

**ENVIRONMENTAL ASSESSMENT
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CHALLIS FIELD OFFICE**

**MILL CREEK RECONNECT PROJECT
EA# DOI-BLM-ID-I030-2013-0006-EA**

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Chapter 1. Purpose and Need for Action

Background

The Bureau of Land Management (BLM) - Challis Field Office (CFO) has received a request from Trout Unlimited, a non-profit organization focused on the restoration and conservation of native salmonids and their habitats. Trout Unlimited (proponent) has requested to reconnect Mill Creek to Big Creek. In partnership with Trout Unlimited, the private land holder and right of way (ROW) applicant is Big Creek Ranch, LLC. Mill Creek is a tributary to Big Creek in the upper Pahsimeroi River Watershed. The Pahsimeroi Valley lies in Central Idaho and includes both Lemhi and Custer counties. Mill Creek has been historically disconnected by irrigation practices and does not directly convey water to Big Creek or allow for upstream and downstream fish migration. The proposed project, described below, would restore stream flow and fisheries connection between Mill Creek and Big Creek, and contribute to the potential future restoration of flow and fisheries connectivity of Big Creek to the Pahsimeroi River.

Applicant

Big Creek Ranch, LLC

Type of Action

This action will be an irrigation ROW (IDI-37624) under Title V of the Federal Land Policy and Management Act (FLPMA) of 1976, as amended, to Big Creek Ranch, LLC for an existing irrigation ditch and installation of an irrigation pipeline. The action also includes a stream reconnection and riparian restoration project and associated fence construction.

Purpose and Need for Action

Historic and current agricultural practices have eliminated the connection of Mill Creek to Big Creek in the Pahsimeroi River Valley. These practices altered or obliterated the natural stream channel(s) for Mill Creek, such that Mill Creek flows are diverted or intercepted by irrigation ditches and do not contribute surface water to Big Creek. The proponent's goal is to restore connectivity of Mill Creek to Big Creek by reconstructing or restoring the Mill Creek stream channel(s).

The purpose of the Proposed Action is to reconnect Mill Creek to Big Creek by providing a restored stream conveyance to allow hydraulic connectivity, fish passage, and reestablishment of an adjacent continuous riparian area. Additional goals of the Proposed Action are to 1) provide access to the ROW applicant for an existing irrigation ditch and to install and maintain an irrigation pipeline, 2) provide access to the proponent to conduct riparian vegetation restoration along restored or reconstructed Mill Creek stream channels on BLM lands, and 3) provide protection to the stream restoration project from livestock and wildlife.

The need for the action is for the BLM-CFO to respond to a request by the proponent to implement the proposed stream reconnection project and application from the existing water rights holder (applicant) for a ROW for an existing irrigation ditch and to construct and maintain a buried irrigation pipeline on lands managed by the BLM. This action is in accordance with the FLPMA and consistent with Challis BLM Resource Management Plan (RMP) (USDI- BLM 1999a).

Location of Proposed Action

The legal land description for the proposed ROW action is:

Boise Meridian, Idaho

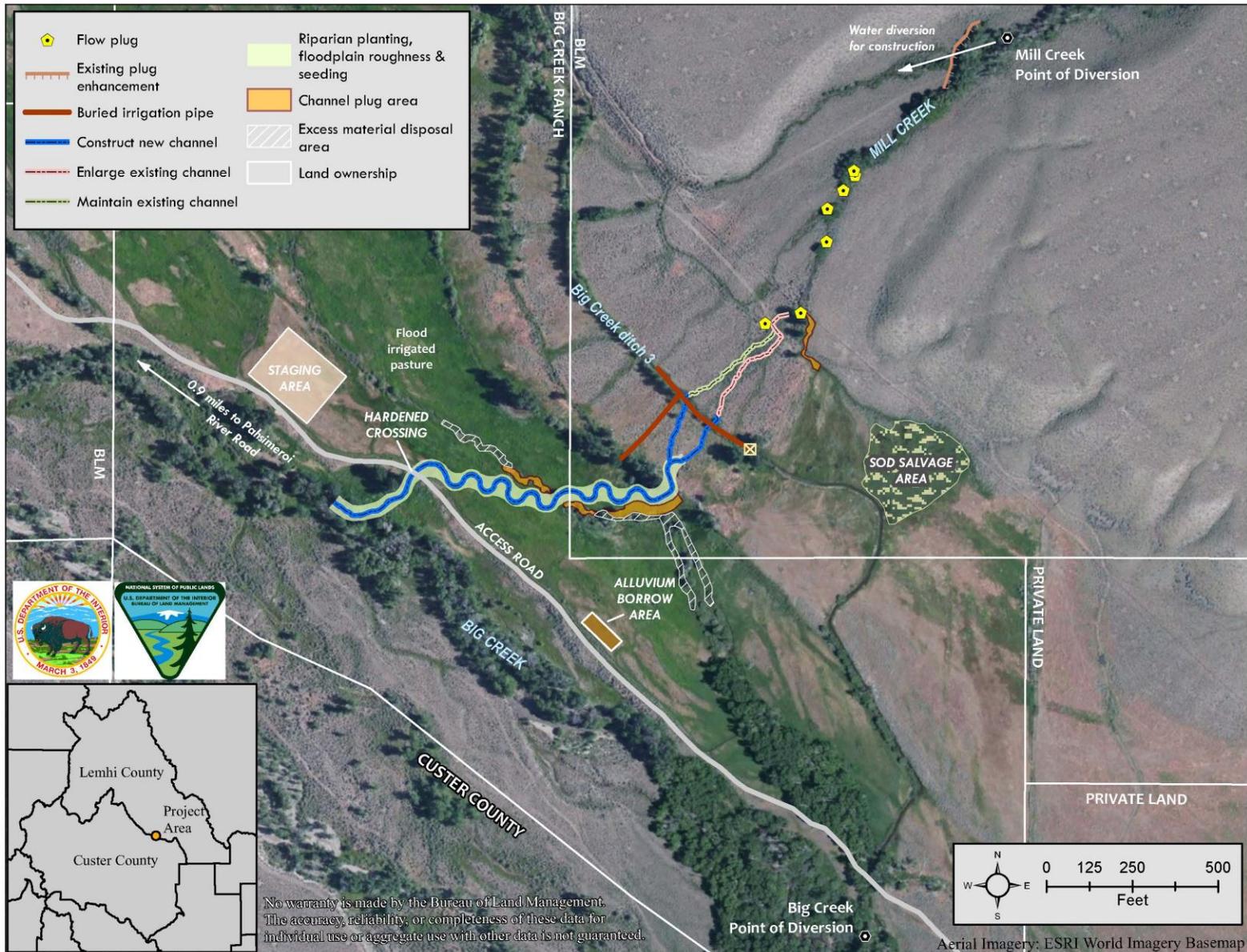
T. 13 N., R. 23 E., Sec. 12, NE1/4, SW1/4.

The area described contains 40 acres in Lemhi County.

The total ROW area would be 1.12 acres.

The Proposed Action would occur along Mill Creek, a tributary to Big Creek, approximately 10 miles southeast of the confluence of Big Creek and the Pahsimeroi River, in Lemhi County, Idaho. The project would be located approximately 23 miles southeast of Ellis, Idaho along the main Pahsimeroi Valley County Road (County Road), on the east side of the Pahsimeroi Valley. Where the main Pahsimeroi Valley County Road crosses Big Creek, the reach of Mill Creek to be reconnected to Big Creek occurs approximately one mile to the east (Figure 1). A portion of the let-down fence would extend into Custer County with the seasonal let-down fence extending into Sections 3-5, 10, and 11 (Figure 2).

Figure 1. Overview Map of the Mill Creek Reconnection Project



Scoping and Issues

This stream reconnection project has been posted to BLM’s E-Planning NEPA (National Environmental Policy Act) database, available to the public, since August 2013. A scoping letter was sent on October 18, 2013, to the CFO Interested Public Mailing list with a request for data, issues, or concerns to be analyzed in the NEPA process. Written feedback in support of the project proposal was received from the Idaho Department of Fish and Game (IDFG) on November 15, 2013 and Idaho Conservation League (ICL) on November 18, 2013. Additionally, ICL provided specific comments regarding: enhancement of existing Mill Creek stream channels; designed channel reconstruction, transplanting native hydric vegetation; installation of a buried pipeline; installation of an additional length of buried pipeline; construction of a temporary fence; construction of fence-line posts to allow for seasonal take-down livestock fence. These comments were primarily supportive or intended to suggest project design features or best management practices (BMPs). Table 1 lists the issues identified through internal and external scoping for the Mill Creek Reconnection Project.

Table 1. Issues Identified for the Mill Creek Reconnection Project through Scoping

Resource	Resource Issue
Invasive/Non-Native Plant Species	How would the proposed project impact the abundance and distribution of invasive/non-native plant species?
Migratory Birds	How would proposed fencing and ground disturbance (removal of vegetation) impact migratory birds? How would timing of the proposed project affect migratory birds?
Soils	How would the Proposed Action and alternative(s) affect long-term viability of soils (productivity, infiltration, ground cover)?
Threatened, Endangered, and Sensitive Animals	How would the proposed project impact sage-grouse and their habitat including designated Preliminary Priority Habitat (PPH) in the upper project area and Preliminary General Habitat (PGH) in the lower project area? Specifically, how would fence design and amount of ground disturbance in mapped habitat impact sage-grouse habitat? How would vegetation removal and fence construction potentially impact pygmy rabbits?
Threatened, Endangered,	How would designated critical habitat and essential fish habitat (EFH) for Chinook salmon, designated

Resource	Resource Issue
Sensitive Fish and Fisheries	<p>critical habitat for bull trout, and threatened, endangered or sensitive (TES) fish individuals, which may be present in Mill Creek and Big Creek in the action area, be initially affected by in-channel disturbance/restoration activities?</p> <p>How would designated critical habitat and EFH for Chinook salmon, designated critical habitat for bull trout, and TES fish individuals, which may be present in Mill Creek and Big Creek in the action area be affected by the project further in time when hydrologic connectivity, fish passage, and restored instream flows occur?</p> <p>How will the proposed project affect individuals or distribution of other native and non-native fish which may be present in the project area?</p>
Range Resources	<p>How would the proposed project alter grazing use patterns?</p> <p>How would the proposed project impact forage resources and livestock use patterns in the area?</p>
Vegetation	How would the proposed project impact existing vegetation composition and vigor?
Visual Resources	How would the proposed project affect the character of the viewshed and the basic elements of form, line, color, and texture found in the predominant natural features of the landscape?
Water Quality	<p>How would the Proposed Action and alternative(s) impact temperature and sediment in Mill Creek and Big Creek?</p> <p>How would sediment and erosion be mitigated both during and following the implementation of the Proposed Action or alternative(s)?</p> <p>Would the Proposed Action and alternative(s) be in compliance with the existing Total Maximum Daily Load (TMDL) for the Pahsimeroi Subbasin?</p> <p>Would the Proposed Action and alternative(s) affect ground water?</p> <p>How would instream flows be affected by the Proposed Action and alternative(s)?</p>
Wetland and Riparian Zones	<p>How many acres of wetlands would be impacted as a result of the Proposed Action and alternative(s)?</p> <p>What wetland/riparian species and vegetation types would be disturbed/created as a result of the Proposed</p>

Resource	Resource Issue
	<p>Action and alternatives?</p> <p>How would the Proposed Action and alternative affect livestock distribution, timing and intensity of use which may affect riparian areas along Big and Mill Creeks?</p> <p>What would be the net gain/loss of wetland and riparian areas as a result of implementation of the Proposed Action and alternative(s)?</p>
Wildlife	How would disturbance in the riparian, as a result of the proposed project impact wildlife habitat for deer, elk, and antelope?

Decision to be Made

The Challis Field Manager is the official responsible for decisions regarding the management of BLM administered lands within the project area. Following appropriate NEPA analysis, the Field Manager would issue a decision document or documents consistent with 43 CFR 2800 for FLPMA ROW, 43 CFR 4160 for grazing administrative remedies, 43 CFR 4120.3-2 for cooperative range improvement agreements and 43 CFR 4120.3-3 for range improvement projects.

Land Use Plan Conformance

The alternatives analyzed in this Environmental Assessment (EA) are subject to and in conformance with the following goals and objectives of the Challis RMP (USDI-BLM 1999a):

- **Biological Diversity:** Goal 1, Page 21: Maintain functional and repair non-functional ecological systems and processes to ensure continued sustained production of ecosystem products and values such as forage, timber, clean water, and wildlife and fisheries habitat.
- **Fisheries:** Goal 1, Page 23: Ensure a natural abundance and diversity of aquatic habitats to support fisheries resources in a healthy and productive condition, to provide the continued opportunity for non-consumptive and consumptive uses, and to ensure the viability of these species.
- **Management Decision Common to All Fisheries Resources #6:** Provide opportunity and support to the Idaho Department of Fish and Game (IDFG), National Marine Fisheries Services (NMFS), US Fish and Wildlife Service (USFWS), US Forest Service (USFS), Bonneville Power Administration (BPA), appropriate Federally recognized tribes, and other partners for the cooperative management of anadromous and resident fish resources in order to promote fisheries opportunities on BLM administered public lands, while ensuring protection of priority salmonid fish resources.
- **Floodplain/Wetland Areas:** Goal 1, Page 26: Maintain or improve the unique resource values of wetland and floodplain areas.
- **Land Tenure and Access:** Goal 3, page 35: Consider public needs for use authorizations, such as ROW, leases, permits, and withdrawals.
- **Minimum Stream Flow:** Goal 1, Page 45: Maintain riparian areas, improve fish migration, decrease fish mortality, provide for recreational opportunities, and maintain aesthetics by facilitating the acquisition of minimum stream flows.
- **Riparian Areas:** Goal 1, Page 57: Manage stream riparian areas to maintain or achieve proper functioning condition to ensure desired functions, improve water quality, prevent and minimize flood and sediment damage, and establish conditions which support attainment of healthy and productive aquatic habitat. Maintain proper functioning condition stream riparian areas (currently 35.8 percent, based on the most recent riparian

functionality assessments) and restore functional-at-risk and non-functional stream riparian areas so that 75 percent or more of stream riparian areas are in proper functioning condition or making progress toward proper functioning condition within five years. Maintain proper functioning condition stream riparian areas and restore functional-at-risk and non-functional stream riparian areas so that 90 percent of riparian areas on fish bearing streams are in proper functioning condition or making progress toward proper functioning condition by 2010.

- Water Quality: Goal 1, Page 68: On perennial streams, improve water quality to fully support those beneficial uses which are not supported, are threatened, or are only partially supported. Maintain fully supported beneficial use status where it exists.

Relationship to Statutes, Regulations, or Other Plans

The National Historic Preservation Act (NHPA) of 1966, as amended, (with regulations under 36 CFR 800) established the federal government's policy and programs on historic preservation. Section 106 of NHPA requires agencies to consider the effects of their actions on historic properties (defined as cultural resources determined to be eligible for listing on the National Register of Historic Places) prior to project implementation. The NHPA specifically requires federal agencies to identify and manage historic properties on federally owned and managed lands. Consultation under NHPA for this project has been conducted in accordance with BLM's National Programmatic Agreement and the 2014 implementing Protocol Agreement between Idaho BLM and the Idaho State Historic Preservation Office.

The Fort Bridger Treaty of 1868 (15 Stat. 673) specifically reserves the rights of the Shoshone Bannock Tribes to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands, including public lands managed by the BLM-CFO. The federal government has a federal trust responsibility to manage public lands to provide for the continued exercise of tribal treaty rights, consistent with management policies, on all unoccupied lands within their jurisdiction. Part of the Federal trust responsibility entails conducting government-to-government consultation with Indian groups when a proposed project has the potential to impact the exercise of treaty-reserved rights.

The Clean Water Act (CWA) (33 USC §1251 et seq.) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes must adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible.

Section 303(d) of the CWA establishes requirements for states and tribes to identify and publish a prioritized list of water bodies that are impaired (not fully supporting their designated beneficial uses) every two years. The most recent publication for Idaho was prepared by the Idaho Department of Environmental Quality (IDEQ), and approved by EPA (Environmental Protection Agency) in September 2011.

For waters identified on this list, the State must define TMDL for each pollutant causing the water body not to fully support its designated beneficial uses. The TMDL is the amount of pollutant that could be added to the water body per day and the given water body would still fully support all of its designated beneficial uses. This is then used to establish allowable pollutant loads set at levels to achieve water quality standards required for the designated beneficial uses.

Clean Air Act of 1970 (amended 1990).

Section 7 of the Endangered Species Act (ESA) of 1973, as amended, outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a) (2) states that each federal agency shall, in consultation with the Secretary, insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of its habitats.

Pursuant to Section 305(b)(2) of the Magnuson-Stevens Act, federal agencies must consult with the NMFS regarding any of their actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect EFH. The Magnuson-Stevens Act, Section 3, defines EFH as “those waters and substrate necessary for fish for spawning, breeding, feeding, or growth to maturity.”

In 1995, the BLM adopted the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, commonly referred to as PACFISH (USDA/USDI 1995). PACFISH provides Riparian Management Objectives and Standards and Guidelines for managing riparian resources. PACFISH standards apply to watersheds that contain anadromous fish such as the Salmon River, Pahsimeroi River and their tributaries.

Also in 1995, the BLM implemented the Bull Trout Habitat Conservation Strategy known as INFISH (USDA 1995b). INFISH is virtually identical to PACFISH except that it applies to land management activities that influence bull trout habitats rather than anadromous fisheries habitats. INFISH standards apply to watersheds that are not already covered by PACFISH.

Chapter 2. The Proposed Action and Alternative

Description of the Proposed Action

The Proposed Action would physically reconnect Mill Creek to Big Creek, tributaries to the Pahsimeroi River. This alternative is proposed by Trout Unlimited and Big Creek Ranch LLC. The proposed project is located in the Pahsimeroi Valley, Lemhi County, Idaho, on lands administered by the BLM and private lands owned by Big Creek Ranch LLC (Figure 1).

Historic and current irrigation diversions have intercepted Mill Creek and disconnected it from Big Creek. Specifically Big Creek 3 Ditch (BC3) intercepts Mill Creek on the alluvial fan and

conveys flow to agricultural pasture, away from Big Creek itself. While stream channels and irrigation ditches, both active and inactive, exist on the Mill Creek alluvial fan above BC3, a channel does not currently exist to convey water to Big Creek below BC3. A buried pipeline in BC3 is needed along with constructed stream channels, for Mill Creek to be reconnected to Big Creek via a functioning stream channel. Constructed stream channels will need to be planted or seeded with riparian vegetation to protect against the anticipated increased flows in Mill Creek and allow for development of a riparian zone and maintenance of stream channel function. Riparian vegetation plantings along Mill Creek will need to be fenced for protection from wildlife and livestock grazing to allow for vegetation establishment and to ensure long term success.

In addition to the channel reconnection and associated riparian fencing, the Proposed Action includes a seasonal let-down fence along Big Creek downstream of the project area, the issuance of a ROW to Big Creek Ranch, LLC for an existing portion of BC3, and the installation of a buried irrigation pipelines for Mill Creek to bisect BC3 (e.g. siphon pipe) and to convey a portion of BC3 for irrigation (e.g. lateral underground pipeline). All components of the proposed action are further described below.

Mill Creek Channel Reconnection and Construction

The Proposed Action is intended to restore a surface water connection between Mill Creek and Big Creek while reducing the loss of surface and subsurface flows from Mill Creek. The proposed project would result in seasonally variable delivery of surface water to Big Creek from Mill Creek. For example, flow measurements collected by Geum Environmental Consulting, Inc. (Geum) and BLM during project planning ranged from 0.5 to 3.6 cubic feet per second (CFS) upstream of BC3 between April 29 and June 11, 2013. The estimated bankfull discharge for Mill Creek is 12 ± 2 CFS. During most years, flows within this range are anticipated in Mill Creek. The Mill Creek Project Plan (Geum 2014a and Geum 2014b) includes the planforms, cross-sections, hydraulic calculations and typicals for habitat structures, and is available from the CFO upon request. The components of the project and design features are listed below, generally from upstream to downstream:

- Retain the existing and historic point of diversion (POD) on Mill Creek. Big Creek Ranch, LLC is the sole water right owner on Mill Creek. Their intention is to retain the POD. No land would be taken out of production as a result of this use. There is not a diversion structure (e.g. headgate) at the legal point of diversion, nor would one be created as the result of this action. An earthen plug would be placed at the legal POD.
- Protect ranch infrastructure and promote flow retention in Mill Creek through the reinforcement or installation of ditch plugs constructed downstream of the Mill Creek POD (Figure 1). Plug dimensions would vary but would be approximately 0.5 feet above bankfull height x 1.0 foot deep x 20.0 feet long. Plug material would be generated during channel construction and installed with the same machinery. The plugs would be intended to reduce flow losses to Mill Creek from ditch interception (Figure 1).

- The total length of the existing BC3 ditch on BLM lands is 1662 feet. The proposed action would replace a portion of BC3 with an underground siphon pipe and re-grade to eliminate interception of Mill Creek flows and accommodate surface flow connection between the alluvial fan and valley bottom. This buried siphon pipe (24 inch PVC) and associated inflow/outflow structures would be 320 feet in length. A secondary 290 foot underground lateral pipeline (8 inch PVC) would be constructed to convey water (approximately 1.0 CFS) from the BC3 siphon to existing ditches southwest of the project area. Dimensions for the ROW request are 1,952 feet length by 25 feet width, totaling 1.12 acres. These dimensions represent the maximum disturbance that would be authorized for the construction and maintenance of the existing ditch and proposed pipelines within the ROW.
- Construct a new channel for Mill Creek below BC3 to provide a surface connection to Big Creek. This channel would vary between an A, B or C channel type based on the existing valley gradients (Rosgen 1994). Channel and floodplain excavation would result in approximately 1.5 acres of disturbance along approximately 2,000 linear feet of Mill Creek is anticipated (Geum 2014a). The constructed channel would be hydrologically connected with the adjacent floodplain, as appropriate for the channel type, to support riparian and wetland development and promote other hydrologic functions, such as water storage.
- Table 2 lists the structures that would be integrated in the constructed channel. The final number and spacing of structures would be determined in the field by the project design team in consultation with BLM staff. Table 2 represents the maximum number of structures that may be necessary. Any trees needed for instream structures would only be obtained from private property along existing ditches.

Table 2. Proposed Channel Structure Types for Mill Creek Reconnection

Structure Type	Purpose	Approximate Number
Root wad and log vane	Deflect flows away from banks and provide gradient control.	23
Large woody debris jam	Deflect flows away from banks, provide cover and maintain pools for habitats	17
Cobble and boulder grade control	Provide gradient control, maintain thalweg, and provide diverse substrate.	35
Cobble grade control	Provide gradient control, maintain thalweg, and provide diverse substrate.	11
Woody brush matrix	Provide stream bank roughness and support development of riparian vegetation.	1050 (feet)

- Establish a riparian corridor along the new Mill Creek channel by incorporating a mix of native woody and herbaceous plant species such as aspen, cottonwood, willows and sedges. Re-vegetation would include planting native shrubs, transplant of wetland sod mats from an existing wetland (e.g. sod salvage area, described below), and seeding with a BLM-approved seed mix.
- Utilize a sod salvage area, adjacent to the project area, to support construction and re-vegetation of the Mill Creek channel. The approximate disturbance of this sod salvage area would be 0.23 acres. The sod salvage area is east of the alluvial fan and is the result of a historic and unmaintained irrigation diversion. This diversion also results in the loss of stream flow from Mill Creek and has created a wetland area on the upland steppe above Big Creek (Geum 2014a). The diversion would be plugged during construction, and remain closed after project implementation to restore stream flows in Mill Creek. Because of the ditch closure and eventual dewatering, wetland sod would be salvaged to support Mill Creek channel construction and re-vegetation utilizing mechanical equipment. The timing and method of salvage would be conducted under dry conditions to retain partial ground cover and prevent erosion. All areas disturbed during collection of wetland sod would be re-seeded with a BLM-approved seed mix appropriate for the location. Manual or mechanical broadcast seeding would be utilized for re-seeding efforts.
- The proponents would install and maintain an enclosure fence (i.e. riparian protection fence) around the Mill Creek riparian corridor to protect plants from wildlife and cattle browsing. This fence would exclude approximately one acre of BLM managed lands and one acre of private lands, and be a total of 3,530 lineal feet in length. Approximately 1700 lineal feet would occur on BLM lands. The fence would consist of eight foot high plastic or wire material and would remain in place until project plantings are established and be able to withstand grazing from both cattle and wildlife, anticipated to be approximately 3-5 years. The fence would be fit with markers to increase visibility of the fence for wildlife; however, materials in high contrast to natural surroundings would be avoided.
- Construct a hardened vehicle crossing in the newly constructed Mill Creek channel on the valley floor, where a current ranch access road crosses the proposed channel on private land (Figure 1). Approximate crossing dimensions would be 50 feet long x 15 feet width. Materials for the crossing would be geotextile fabric overlain with 2-12 inch diameter clean graded rock from a local source
- Approximately 1,612 cubic yards of excess fill would be generated by excavating the channel and floodplain. Material generated during project excavation would be retained for construction, used in channel plugs or placed in obsolete irrigation ditches
- Reclaim and re-vegetate all disturbed areas with native plant species. Continue noxious and invasive weed management in the project area on both BLM managed and private lands. The target weed species include Idaho listed weed species (Idaho State Department of

Agriculture, <http://www.idahoag.us/Categories/PlantsInsects/NoxiousWeeds/watchlist.php>), and cheatgrass.

Mill Creek Channel Construction Timing

It is anticipated that construction would occur between approximately September 1 and October 31, during the dry fall conditions, and would take 4-6 weeks. However, depending on the timing of project initiation, the construction time frame may extend through November, weather permitting. The project is intended to be implemented in 2014, however, project funding allows for implementation for up to three years (2014-2017). The exact work window and schedule may be determined by Section 404 and 401 permit requirements and ESA consultation if required. Ideally, re-vegetation and streambank construction requiring the use of willow cuttings would be done once the source plants are dormant.

The proposed construction timing is intended to provide for low water flows during the fall. Mill Creek would be temporarily diverted near and below the point of diversion through an old irrigation channel to agricultural pasture west of the project area (Figure 1). This area has existing ditches from historic irrigation practices that are adequate to convey water to private pasture. Diversion of Mill Creek at the upper end of the project would also allow the sod salvage area to dry out prior to harvesting. The IDFG would conduct fish salvage in Mill Creek and BC3 in cooperation with the BLM fisheries staff and Trout Unlimited. These efforts would be conducted as necessary prior to dewatering.

Construction of the BC3 siphon and the lateral buried irrigation pipe would be expected to occur in September, prior to Mill Creek channel construction. The BC3 ditch would be shut off and installation of the underground pipes would be done in dry conditions. The project would be anticipated to be completed with final grading, re-vegetation, and water turned into the new channel by approximately October 31.

Construction features including channel location, bank and instream structures, and excavation and fill locations would be staked in the field prior to construction by the project design team.

The following Best Management Practices (BMPs) and design features would be followed during channel construction or maintenance.

- All equipment would be pressure washed prior to arriving on site to remove dirt clods that may contain weed seeds.
- Equipment would be cleaned of external oil, grease, dirt, and mud, and all leaks would be repaired prior to entering areas that drain directly to streams or wetlands.
- Equipment would be inspected daily for fuel or lubricant leaks.
- Staging of construction equipment and materials would occur at least 100 feet away from open water.

- Fuel storage and refueling would not occur within 300 feet of perennial drainages and wetlands or within 150 feet of ephemeral drainages. Fuel spill containment and cleanup materials would be present and available on-site.
- Weed infestations near the project area would be identified by the construction manager prior to construction. Heavy equipment would avoid unnecessarily entering these areas to reduce potential spread of weeds.
- Wetland sod will be salvaged in a manner that minimizes disturbance to the salvage area, and equipment access routes into the salvage area will be limited.
- Vegetation disturbance would be minimized to the maximum extent possible.
- Erosion control measures, such as straw bales, straw wattles or silt fence would be installed between construction areas and any live water, wetlands or drainages with potential for live water.
- Excavated material stockpiles and equipment staging areas would be designated to minimize soil disturbance and vegetation disturbance, and prevent sediment delivery to streams or wetlands.
- A supply of erosion control materials would be kept on hand to respond to sediment emergencies.
- Weed-free straw bales would be placed at the downstream end of Mill Creek where it would connect with Big Creek to contain suspended sediment when water is first turned into the constructed channel.
- Construction would occur during seasonal low flow, and water would be turned back into the work areas slowly to minimize turbidity.
- In-stream work and other construction activities within 300 feet of perennial streams (Big and Mill creeks), would be ceased during heavy precipitation events in order to limit the potential for adverse sedimentation from erosion and soil compaction.
- Sediment abatement devices would be deployed downstream of proposed excavation. These devices would be selected, installed, and maintained with the objective of reducing the intensity and duration of turbidity plumes.
- Following implementation, prior to any maintenance which may require dewatering of Mill Creek on BLM lands, the operator must obtain prior approval from the BLM. Any work area within the wetted channel will be isolated from the active stream whenever ESA-listed fish are reasonably certain to be present, or if the work area is 300 feet or 10 times bankfull channel width (whichever is less) upstream from spawning habitats, unless NMFS and FWS agree in writing (email) that the work can be done with less potential risk to listed fish without isolating and dewatering the work area.
- All operators of construction equipment and/or construction personnel would be required to immediately cease operation if a sick, injured, or dead specimen of a threatened or

endangered species is found in association with project construction. Dead specimens would be preserved in the best possible condition for later analysis of cause of death.

- Any trees needed for instream structures would be obtained from private property along existing ditches

Big Creek Let-Down Fence

An issue identified through scoping is the potential response of Big Creek instream flows and riparian areas from the proposed restoration activities and how that could affect livestock use patterns. Currently, there is limited livestock use that occurs along Big Creek within the County Line Allotment for several reasons: water and forage availability, timing of use, and duration of use. As a result of the Proposed Action and other ongoing, planned, and/or potential restoration activities in the watershed, the duration and magnitude of flow in Big Creek is anticipated to increase in this reach. This potential increase in flowing water in Big Creek downstream of the County Road during the growing season may also increase the extent of woody riparian tree/shrub recruitment, hydric herbaceous vegetation, and development of more stable, vegetated streambanks. The potential increase in water and forage available to livestock may increase livestock use along Big Creek and create a need to limit the timing, intensity, duration, and location of livestock use on Big Creek. At this time, however, there is an uncertainty of how Big Creek will respond to the restoration activities and if the changes in riparian restoration activities will change the livestock use patterns associated with Big Creek in the County Line Allotment.

Therefore, to address the aforementioned issue and uncertainty of changes in livestock use patterns, an adaptive management strategy would be implemented. Adaptive management is adjustment of an action to environmental conditions so as to accomplish an objective (in this case improved riparian vegetation and streambank stability resulting from increased streamflows) through the use of science based activity planning. Adaptive management is a five step process that includes: Assessment; Development of Resource Objectives; Activity Design and Implementation; Monitoring; and Modification.

The project applicant, Big Creek Ranches LLC, have also proposed to install a seasonal let-down fence to limit livestock use on Big Creek. Prior to implementation of the proposed fence, the BLM would establish a representative designated monitoring area (DMA) within the proposed seasonal exclosure area to obtain baseline data on channel and riparian condition. Once baseline data are established, site specific resource management objectives would be developed following guidance from the Challis RMP (USDI-BLM 1999a). Monitoring would be conducted to determine if livestock grazing is preventing attainment of resource management objectives for greenline vegetation seral status and streambank stability. The monitoring data, documented field observations, and other data acceptable to the authorized officer would be assessed. Monitoring would include: grazing use indicator monitoring, assessments of livestock use patterns, and relative frequency of use along Big Creek as collected by the BLM and Big Creek Ranches, LLC.

The need for the proposed fence would be evaluated for 3 seasons of authorized livestock use on the County Line Allotment, following implementation of the proposed restoration actions. If monitoring indicates that livestock grazing is preventing attainment of resource management objectives for greenline vegetation seral status and streambank stability, then the fence would be implemented by Big Creek Ranch, LLC as proposed and described below.

The proposed Big Creek let-down fence includes the installation of approximately 4.4 miles of a seasonal let-down fence with an extent of permanent infrastructure along Big Creek. When livestock are not on the allotment, the fence wires would be let-down by the permittee, while some braces and posts would remain in place for ease of future wire deployment. The location of the proposed fence would be adjacent to the county road and Big Creek Bridge at T12N, R23E Sections 3-5, 10, and 11. The proposed fence alignment follows an established road east (upstream) of the Big Creek Bridge and an existing two-track road along the downstream end of the fence. The fence would parallel approximately four miles along Big Creek and exclude approximately four stream miles and 948 acres (Figure 2).

The fence would consist of a three-wire high tensile electric (wire and/ or tape) fence, spaced at 16, 26 and 38 inches above ground to allow for the movement of big game. The high tensile wire would be let-down by being pinned to the ground or rolled up during nonuse periods. The top two wires would be energized with the bottom wire as ground wire. There would be up to 225-250 five foot steel t-posts spaced every 40 feet with insulated plastic wire clips to allow for ease of take down during nonuse periods. Portable steel fence braces would be used to aid in the ease of deployment and removal, although some are anticipated to remain in place perennially.

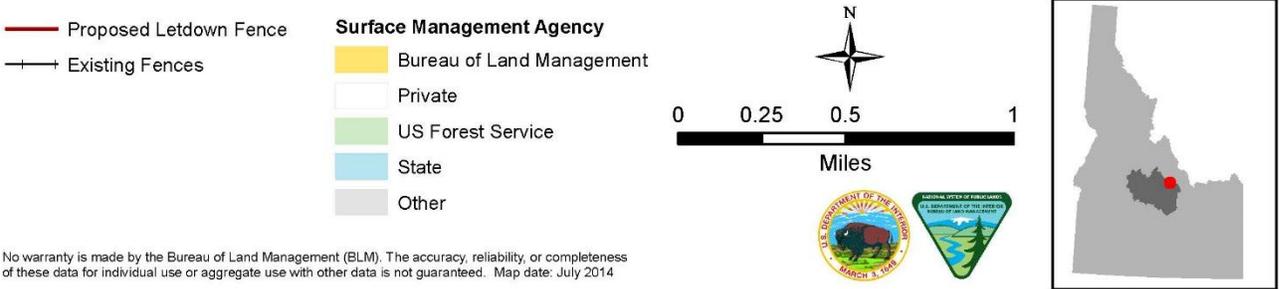
The fence would be powered with a solar powered energizer. Gates would be placed at road crossings. The fence would follow existing designated roads or access routes as much as possible, while also maintaining strategic sections in a straight line to reduce fence braces. The BLM would monitor the fence location for noxious or invasive weed species and treat appropriately if found.

The proposed Big Creek let-down fence, if implemented, would be authorized through a cooperative agreement between the BLM and the permittee. The cooperative agreement would include general BLM fence construction BMPs, as well as the conditions listed below.

- Maintenance would include timely repair of the fence to keep it in usable condition for the purpose intended over its normal expected life span. Fence maintenance includes: periodic inspection, keeping the wire attached to the posts with proper tension, maintaining a specified number of wires, replacing bent or broken posts and stays, repairing gates, repairing drainage crossings, and other minor work needed to keep the fence usable.
- The permittee would put the wires on the posts no earlier than two weeks prior to livestock entry and let the wires down no later than two weeks after livestock have been removed from the allotment. Current season dates are May 5 to June 15.

- The permittee is responsible for checking the fence during the grazing season making sure it is working properly and keeping all livestock out of the area enclosed. The permittee is responsible for the proper care of the battery, including, but not limited to, the removal of the battery at the end of the grazing season, proper storage of the battery to prevent freezing and keeping a fully charged battery on the fence at all times during the grazing season.
- No cross country vehicle travel would be authorized for the installation or maintenance of the fence.
- The fence would be constructed according to BLM Manual Handbook H-1741-1.
- The proposed fence, if implemented, would be as described in the associated decision.

Figure 2. Mill Creek Reconnection Project Proposed Big Creek Let-Down Fence



Big Creek 3 Ditch Right of Way

The Proposed Action would include the issuance of a ROW for the portion of the existing BC3 ditch that is located on lands administered by the BLM and a secondary lateral pipeline. The landowner has submitted a ROW application to the BLM for BC3 and the proposed lateral pipeline that supplies irrigation water to Big Creek Ranch west of the project area. The ROW application includes approximately 1,952 feet length and 25 feet width (1.12 acres). This represents the maximum disturbance that would be authorized for the construction and maintenance of the ditch and pipelines included in the ROW application (Figure 3).

The following items are included here as project design features, BMPs, and ROW stipulations. These would be adhered throughout project implementation and for the duration of operation and maintenance of the authorized ROW.

- Fuel storage and refueling, if needed, would occur no closer than 300 feet from Mill and Big Creeks. Existing ranch roads and turn-arounds would be used to access the project area. Off-site areas (e.g. private property) would be used as a staging/refueling area for equipment and vehicles. A fuel spill response kit of appropriate size for the equipment would be readily available throughout the construction period.
- Heavy equipment would be washed to remove oil/grease before delivery to the job site.
- All equipment would be inspected before use to remove vegetation and dirt clods that may contain noxious weeds and seeds.
- Machinery would be inspected daily for fuel or lubricant leaks.
- Machinery would be operated from the top of the stream bank on adjacent upland and developed areas to the maximum extent practicable. Equipment would not be driven or operated in flowing water.
- Use of sediment barriers and erosion controls such as fences, weed-free straw matting/bales or fiber wattles as necessary in all work areas sloping toward the water channels to intercept any surface flow that might transport sediment to the stream channel.
- Excavated material would be covered and stockpiled away from the stream channel or flanked with sediment fencing or fiber wattles to minimize opportunity for fine sediment to be transported into the stream.
- Where construction would otherwise destroy existing riparian vegetation, project managers would direct machinery to remove existing willows prior to disturbance, stockpile them until construction is complete and then replant them in disturbed areas to aid site recovery.
- The ROW holder shall obtain prior approval from the BLM-CFO prior to any maintenance which may require dewatering of Mill Creek. Any work area within the wetted channel will be isolated from the active stream whenever ESA-listed fish are reasonably certain to be present, or if the work area is 300 feet or 10 times bankfull channel width (whichever is less) upstream from spawning habitats—unless NMFS and FWS agree in writing (email) that the

work can be done with less potential risk to listed fish without isolating and dewatering the work area.

- The holder shall conduct all activities associated with the construction, operation, and termination of the ROW within the authorized limits of the ROW.
- Holder shall remove only the minimum amount of vegetation necessary for the use and maintenance of the existing road.
- ROW shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. 'Waste' means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
- The holder shall be responsible for weed control on disturbed areas within the limits of the ROW. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations). Control measures must be done in accordance with the Challis Field Office Integrated Weed Management Program. Coordination with the Challis Field Office Weed Specialist shall be completed before applying herbicides.
- The holders of ROW, IDI-37624, agree to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the ROW (unless the release or threatened release is wholly unrelated to the ROW holder's activity on the ROW.) This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
- There is reserved to the Authorized Officer, the right to grant additional rights-of-way or permits for compatible use on, over, under, or adjacent to the land involved in this grant.
- The holder shall immediately bring to the attention of the responsible Federal agency official any and all antiquities, or other objects of historic, paleontological, or scientific interest including but not limited to, historic or prehistoric ruins, fossils, or artifacts discovered as a result of operations under this authorization. The holder shall immediately suspend all activities in the area of the object and shall protect and leave such discoveries intact until written approval to proceed is obtained from the Agency Official (36 CFR 800.13(b)). Approval to proceed will be based upon timely evaluation of the object(s). Evaluation shall be by a qualified professional selected by the Agency Official from a Federal agency insofar as feasible (BLM Manual 8140.06H). When not feasible, the holder shall bear the cost of the services of a properly qualified non-Federal professional (BLM Manual Direction 8100.24). Antiquities, historic or prehistoric ruins, paleontological or objects of scientific interest that are outside of the authorization boundaries but directly associated with the impacted resource will also be included in this evaluation.

- The holder of this authorization must immediately notify the responsible Federal agency official by telephone upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony, in accordance with 43 CFR 10.4(g). Further, pursuant to 43 CFR 10.4(b), the holder must also provide the Agency Official with written confirmation of the inadvertent discovery, to be sent via certified letter. The holder must stop all activity in the area and make a reasonable effort to protect the discovery until notified to proceed by the responsible Federal agency official (43 CFR 10.4(c) and (d)).
- Ninety (90) days prior to termination of the ROW, the holder shall contact the authorized officer to arrange a joint inspection of the ROW. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, top soiling, or seeding. The authorized officer must approve the plan in writing prior to the holder's commencement of any termination activities.

Figure 3. Mill Creek Reconnection Project Proposed FLPMA ROW

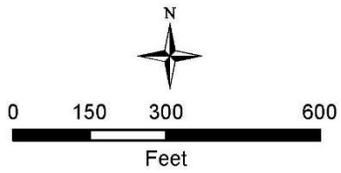


Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

— Proposed FLPMA ROW

Surface Management Agency

- Bureau of Land Management
- Private
- US Forest Service
- State
- Other



No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed. Map date: July 2014

Alternative 2 - No Action

Under the no action alternative, no construction activities would occur. A channel would not be constructed to connect Mill Creek to Big Creek. Mill Creek would continue to be intercepted by the BC3 ditch and other existing lateral ditches, and would not flow to Big Creek. No new fences would be constructed along Big Creek on the County Line Allotment for livestock management under the no action alternative. The BC3 ditch would continue to occupy lands administered by the BLM.

Chapter 3. Affected Environment and Environmental Consequences

General Setting

The project area is located in east central Idaho within the Pahsimeroi Valley. This valley is bounded by the Lemhi Mountain Range to the northeast and by the Lost River Mountain Range to the southwest. Elevations range from 12,662 feet at Borah Peak in the Lost River Range to 4,600 feet at the mouth of the Pahsimeroi River near Ellis, Idaho. The topography of the Pahsimeroi Valley is characterized as a long U-shaped valley with the steepest slopes occurring near the mountain tops and more gentle slopes occurring on the valley floor. The valley varies in width from approximately one to ten miles, and is marked by large alluvial fans spreading out from the mountain ranges and converging on the valley floor.

The climate of the region is semi-arid high desert typical of the Rocky Mountains in Central Idaho. This climate is characterized by cold winters and hot, dry summers which are affected by the Pacific Ocean maritime masses. Elevations, topography and aspect result in high variability in microclimates throughout the valley. National Weather Service data collected between 1961 and 1989 in May, Idaho recorded a mean monthly rainfall of 0.28 inches during January, and 1.43 inches during June. Mean monthly temperatures were 19.5°F in January to 66.3°F in July with extremes of 101°F recorded on August 3, 1961, and -40°F recorded on December 23, 1983 (IDEQ 2001).

The Pahsimeroi River has an elevation of approximately 7,800 feet near Leatherman Peak at the top of the valley. The Pahsimeroi is an 845 square mile subbasin that is further divided into 27 watersheds. During the Interior Columbia River Basin Assessment, the Pahsimeroi Subbasin was given a low rating for hydrologic integrity as compared to other subbasins in the interior Columbia River Basin. This means that the Pahsimeroi Subbasin generally does not have a well-connected network of streams and groundwater (USDI/USDA 2001).

The project area lies in the upper Pahsimeroi Subbasin which is characterized as a losing reach with essentially all of the flow from the headwaters being lost in the upper valley where the river flows through sagebrush steppe underlain by thick alluvium (Williams et al. 2006). Big

Creek is one of the largest tributaries to the Pahsimeroi River with a drainage area of approximately 70 square miles. The estimated mean monthly flows for Big Creek vary from 24 CFS in November, to 380 CFS in June (Shumar and Reaney 2001). The lower six miles of Big Creek (approximate) have discontinuous flow and do not maintain connection with the Pahsimeroi River because of natural channel infiltration loss and reduced stream flow from irrigation withdrawal upstream. In some years, Big Creek conveys water to the Pahsimeroi River during spring runoff (Colvin 2005).

Mill Creek is located just upstream of the intermittent reach of Big Creek and is the most downstream fish-bearing tributary. Mill Creek has a drainage area of approximately three square miles. Mill Creek originates and flows out of a relatively steep and narrow canyon northeast of the project. Mill Creek in the canyon is an A channel type dominated by boulder step pools (Rosgen 1994). Riparian vegetation consists of cottonwood, aspen and a mix of wet and dry shrubs including willow, alder, currant, rose and snowberry. The riparian corridor and stream channel are relatively undisturbed in the canyon portion of Mill Creek.

Once Mill Creek reaches the valley floor, it encounters an alluvial fan that has been highly manipulated by irrigation diversions since the late 1800s. It is likely that Mill Creek was connected to Big Creek at some time in the past via a surface channel, but the extent of disturbance from irrigation diversions makes it difficult to determine this historic alignment. Most of these manipulations were present prior to 1939, the year of the oldest aerial photos available for the project area. The General Land Office survey dated 1897 (BLM 2012) also shows some development of pastures and irrigation ditches near the project area.

Historic and ongoing irrigation practices have eliminated the lower reaches of Mill Creek, disconnecting it from Big Creek. On the Mill Creek alluvial fan there is a defined stream channel and several secondary channels. At the point where Mill Creek reaches the BC3 ditch, it is intercepted and there is no defined stream channel below this point.

Resources Considered in the Impact Analysis

The results of the scoping and site-specific assessments indicate that not all of the resources considered are present or would be directly or indirectly impacted by any of the alternatives described in Chapter 2. Only those resources that are present and impacted are discussed in the following narratives (Table 3).

Table 3. Resources Considered in the Impact Analysis

Resource	Resource Status	Rationale
Access	Present, Not Impacted	There are roads which parallel the proposed seasonal let-down fence, providing motorized access. Only non-motorized access exists to the stream reconnect project area. The Proposed Action or Alternative would not create,

Resource	Resource Status	Rationale
		eliminate, or result in any changes to authorized routes and access.
Air Quality	Present, Not Impacted	The Proposed Action or Alternatives would not result in production of vehicle or equipment emission or particulate matter above incidental levels as required by the Clean Air Act.
Areas of Critical Environmental Concern (ACEC)	Not Present	The project area is not located within or near an ACEC.
Cultural Resources	Not Present	<p>A Class III intensive cultural resource inventory was conducted over the Area of Potential Effect of the proposed undertaking. The Idaho State Historic Preservation Office (SHPO) has reviewed and concurred in the findings and determination of effect.</p> <p>BLM policy provides for consideration of cultural resources on non-federal lands when a BLM decision would foreclose alternatives for surface disturbing activities beyond the boundaries of the public lands (BLM Manual Direction 8140.06D1). To take potential effects to cultural properties into account, SHPO has concurred with the BLM recommendation that ground disturbance associated with stream channel construction on private land be monitored by a qualified archaeologist.</p>
Economic and Social Values	Present, Not Impacted	The Proposed Action or Alternatives would not result in changes to economic or social values because no changes to the amount of irrigated private pasture lands or amount of authorized Animal Unit Months (AUMs) associated with the County Line or Mill Creek grazing allotments would result.
Environmental Justice	Present, Not Impacted	There are some scattered minority and low-income populations in the project area, however, the projects and activities described in the Alternatives would not affect those populations as described under Executive Order 12898 of 2/11/1994. There would be no disproportionately high and adverse human health or environmental effects to the minority and low-income populations in the area resulting from the proposed activities.
Existing and Potential Land	Present, Not	Existing uses in the area include ongoing authorized livestock grazing on the Mill Creek and County Line Allotments, a

Resource	Resource Status	Rationale
Uses	Impacted	powerline ROW, a buried telephone line ROW, an existing ditch, and the County Road. The Proposed Action or Alternative would not affect the existing and potential future land uses in the project area because ground disturbing activities would be minimal or are not spatially concurrent with aforementioned uses.
Fisheries	Present, Impacted	Impacts are disclosed in Chapter 3, Threatened, Endangered, and Sensitive Fish/Fisheries.
Floodplains	Not Present	In accordance with the Lemhi County, Idaho Flood Insurance Study, this area occurs in Zone D, an area where no floodplains have been delineated and no flood hazards have been identified (FEMA 1988).
Forest Resources	Not Present	There are no forest resources in the project area.
Invasive, Non-Native Species	Present, Impacted	Impacts are disclosed in Chapter 3, Invasive, Non-Native Species.
Mineral Resources	Present, Not Impacted	Mineral resources (e.g. sand, gravel, fill) are present on almost all lands in the CFO area. However, the minimal extent of existing or new disturbance would not result in impacts to such resources from the Proposed Action or Alternative.
Migratory Birds	Present, Impacted	Impacts are disclosed in Chapter 3, Wildlife.
Native American Religious Concerns	Not Present	There are no known ceremonial sites or resources associated with ceremonial practices in the proposed project area.
Paleontological Resources	Not Present	There are no known paleontological resources within the proposed project area.
Prime and Unique Farmlands	Not Present	There are no prime or unique farmlands located within or near the proposed project area.
Soil Resources	Present, Impacted	Impacts are disclosed in Chapter 3, Soil Resources.

Resource	Resource Status	Rationale
Threatened, Endangered, and Sensitive Plants	Not Present	There are no threatened, endangered, or sensitive plants within the project area.
Threatened, Endangered, and Sensitive Animals	Present, Impacted	Impacts are disclosed in Chapter 3, Wildlife.
Threatened, Endangered, and Sensitive Fish	Present, Impacted	Impacts are disclosed in Chapter 3, Threatened, Endangered, and Sensitive Fish/Fisheries.
Range Resources	Present, Impacted	Impacts are disclosed in Chapter 3, Vegetation Type, Communities, and Range Resources.
Recreational Use	Present, Not Impacted	Access and availability for recreation opportunities will not change as a result of the Proposed Action or Alternative.
Tribal Treaty Rights and Interests	Present, Not Impacted	In accordance with Idaho Falls District policy, tribal treaty rights and interests are discussed in Chapter 3, Tribal Treaty Rights and Interests.
Vegetation	Present, Impacted	Impacts are disclosed in Chapter 3, Vegetation Type, Communities, and Rangeland Resources.
Visual Resources	Present, Impacted	Impacts are disclosed in Chapter 3, Visual Resources.
Wastes, Hazardous and Solid	Not Present	There are no solid or hazardous wastes in the project area and none would be created during the implementation of the Proposed Action or Alternative.
Water Quality (Surface and Ground)	Present, Impacted	Impacts are disclosed in Chapter 3, Water Quality.
Wetland and Riparian Zones	Present, Impacted	Impacts are disclosed in Chapter 3, Wetlands and Riparian Zones.
Wild and Scenic Rivers	Not Present	There are no wild and scenic rivers near the project area.

Resource	Resource Status	Rationale
Wild Horse and Burro HMAs	Not Present	There are no wild horse and burro Horse Management Areas (HMAs) near the project area.
Wilderness	Not Present	There are no wilderness areas or wilderness study areas (WSAs) within or near the proposed project area.
Lands with Wilderness Characteristics	Not Present	There are no lands with wilderness characteristics in or near the project area.
Wildlife Resources	Present, Impacted	Impacts are disclosed in Chapter 3, Wildlife.

Invasive, Non-Native Plant Species

Affected Environment

While most of the proposed project area supports intact native vegetation, invasive, non-native species are present, primarily cheat grass and spotted knapweed. The CFO follows an Integrated Weed Control Program to manage weed species. Under this plan, weed locations are mapped and treated with the appropriate method to eradicate or control the population. Treatment may include chemical, biological or manual methods and would continue, along with monitoring, regardless of the chosen alternative.

Use of herbicides has been evaluated by BLM in the 2007 Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement. The CFO tiered to this document in preparing the 2009 Challis-Salmon Integrated Weed Control EA.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

New ground/vegetation disturbance associated with the Mill Creek channel and pipeline construction would be approximately 1.62 acres over the short-term (1 to 2 years). These areas would be planted with woody vegetation, re-vegetated with transplanted wetland sod mats or seeded with a BLM approved seed mix as a part of the project. Until vegetative treatments become established, these disturbed areas would be susceptible to weed infestation. However, routine monitoring and treatment of these areas would prevent weeds from establishing and spreading over the long-term.

Big Creek 3 Ditch Right of Way

During project construction, no new disturbance would occur along most of the existing BC3 Ditch. Installation of the proposed buried siphon pipe, installation of the lateral underground pipeline, and future maintenance activities within the proposed ROW (totalling 1.12 acres) could increase the potential for weed infestation. However, monitoring and treatment of the weeds along the BC3 Ditch is already being implemented and will continue to prevent the spread of invasive species. There are also BMPs identified for construction activities and ROW maintenance, to further limit the potential for transport and establishment of invasive plant species.

Big Creek Let-Down Fence

The Big Creek let-down fence has been designed to minimize ground disturbance during construction and maintenance by following established access routes where possible. Minimizing ground disturbance from the installation of the fence would reduce opportunities for invasive species to become established. Monitoring and treatment would be conducted following construction to ensure that invasive plants do not become established or increase.

Alternative 2 – No Action

No Action would result in no change to existing conditions for invasive non-native plant species. The abundance and distribution of invasive species in the project area would remain as described in the affected environment. However, BLM would continue to monitor and treat invasive and non-native vegetation on lands administered by the CFO, and maintenance or decline in existing levels is anticipated.

Migratory Birds

Affected Environment

The Migratory Bird Treaty Act of 1918 makes it illegal for anyone to take, possess, import, export, transport, sell, or offer for sale, purchase, or barter, any migratory bird, or their parts, nests, or eggs of such a bird except under the terms of a valid permit issued by USFWS. Executive Order 13186, signed by the President in 2001, on the responsibilities of federal agencies to protect migratory birds, directs those agencies to ensure environmental analyses of proposed Federal actions required by NEPA evaluate the effects of those actions on migratory birds. Migratory birds have the potential to exist throughout the project area in all habitat types. A large portion of the project area consists of riparian habitat and non-riverine wetlands which Idaho Partners in Flight considers two of the four highest priority habitat types in Idaho (Idaho Partners in Flight 2000).

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

Impacts would be temporary and timed to avoid the traditional migratory bird nesting season. Some minor temporary displacement of migratory birds may occur during the 4-6 week construction phase of the project, during the fall (September – November). Vegetation disturbance within the project area would have an impact on migratory birds. However, the small scale, temporary nature of the vegetation disturbance, and applicable fence guidelines for the riparian protection fence would keep impacts to migratory birds from the temporary fence to a minimum. Available habitat would shift over time in the form of new riparian habitat establishing itself along the restored Mill Creek channel and existing habitat along dewatered or plugged ditches slowly desiccating from lack of water resources. In the long term, habitat availability to migratory birds would be similar to what is available now.

Big Creek 3 Ditch Right of Way

The proposed ROW would include the existing BC3 ditch, and construction of the siphon pipeline and lateral pipeline. Initial disturbance during construction would be limited to the pipeline installation, as the remainder of the existing BC3 ditch would remain as is. Disturbance associated with the ROW would be a maximum of 1.12 acres during subsequent operation and maintenance of the entire ROW. Impacts to individuals potentially present in the project area during pipeline construction in the fall would be temporary displacement. However, project construction would be timed to avoid the traditional migratory bird nesting season (Idaho Partners in Flight 2000). Following pipeline construction, disturbed areas would be re-seeded or otherwise revegetated, resulting in temporary impacts. Habitat impacts, such as vegetation disturbance, associated with future maintenance of the ROW, would be a maximum extent of 1.12 acres. Given the riparian areas along Big and Mill Creek's proximal to the project area, sufficient habitat would be available for individuals potentially displaced during ROW maintenance activities. Authorization of the proposed ROW would be in compliance with guidance in BLM Manual 6840 (USDI-BLM 2008).

Big Creek Let-Down Fence

Some minor displacement of migratory birds may occur during the construction phase of the seasonal let-down fence. The small scale, temporary nature, and applicable fence guidelines would reduce the proposed fence impacts to migratory birds when it is seasonally deployed during the authorized grazing season (May 5 to June 15). The maximum temporal extent of seasonal deployment (i.e. wire or tape is hung and charged), as stipulated under the description of the proposed action, would include two weeks pre and post authorized grazing season, approximately April 21 to June 29. The initial construction and subsequent annual deployment and let-down of the wire or tape could occur during the nesting season of some species. Impacts to habitat could include vegetation pruning or removal to construct and maintain the

proposed fence would be limited to a maximum of 2.1 acres. If implemented, the proposed fence would exclose livestock from 948 acres, to accelerate riparian vegetation recovery, and potentially benefit migratory bird habitat. Construction and seasonal deployment of the wire or tape would potentially impact individuals during these activities over an area of 2.1 acres.

Alternative 2 - No Action

The No Action Alternative would have no impacts to migratory birds. Conditions for migratory birds in the project area would remain the same as current conditions.

Soil Resources

Affected Environment

Soils in the project area are derived from quartzite rocks of Precambrian age, and include Pahsimeroi gravelly loam, Biglost-Copperbasin complex, Copperbasin-Redfish complex, and Pahsimeroi extremely gravelly loam. Slopes for these soil types range from 2-10%, and are not classified as prime farmland. Alluvial fans in the upper Pahsimeroi Valley are typically comprised of unconsolidated fluvial and alluvial deposits from the adjacent mountains and overbank stream deposits. The alluvial fan soil types within the project area are Pahsimeroi gravelly loams. The Big Creek floodplain and valley bottom lands are Biglost-Copperbasin complex and Copperbasin-Redfish complex, and are gravelly and extremely gravelly loamy sands. The Big Creek channel soils are Pahsimeroi extremely gravelly loams, and are typically extremely gravelly loams and extremely cobbly loamy coarse sands. Most of the soils are typically very well drained, with Pahsimeroi gravelly loam and Pahsimeroi extremely gravelly loams being somewhat excessively drained (NRCS 2014). All of the soils within the project area have a low to moderate water holding capacity and a moderate to high saturated hydraulic conductivity. The valley alluvium is underlain by much less permeable Tertiary sediments (Geum 2014a).

Geum Environmental Consulting, Inc. collected soils data as part of their site investigation for project design. The following site specific soil descriptions are from the Mill Creek Project Bid Package and Permit Support Document (Geum 2014b).

Soil and substrates were investigated on the Mill Creek alluvial fan and in the valley bottom between the alluvial fan and Big Creek. This valley bottom contains the floodplain for Big Creek. Soils on the alluvial fan consist of very shallow silt loam underlain by cobble. There are small pockets of deeper soil along the existing Mill Creek channel as a result of sediment deposition over time on the alluvial fan.

On the valley bottom, the soils consist of deeper silt loam. Soil depths range from 12 to 18 inches. These soils are underlain by gravel and cobble alluvium, slightly smaller in size than the materials observed on the alluvial fan. This alluvium layer extends to at least four feet and is assumed to be much deeper.

Soil infiltration was tested in one location on the valley bottom and two locations on the

alluvial fan (Geum 2014b). The alluvial fan and the valley bottom had similar infiltration rates. The infiltration on the fan ranged from 3.2 to 3.5 mm/second and in the valley bottom the infiltration rate was measured at 2.4 mm/second. These infiltration rates are very high, indicating very permeable soils that tend to favour infiltration over runoff.

Environmental Consequences

Alternative 1 - The Proposed Action

The components of the Proposed Action that could potentially impact soil resources include channel construction, ditch plugging, pipeline installation, fence construction and maintenance and future ditch maintenance. Soils in the construction areas would be physically disturbed and soil profiles would be inverted and altered. Disturbed areas have the potential for accelerated surface erosion until these sites can be successfully re-vegetated. The potential for surface erosion increases with slope. Slopes in the project area range from approximately 5-10 percent on the alluvial fan to less than 2-3 percent in the floodplain and along the proposed livestock management fence.

Soil disturbance resulting from the channel construction, pipeline installation, and ditch filling is estimated at 1.62 acres (Geum 2014a). Disturbance associated with the BC3 ditch ROW could occur up to maximum of 1.12 acres. Disturbance from the fence construction and maintenance is approximately 2.1 acres. A total of approximately 4.5 acres would be disturbed during implementation of the Proposed Action. The potential effects of soil disturbance include accelerated soil erosion, soil compaction, loss of microbiotic crusts, and reduced site productivity.

Mill Creek Channel Reconnection and Construction

Areas disturbed for the channel construction, pipeline installation and ditch plugging would be re-vegetated as part of the project design. Planned re-vegetation includes transplanting wetland sod mats along portions of the new channel where floodplain development is anticipated, planting trees and shrubs, and reseeding with a BLM approved seed mix. The potential for erosion will decrease as the planted, transplanted, and seeded areas become established. The potential for erosion would be highest on the alluvial fan due to the slope (up to 10%), however this area would have the least disturbance, as construction activities in this area are limited to enhancement of the existing channel. With the aforementioned exception, slopes within the project area are relatively low angle and proposed re-vegetation activities would do an adequate job of stabilizing soils until planted and transplanted vegetation can become established. Additionally, BMPs would be employed that would work to minimize the amount of erosion that would occur on soils that would be disturbed under the proposed action.

The potential for accelerated soil erosion is expected to be short term as disturbed areas would be reseeded or transplanted with potted plants, cuttings, or wetland sod. Final site stabilization (i.e. soils would return to pre-disturbance erosion levels) is anticipated to occur within in 3-5 years. Supplemental watering is planned by the landowner to increase the success of the re-vegetation

and decrease the time until the disturbed areas are re-vegetated. In addition, the disturbed areas around the new channel would be fenced with an eight foot fence to exclude wildlife and livestock until the areas are fully re-vegetated. It is anticipated that the fence would remain in place for approximately five years. Re-vegetation success criteria are discussed in the Monitoring and Maintenance section of this EA. Irrigation water from BC3 would be used for supplemental watering of project elements. This water would be pumped with a small portable, screened pump to the project area.

The potential for soil compaction during construction activities is expected to be minimal due to the coarse soils found on the alluvial fan, the requirement for all the channel work to be done in dry conditions, timing of the project during the early fall when the site would be the driest, and diverting water away from the sod salvage area so that it would dry out prior to sod removal. With the implementation of these design features and BMPs the potential for soil compaction would be minimal.

Microbiotic, or biological soil crusts, are an important component of soil stabilization in arid environments. Microbiotic crusts are commonly found on dry sites where other vegetation is widely spaced due to the low available soil moisture. In the channel and pipeline construction area microbiotic crusts would be expected to be found on the drier portions of the alluvial fan. These crusts would not be expected along the lower portions of the fan or in the floodplain where there is adequate moisture to support an almost continuous sod cover. Some impacts to microbiotic crusts would be expected to occur on the alluvial fan. These effects should be limited in extent as minimal construction activity is planned for the fan.

The potential effects on soil productivity from channel construction activities is expected to be short term until the disturbed areas are adequately re-vegetated. It is anticipated that soil productivity would change in the project area with the changes in water routing across the fan and plugging of lateral ditches. As the hydrology across the fan is changed, the areas receiving additional moisture through the infiltration of surface water would also change. Some areas would become more productive and other areas less productive as the vegetation equilibrates back to the natural hydrologic regime, however, the overall site productivity is not expected to change in the long term.

Big Creek 3 Ditch Right of Way

The proposed ROW would include the existing BC3 ditch and the proposed pipelines. Disturbance along the ROW associated with channel construction, ditch plugging and pipeline construction activities are discussed above. Future ditch maintenance has the potential to affect soil resources by disturbing soils and inversion of the soil profile, resulting in localized soil erosion and a reduction in site productivity. This effect would be short term until the disturbed areas re-vegetate. However, based on the frequency of ditch maintenance and cleaning this effect could be repeated every time there is extensive ditch maintenance resulting in a long term effect on the soil resource. These potential effects on soil resources could occur on the 1.12 acres associated with the ROW.

Big Creek Let-Down Fence

Soil disturbance could occur during the fence construction from the non-motorized transport of fence materials and the installation of posts and braces. Following construction there is a potential for livestock to trail along the fence resulting in additional soil disturbance. Deploying the fence annually and maintaining the fence has the potential for additional soil disturbance.

A corridor adjacent to the fence approximately 4 feet wide could be disturbed by fence construction, fence maintenance activities, and by livestock trailing. Soil disturbance would include a reduction in ground cover and adverse impacts to microbiotic crusts. The loss of ground cover is not expected to cause appreciable soil erosion during precipitation events because the proposed fence alignment is located on relatively flat ground. Where the proposed fence crosses Big Creek, the substrate is dominated by gravels and cobble so the potential for soil erosion and stream sedimentation is low. There is, however, some potential for wind erosion of the soil disturbed along the proposed fence corridor. The potential for soil compaction would be low because of the coarse nature of the soils found in the floodplain and terraces adjacent to Big Creek.

The potential impacts to soil resources along the fence corridor would be long term from annual deployment activities, fence maintenance and livestock trailing effects. Approximately 2.1 acres (4.4 miles x 4 feet) of disturbed ground along the fence corridor will have reduced site productivity because of a reduction in ground cover, including microbiotic crusts.

Alternative 2 - No Action

Under the No Action Alternative the soil resource is not expected to change from the condition described in the Affected Environment. The rates of soil erosion, ground cover conditions and site productivity would remain in their current condition.

Threatened-Endangered-Sensitive Fish/Fisheries

Affected Environment

The USFWS and the NMFS have, under ESA, identified the following fish species and habitat for the area administered by the CFO as:

- Snake River Spring/summer Chinook salmon (*Oncorhynchus tshawytscha*) - Threatened
- Snake River Basin steelhead trout (*O. mykiss*) - Threatened
- Columbia River Bull trout (*Salvelinus confluentus*) - Threatened
- Snake River Sockeye salmon (*O. nerka*) - Endangered
- Critical Habitat – all four species

This analysis was conducted based on species known to occur in or near the project area according to USFWS, NMFS, IDFG, USFS and BLM records. Snake River sockeye salmon are listed in the Upper Salmon River Subbasin as endangered, however, they have not been documented in the Pahsimeroi River Watershed, nor do they use the river as a migration corridor. Therefore, this species will not be considered further.

Although not ESA listed, Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) and Columbia River Redband Trout (*Oncorhynchus mykiss gairdneri*) are Idaho State and BLM species of concern, which occur in the Challis Field Office. These species benefit peripherally from the consideration of effects to listed salmonids, including designated critical habitat. For this reason, co-occurring BLM sensitive fish species or Idaho species of concern are not analyzed separately.

The summaries that follow describe the status of the three ESA-listed species and their designated critical habitats which occur in the Pahsimeroi River subbasin, relative to areas affected by the proposed action. More detailed information on the status and trends of these species can be found in the listing regulations and critical habitat designations published in the Federal Register (Table 4).

Table 4. Federal Register (FR) notices and Dates for ESA-Listed Fish Species Considered in Analysis

Species	Listing Date and FR	Critical Habitat Designation Date and FR
Chinook salmon Snake River spring/summer run	6/28/05; 70 FR 37160	10/25/99; 64 FR 57399; 12/28/93; 58 FR 68543
Steelhead trout Snake River Basin	8/18/97; 62 FR 43937	9/02/05; 70 FR 52630
Bull trout Columbia River	11/1/99; 64 FR 58909	10/18/10; 75 FR 63897

ESA Listed Fish Species Distribution

The project area includes reaches of Big Creek and tributary Mill Creek. Anadromous salmonids (steelhead and Chinook salmon) cannot currently access Big Creek or its tributaries due to manmade barriers and dry or substantially dewatered channel reaches in Big Creek and the Pahsimeroi River resulting from a combination of irrigation practices and natural flow infiltration. No recorded occurrence of these species exists for the Big Creek drainage (BLM

2012).

Fragmented and/or isolated populations of bull trout are present in the Pahsimeroi River from the mouth to the headwaters and many of its tributaries including Big Creek. Fish surveys conducted by the USFS Challis Ranger District, found that bull trout are particularly abundant in the Pahsimeroi River Basin and present in 89% of the sampling sites that contained fish and 78% of the streams that contained salmonids. In these surveys, the highest density of bull trout was observed in the North Fork of Big Creek (USDA 2010). Limited connectivity (both natural and anthropogenic impediments/limitations) between Big Creek and the Pahsimeroi River prevents use of Big Creek by fluvial bull trout. Bull trout have not been documented in Mill Creek (Figure 4). Based on 2013 fish surveys in the project area, there is potential for sparsely distributed bull trout individuals, or they may be seasonally absent. The vast majority of fish within the project area are resident forms of westslope cutthroat trout, resident rainbow and/or redband trout, and non-native brook trout (Tables 5 and 6).

Figure 4. Fish and Temperature sampling locations near the Mill Creek project area (BLM 2013)

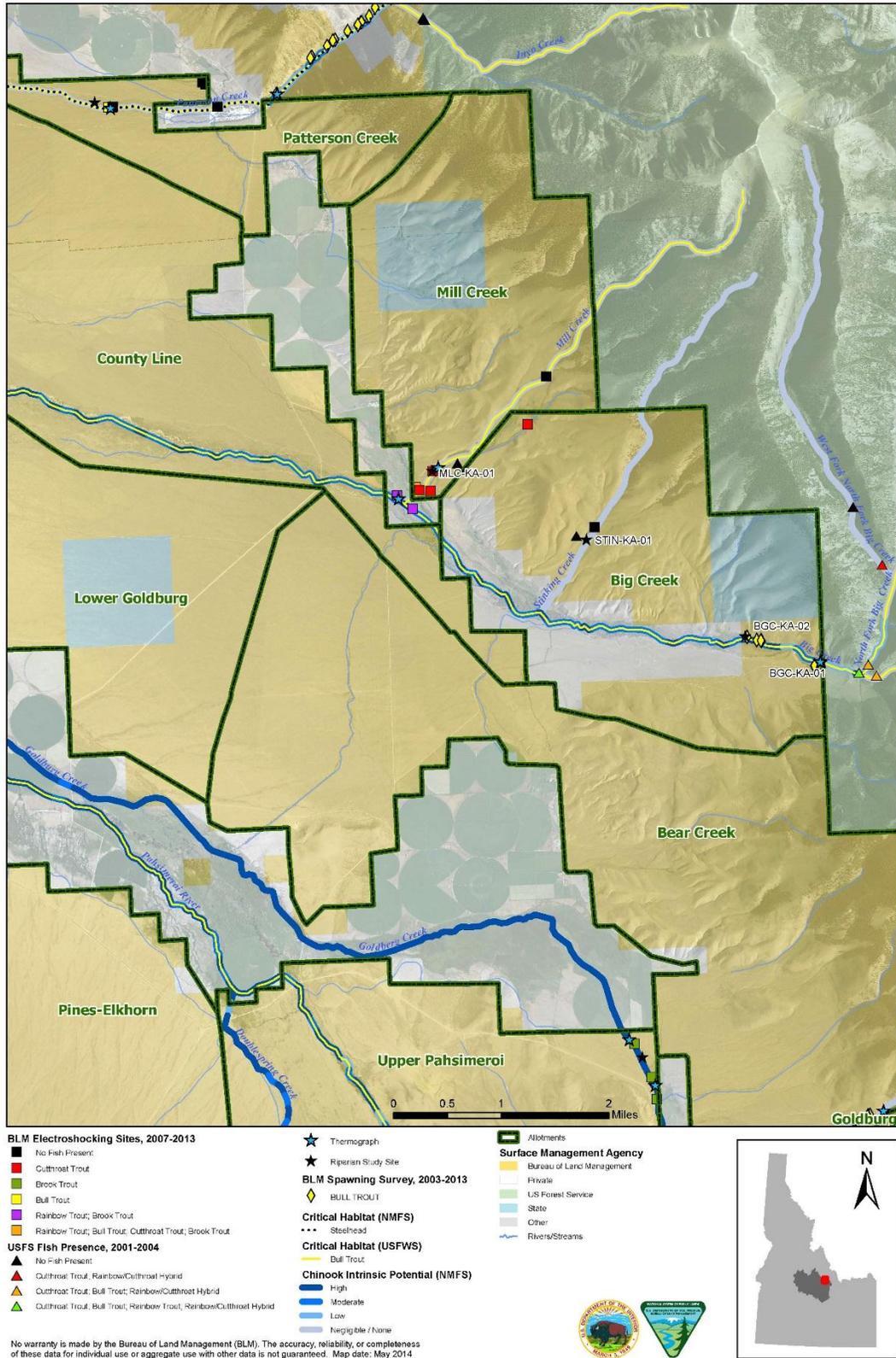


Table 5. Summary of Documented Fish Species Occurrence in the Mill Creek Reconnection Project Area (Electrofishing Survey Data, 2010-2013, CFO)

Stream	Common Name	Genus Species
Mill Creek	Westslope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>
Big Creek	Rainbow trout	<i>Oncorhynchus clarki lewisi</i>
	Brook trout	<i>Salvelinus fontinalis</i>
	Sculpin	<i>Cottus spp.</i>
Big Creek 3 Ditch	Bull trout	<i>Salvelinus confluentus</i>
	Westslope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>
	Rainbow trout	<i>Oncorhynchus mykiss</i>
	Brook trout	<i>Salvelinus fontinalis</i>

Table 6. Fish species and number observed near the Mill Creek Reconnection Project Area during 2013 BLM Fish Surveys

Sampling Site (Site Length in meters)	Species	Number Captured	Size Range (mm)
Big Creek Site 1 (135 m)	Rainbow trout	20	(50-290)
	Brook trout	7	(190-260)
	Sculpin	24	(50-110)
Big Creek Site 2 (115 m)	Rainbow trout	6	(60-290)
	Brook Trout	4	(60-210)
	Sculpin	38	(not measured)
	Unknown	15	(40-70)
Big Creek 3 Ditch (200 m)	Westslope cutthroat	7	(110-259)
	Rainbow trout	5	(70-150)
	Bull trout	3	(70-90)
	Brook trout	2	(80-110)
	Unknown	9	(59-75)
Mill Creek Diversion (90 m)	Westslope cutthroat	8	(60-150)

Spawning habitat for anadromous fish may exist in tributary streams in the upper Pahsimeroi River watershed, including Big Creek, but are not available at critical times due to the combination of natural infiltration and agricultural dewatering (BLM 2012). BLM personnel conducted bull trout spawning surveys (i.e. redd counts) on the $\frac{3}{4}$ mile section of Big Creek located on BLM administered lands just downstream from the confluence of the North and South Forks of Big Creek (about four miles upstream from the project area) during the fall of 2010 and 2011. In 2010, redd counts were done on September 28 with two bull trout redds observed. In 2011, redd counts were done on September 14, 22, and 28 with two bull trout redds being observed on the 22 and 28th.

During 2013, BLM personnel also conducted several bull trout spawning surveys in Big Creek, both within and upstream of the project area. On September 11, 2013, a spawning survey was conducted near the proposed Mill Creek confluence, and no redds were observed. Spawning in this area is very unlikely given instream flow limitations, large substrate size, and the absence of bull trout during electrofishing. On September 19 and 27, 2013 surveys were conducted just upstream of the project area for approximately one mile, and no redds or bull trout were observed. Also on September 19, a survey was conducted further upstream where previous surveys in 2010 and 2011 detected bull trout spawning; three redds were observed on the $\frac{3}{4}$ mile reach of Big Creek located on BLM administered lands just downstream from the confluence of the North and South Forks. This survey was repeated on September 27, and no additional bull trout spawning activity was observed. Based on these surveys, and observations of habitat suitability, it does not appear that bull trout are currently spawning in the project area.

Brook trout have been described as an invasive species in the West, and in some instances may out compete or displace cutthroat trout populations (Dunham et al 2002, Peterson et al. 2004). The presence of non-native brook trout within Big Creek was documented in 2013 during sampling in the project area. However, the source or status of brook trout in Big Creek remains uncertain. For example, it is unknown if a reproducing population occurs in Big Creek or if they are sourced from other streams (i.e. Goldburg Creek) via irrigation canals. The potential for a reproducing population in Big Creek is diminished because of the current state of habitat fragmentation due to culvert near the USFS/BLM boundary upstream, which may represent a fish passage barrier, and annually dewatered conditions downstream. Brook trout are apparently absent from Mill Creek currently, based on limited to absent fish passage into Mill Creek and fish surveys conducted.

ESA Fish Designated Critical Habitat

Critical habitat has been designated for Snake River spring/summer Chinook salmon and includes “river reaches presently or historically accessible...to Snake River spring/summer Chinook salmon.” This designation did not specify stream reaches included in the designation. While it remains uncertain, historical access to Big and Mill creeks may have existed. The

NMFS habitat intrinsic potential analysis (Cooney and Holzer 2006) identifies Big Creek as having moderate to high intrinsic habitat potential for Chinook salmon spawning (BLM 2012). Therefore, for the purposes of this EA, both Big Creek and Mill Creek are assessed as Chinook salmon designated critical habitat.

Designated critical habitat for Snake River steelhead trout does not exist in the upper Pahsimeroi Watershed above Patterson Creek. As such, critical habitat for steelhead does not exist within the proposed project area. The nearest downstream steelhead critical habitat is approximately 13.6 miles downstream from the proposed Mill Creek confluence to the Hooper Lane road crossing of the mainstem Pahsimeroi River.

Columbia River bull trout critical habitat was designated in 2010 for areas including the Upper Salmon River Basin, the Pahsimeroi River, and many of its tributaries. Mill Creek and Big Creek are both designated critical habitat for bull trout.

The description of the affected environment relative to riparian and wetland resources, water quality, and Clean Water Act designations are disclosed under the following sections for “Water Quality” and “Wetland and Riparian Zones”. Other elements of fish habitat related to water temperature, streambank stability and stream substrate composition are described here under “Threatened-Endangered-Sensitive Fish/Fisheries.”

Fish Habitat-Streambank stability

The BLM has collected greenline and streambank metrics using the Multi Indicator Monitoring method (MIM) at the Designated Monitoring Area on Big Creek (BGC-KA-02) as part of the range monitoring program. This site is located upstream of the project area and does not wholly represent Big Creek. It is included here as a description of Big Creek, where perennial flows occur, which may be similar to conditions in the project area. Stream channel conditions were evaluated at the end of the grazing season in 2010 and 2013, and the level of streambank alteration by livestock hooves indicates infrequent livestock presence (Table 7). Streambank stability is approaching the PACFISH objective of 80%, but the CFO would continue to implement ongoing management and monitoring to make progress towards the 90% objective. Big Creek near the proposed Mill Creek confluence has similar density of woody vegetation and streambank cover as BC-KA-02. Downstream of the county road, the presence of stream flow is intermittent and often absent for portions of the growing season. Thus, a lower level of bank stability and streambank cover likely predominates.

Table 7. Multi Indicator Monitoring Data for Big Creek

Big Creek at BC-KA-02	2010	2013
Streambank Stability ¹	67%	75%
Streambank Alteration	0%	0%
Percent fine sediment ²	8%	6%

Big Creek at BC-KA-02	2010	2013
Streambank Cover	66%	75%

¹ Target 90% for fish bearing streams (CFO RMP, USDI 1999a)

² <6 mm intermediate diameter

The BLM has collected greenline and streambank metrics using MIM at the Designated Monitoring Area on Mill Creek (MLC-KA-01) as part of the range monitoring program. This site is just upstream of the Mill Creek alluvial fan and project reach. Stream channel conditions were evaluated at the end of the grazing season in 2010 and 2013, and the level of streambank alteration by livestock hooves indicates infrequent livestock presence (Table 8). Streambank stability exceeds the PACFISH objective of 80%, and has achieved the CFO objective of 90%. There is relatively dense riparian vegetation as indicated by 86% of streambanks being covered by perennial vegetation, root masses, large wood or rock (Table 8).

Table 8. Multi Indicator Monitoring Data for Mill Creek

Mill Creek at MLC-KA-01	2010	2013
Streambank Stability	84%	90%
Streambank Alteration	0%	1%
Percent Fine Sediment	37%	46%
Streambank Cover	78%	86%

¹ Target 90% for fish bearing streams (CFO RMP, USDI 1999a)
² <6 mm intermediate diameter

Fish Habitat - Water Temperature

Water temperature can be a key limiting factor for salmonid habitat in the Pahsimeroi Watershed. Temperature increases may be attributed to changes in stream width and depth, increased sediment and reductions in riparian cover. Annual climactic variability also has a strong influence on maximum temperatures recorded during the summer. Table 9 summarizes instream temperature thresholds important to listed salmonids.

Table 9. PACFISH/INFISH (1995) Instream Temperature Thresholds¹ for Listed Salmonids

Species	Spawning Season	Spawning Temperature (°F)	Rearing Temperature (°F)	Migration/Holding Temperature (°F)
Chinook Salmon	Summer	≤ 60	≤ 64	≤ 64
Steelhead Trout	Spring	≤ 60	≤ 64	≤ 64

Species	Spawning Season	Spawning Temperature (°F)	Rearing Temperature (°F)	Migration/Holding Temperature (°F)
Bull Trout	Fall	≤ 48	≤ 54	≤ 59
¹ Measured as the seven day maximum average instream temperature.				

Instream temperature monitoring provides seasonal thermal habitat suitability information relative to behavioral thresholds for listed salmonids (Figures 5-7). Daily maximum instream temperatures illustrate fine-scale variability while the maximum 7-day running average smooths the trend by averaging daily values. Averaging over a 7 day period is useful in detecting the timing of sustained instream temperature relative to spawning thresholds, for determining when seasonal cooling to salmonid behavioral thresholds occurs.

Two stream temperature monitoring sites were established by the CFO near the project area in 2013. One location measured water temperatures near the Mill Creek POD and the second measured Big Creek water temperatures directly upstream of the proposed Mill Creek confluence. Data from this 2013 monitoring shows that both Big Creek and Mill Creek may have limiting thermal conditions that are at times in excess of or close to exceeding PACFISH/INFISH behavioral thresholds. The presence of westslope cutthroat trout in Mill Creek however suggests that temperature is not completely limiting. Also, the presence of brook trout and rainbow trout in Big Creek in September 2013, where in some cases fish were trapped in isolated refugia pools susceptible to increased temperatures, indicates some subsurface flow contribution capable of sustaining fish in isolated pools for one to two months.

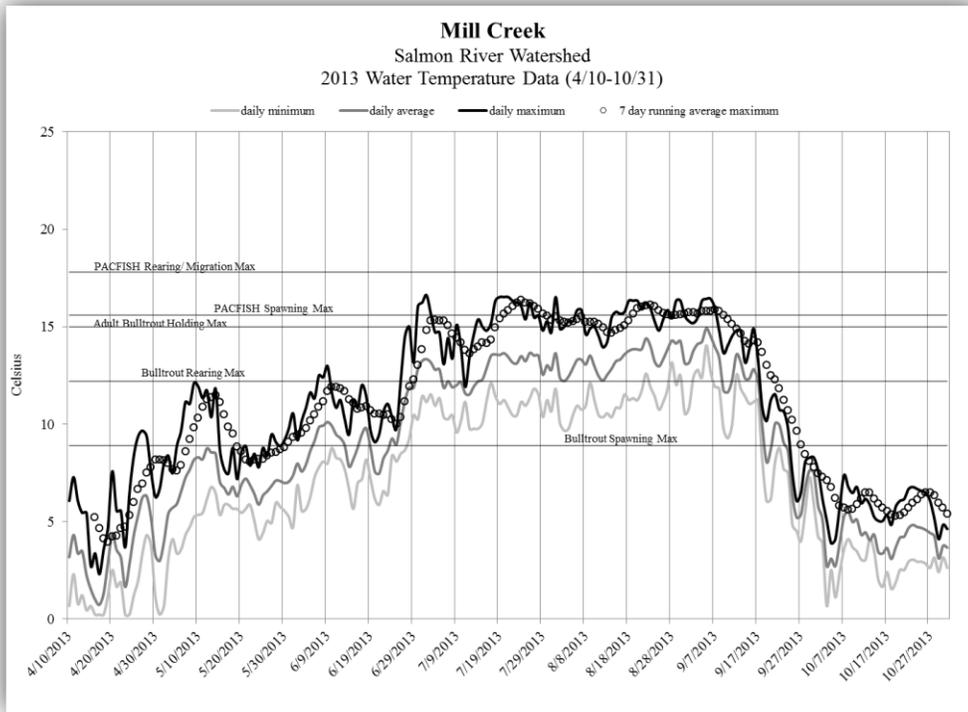


Figure 5. Water temperature data collected by the CFO near Mill Creek POD, 2013

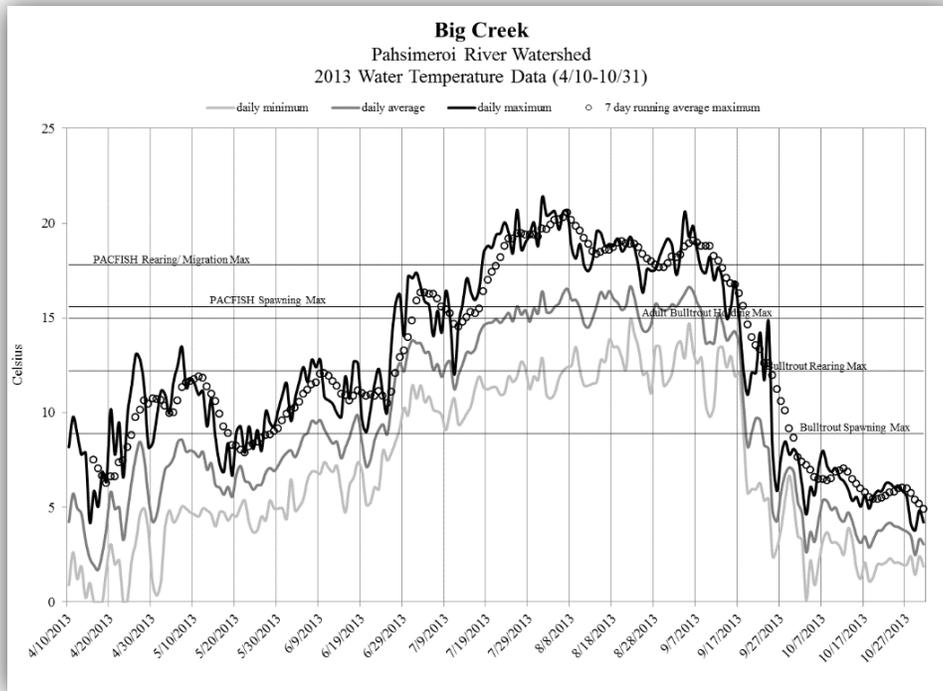


Figure 6. Water temperature data collected by CFO from Big Creek just upstream from the proposed mouth of Mill Creek, 2013

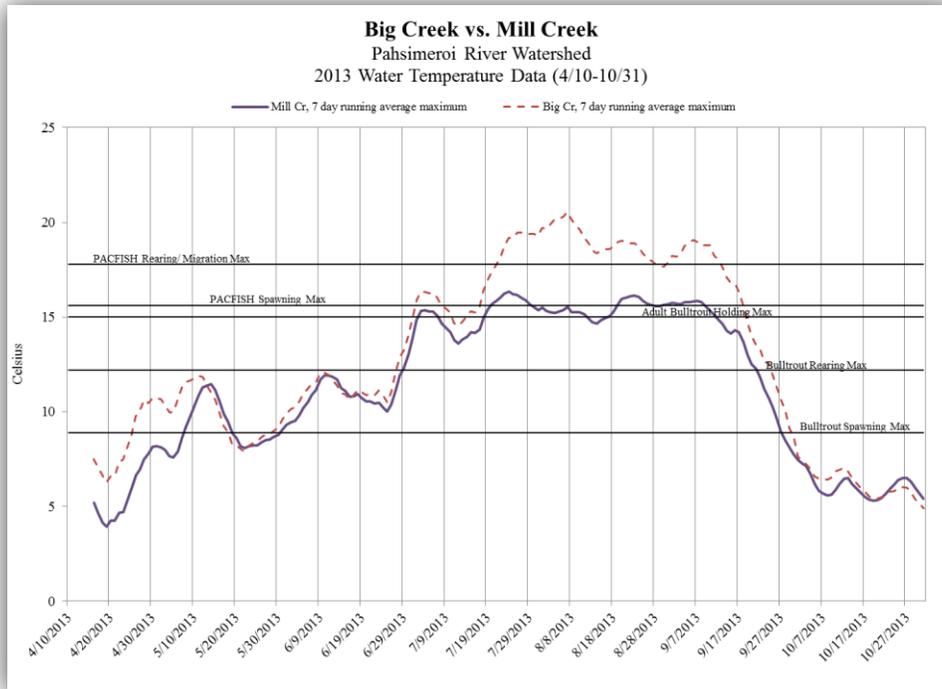


Figure 7. Comparison of the 7-day running average temperature in Mill Creek (near the Mill Creek POD) and Big Creek (near the proposed mouth of Mill Creek)

Fish Habitat - Substrate Composition

Idaho water quality standards do not have numeric criteria for sediment and surrogate measures are often used as an indicator of sediment problems. Surrogate indices include the percentage of fine sediments at depth in spawning gravels and streambank stability. Generally, depth fines greater than 28-30% are considered unsatisfactory for healthy spawning gravels. Streambank stability levels that fall below 80% may be contributing unhealthy levels of sediment to aquatic habitat (IDEQ 2001). MIM evaluates surface substrate composition rather than core samples (Table 7 and 8).

Mill Creek was sampled by the CFO in 2010 using the MIM method. Wolman pebble counts from this assessment yielded 37% surface fines < 6.0 mm over gravel substrate (D84 = 77 mm), and a bank stability estimate of 84%. Based on these findings, BLM concluded that perennial portions of Mill Creek likely function appropriately for a small transport limited stream (BLM 2012). Substrate composition was estimated to have 46% fine sediment 2013.

Environmental Consequences

Alternative 1 – The Proposed Action

The proposed project area is currently precluded from occupancy by anadromous salmonids due to a combination of anthropogenic influences that impede movement and limit water availability through irrigation withdrawal and natural flow losing reaches common in this area of the Pahsimeroi River valley. All of these factors have resulted in the disconnection of Mill Creek from Big Creek and partial disconnection of Big Creek from the Pahsimeroi River. The

project area includes unoccupied designated critical habitat for Chinook salmon, occupied critical habitat for bull trout in Big Creek seasonally, and non-ESA listed westslope cutthroat trout, rainbow and non-native brook trout in Big Creek. Currently, only westslope cutthroat trout are known to occur in Mill Creek.

Based on the absence of ESA listed Chinook salmon and steelhead, no effects to those individuals would occur during project construction. Bull trout were not present in Mill Creek or Big Creek in the project area during 2013 sampling, and their low-density or seasonal absence results in a discountable potential for effects to individuals during project construction. The proposed action would result in beneficial effects to ESA listed fish (flow, temperature refugia, habitat availability), if in the future, additional stream flow, fish habitat, and fish passage restoration efforts in the Pahsimeroi Watershed resulted in their expansion into the project area. The potential for impacts to fish during future maintenance activities associated with the channel reconstruction or ROW have been considered, and are anticipated to be minimized to an insignificant level with stipulations and BMPs associated with the proposed action.

Direct Effects of the Proposed Action

- Increased instream fish habitat in Mill Creek (2,000 feet of Lower Mill Creek).
- Restore surface connection between Mill Creek and Big Creek, where none currently exists.
- Instream and riparian habitat disturbance associated with stream channel and fence construction.
- Short-duration contribution of sediment associated with construction activities, soil disturbance, and channel re-watering.
- Disturbance of fish individuals, potentially including rainbow trout, westslope cutthroat trout, bull trout and sculpin, which may be present in Big Creek or BC3 during project construction.
- Impacts to fish in Mill Creek during channel dewatering. Only westslope cutthroat trout are known to occupy Mill Creek. Fish salvage would be conducted by qualified fisheries biologists or technicians. Most construction, associated with channel excavation and pipeline installation, would be conducted in dry conditions prior to channel dewatering upstream of BC3.

Indirect Effects of the Proposed Action

- Potentially beneficial decreases in water temperature associated with a newly established Mill Creek channel that would convey water directly to a flow limited reach of Big Creek.
- Changes in existing water regimes, both ground and surface, on the Mill Creek alluvial fan.
- Potential increase in habitat and alternate refugia (resting areas and thermal cover) for fish currently in Big Creek, once Mill Creek is reconnected.
- Increased potential for genetic exchange among fish currently in Mill Creek once

connection with Big Creek is established.

- Potential expansion of bull trout and nonnative brook trout into Mill Creek.

Potential negative effects for fish, related to channel construction, issuance of a ROW for BC3, and construction and maintenance of a seasonal fence near Big Creek Bridge are anticipated to be temporary, short term and/or offset by project specific design criteria and BMPs. The design criteria and BMPs are intended to limit sediment from entering streams, and reduce the loss of buffering by riparian vegetation until disturbed areas are re-established.

Indirect effects that could potentially negatively impact fisheries in Big Creek and Mill Creek are associated with increased sediment and expansion of nonnative brook trout. Sediment inputs during project construction and maintenance would be minor or immeasurable, given BMPs and design features associated with proposed actions described above. Increases in sediment input, once construction is complete, are anticipated to be during spring high flows, however, once riparian vegetation is re-established these effects are expected to be within the normal range of sediment input from runoff events associated with the small tributaries of the upper Pahsimeroi Watershed. Sediment controls established at time of construction would remain in place until vegetative treatments have recovered to reduce these potential effects of sedimentation.

Big Creek downstream of the project reach is typically dry in its lower reaches and often flow limited near the proposed confluence with Mill Creek. It is also inaccessible to adult chinook migration and is flow limited during late-season bull trout spawning period. Based on habitat limiting factors and recent 2013 redd surveys, bull trout spawning is very unlikely to occur in the subject reach. The closest known bull trout spawning area is located approximately four miles upstream of the project area in Big Creek. Project timing and lack of spawning habitat directly downstream of the Proposed Action will limit or preclude the impacts of increased fines in spawning habitat due to short term sediment pulses during construction and naturalization of substrate transport following riparian vegetation establishment.

The Proposed Action may result in changes in distribution for native and non-native salmonids. Brook trout have been described as an invasive species in the West, and in some instances may out compete or displace cutthroat trout populations (Dunham et al. 2002, Peterson et al. 2004). Brook trout can also impact bull trout populations through competition, but a greater detriment is the potential for hybridization, which has been observed over a large portion of their range (Kanda et al. 2002). Currently, brook trout may have had indirect access to Mill Creek through the BC3 ditch, however, based on limited sampling they have not moved into the Mill Creek system. There is no certainty that brook trout would expand into Mill Creek given its relatively high gradient, and varied patterns of segregation observed throughout the West (Dunham et al. 2002). After careful consideration and consultation with fisheries specialists from the Upper Salmon Basin Watershed Project (IDFG, BLM, NMFS and Office of Species Conservation), the consensus is that the benefits to habitat recovery outweigh the potential risk of brook trout expansion.

Beneficial effects of the Proposed Action, including increased instream habitat and water availability and increased cold water input to Big Creek from Mill Creek, would serve to improve the overall existing conditions for threatened, endangered and sensitive fish in these two systems.

Alternative 2 - No Action

Under this alternative none of the effects of the Proposed Action would occur. Mill Creek would continue to be captured by BC3 ditch and disconnected from Big Creek. Instream habitat in Mill Creek would continue to support an isolated population of westslope cutthroat trout. Fish present in Big Creek would continue to not have access to Mill Creek. Water temperatures would remain at current levels and Big Creek would not receive additional cold water inputs from Mill Creek.

Threatened, Endangered, Candidate, and Special Status Species Wildlife

Affected Environment

There are four terrestrial wildlife species that are identified by USFWS for consideration under ESA that have been documented or have the potential to occur in the CFO (Table 10).

Table 10. Threatened, Endangered, Candidate and Proposed Species Present on Lands Administered by the CFO

Common Name	Scientific Name	Status	General Habitat
Canada Lynx	<i>Lynx canadensis</i>	Threatened	Conifer
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	Candidate	Sagebrush steppe
Wolverine	<i>Gulo gulo luscus</i>	Proposed	Alpine, boreal, arctic habitats
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Proposed	Riparian

The nearest designated Canada lynx Analysis Unit (LAU) is 2.75 miles away from the project area. Suitable Canada lynx habitat does not occur within the project area.

Wolverines seek higher altitude, colder habitats with persistent spring snow for denning and for physiological reasons the rest of the year. No designated habitat for wolverines is associated with the project area

Suitable yellow-billed cuckoo breeding habitat is defined as needing large blocks of riparian habitat with dense understory foliage (USFWS 2001). Breeding habitat requirements are defined as a minimum of approximately five acres of prime riparian habitat with old growth cottonwoods, and a dense understory of willow or dogwood. Research has concluded that yellow-billed cuckoos have never been particularly abundant in Idaho, and the nesting strongholds for this species are limited state wide, with a nesting population at fewer than 20

pairs (Reynolds and Hinckley 2005). Based on data from the USFWS (2001) and Reynolds and Hinckley (2005), the proposed project area does not constitute potential, suitable breeding habitats for the yellow-billed cuckoo.

The Canada lynx, wolverine, and yellow-billed cuckoo will not be discussed further in this analysis due to a lack of suitable habitat and/or the lack of any known presence of these species within the project area.

Greater Sage-Grouse

In November 2004, the BLM released its National Sage-Grouse Habitat Conservation Strategy which emphasizes partnership in conserving sage-grouse habitat through consultation, cooperation, and communication with the Western Association of Fish and Wildlife Agencies, the USFWS, the USFS, the US Geological Survey, State wildlife agencies, local sage-grouse working groups (LWGs), and various other public and private partners.

The Strategy calls for managing public lands in a manner that will maintain, enhance and restore sage-grouse and sagebrush habitats while continuing to provide for multiple uses of lands under BLM stewardship. These actions form a consistent, effective framework for addressing sage-grouse conservation needs on lands the BLM manages.

In Idaho, state-wide guidance is provided by the *Conservation Plan for the Greater Sage-Grouse in Idaho* (Idaho Sage-Grouse Advisory Committee 2006). The primary goal of the plan is to maintain, improve, and, where possible, increase sage-grouse populations and habitat in Idaho, while considering a variety of other land uses (Idaho Sage-Grouse Advisory Committee 2006). In order to meet this goal, the plan outlines a series of conservation measures designed to minimize impacts associated with a wide array of potential threats to sage-grouse and their habitats.

The Idaho Sage-Grouse Management Plan was completed in 1997. This plan called for the creation of local working groups that would develop sage-grouse management plans for each of Idaho's sage-grouse planning areas (Idaho Sage-Grouse Advisory Committee 2006). The Challis Sage-Grouse Local Working Group (Challis LWG) was formed in 2002. The Challis LWG is made up of interested parties of both private citizens and public agencies. The Challis LWG completed the Challis Sage-Grouse Conservation Plan (Challis SCP) in 2007. The goal of Challis SCP is to plan and oversee the implementation of conservation measures within the Challis Sage-Grouse Planning Area. The Challis SCP designated priority areas and mapped seasonal sage-grouse habitat throughout the LWG area (Figure 8). Seasonal habitat is delineated by sage-grouse observations and habitat type encompassing those locations. Seasonal maps are updated as new data points are collected.

On March 5, 2010, the USFWS found the greater sage-grouse warranted, but precluded ESA listing by higher priority listings and placed it on the Candidate species list. Until sage-grouse can be addressed by the USFWS, it is managed by the state, and addressed by BLM as a special status species (USDI-BLM 2008). In response, the BLM has identified wildfire, habitat

loss due to invasive plant species, and habitat fragmentation as the major threats in the western portion of the existing sage-grouse range, of which Idaho is part.

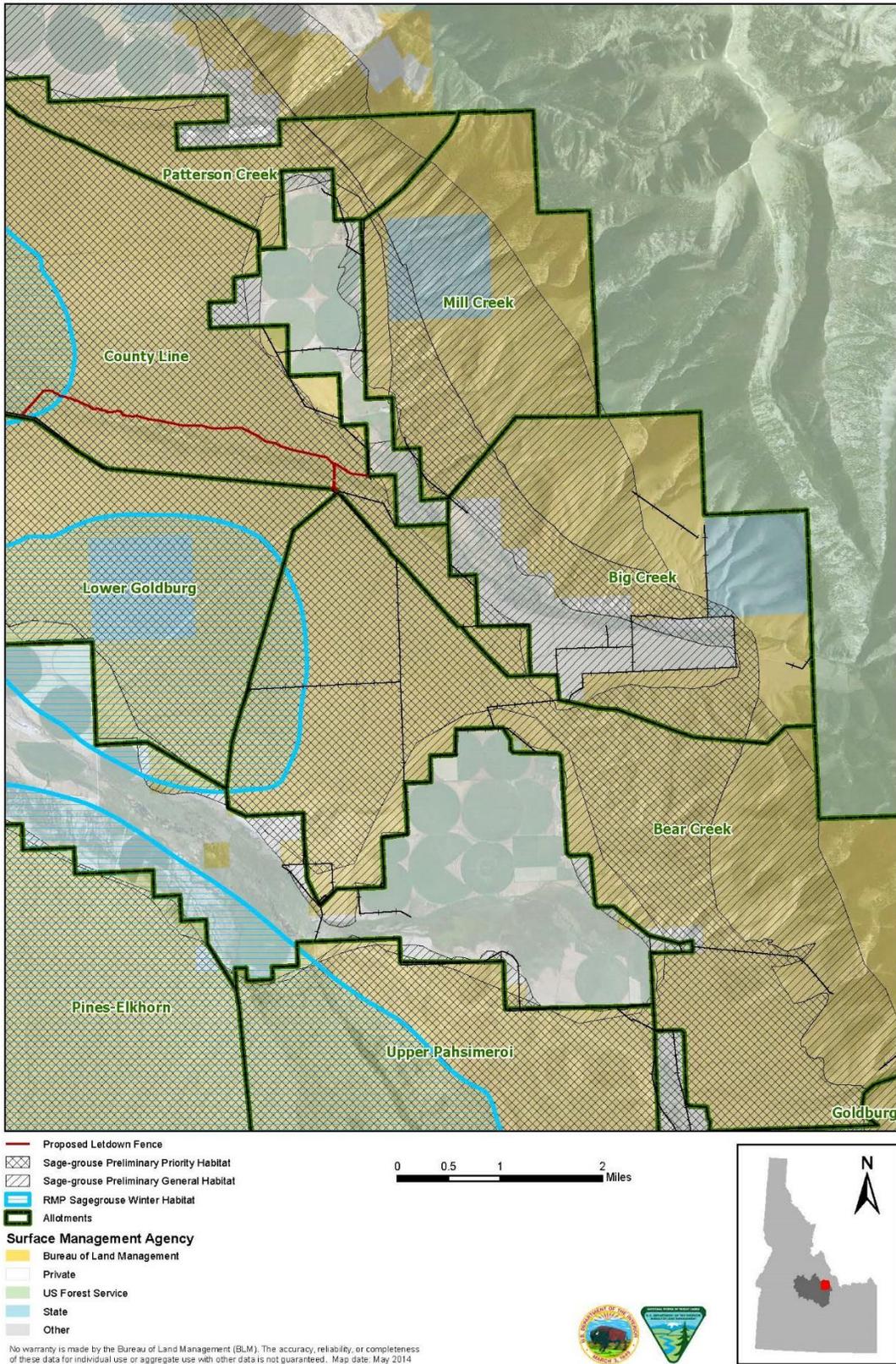
On December 27, 2011, the BLM released Instruction Memorandum No. 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures (Interim Management), to provide interim conservation policies and procedures for ongoing and proposed authorizations and activities that affect the greater sage-grouse and its habitat, until long term conservation measures can be incorporated into Land Use Plans. These policies and procedures apply to Preliminary Priority Habitats (PPH) and Preliminary General Habitats (PGH). Interim Management defines PPH as areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-grouse populations and PGH as areas of occupied seasonal or year-round habitat outside of priority habitat. The conservation policies and procedures for PPH are to seek to maintain, enhance, or restore conditions for greater sage-grouse and its habitat and for PGH are to reduce and mitigate adverse effects on greater sage-grouse and its habitat to the extent practical (USDI 2011).

BLM Interim Management designates the majority of the stream reconnection portion of the project as PPH with the lower portion of the stream reconnection being PGH.

The western 0.5 miles of the seasonal let-down fence along Big Creek enters greater sage-grouse winter habitat as designated in the Challis RMP. The proposed location of the seasonal let-down fence occurs within PPH.

There are no known active leks in or near the proposed project area. The closest known active lek is approximately seven miles away.

Figure 8. Mill Creek Reconnection Project Sage-Grouse Habitat



Pygmy Rabbit

Pygmy rabbits are known to be distributed historically and presently throughout southern and eastern Idaho where preferred habitat conditions exist. Pygmy rabbits are sagebrush obligates and are found in landscapes with tall, dense stands of sagebrush and deep soils for construction of burrow systems (Green and Flinders 1980). On September 20, 2010, the USFWS 12-month finding (75 FR 60515) on the petition to list found pygmy rabbit listing was “not warranted at this time” for the populations found outside the Columbia River distinct populations segment.

GIS analysis identified the project area as a potential occurrence area for pygmy rabbits as per the predicted distribution layer (Scott et al. 2002). A review of BLM GIS files for pygmy rabbit surveys in the Challis Field Office indicate that two individuals were located near the project area in 1998 (Roberts, 1998). One of these individuals was located in the vicinity of the proposed seasonal let-down fence. No locations were within the vicinity of the Mill Creek drainage.

Field surveys conducted by BLM personnel of the area surrounding the channel reconstruction in 2013 identified deeper soils with larger sagebrush vegetation expression present on the Mill Creek alluvial fan and a small bench on the south side of the immediate drainage that may provide suitable habitat. However, no sign of pygmy rabbit occurrence was found.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

Greater Sage-grouse

Ground disturbance on 1.62 acres of vegetation would potentially have an impact on sage-grouse in the project area by reducing the amount of forage and cover. Areas disturbed by the project would be re-vegetated with transplanted wetland sod, cuttings, or seeded with native grasses and forbs. Upon establishment of the re-vegetation, habitat available to sage-grouse would be similar to what is currently available.

The installation of approximately 1,700 total lineal feet of riparian protection fence around the newly constructed riparian corridor on BLM lands would temporarily impact sage-grouse by potentially restricting their movement and increasing the possibility of collision. This fence would exclude approximately one acre of BLM managed lands and one acre of private lands, and be a total of 3,530 lineal feet in length. The fence would be marked to improve visibility for wildlife. Upon establishment of the riparian plantings and removal of the fence, these impacts would cease.

Pygmy Rabbit

Disturbance of 1.62 acres of vegetation could have an impact on pygmy rabbits in the area by potentially removing beneficial vegetation (sagebrush) as well as disturbing any burrows in the

area. The majority of the ground disturbance from the Proposed Action would occur in areas that are not considered suitable pygmy rabbit habitat (riparian ecotypes). During pygmy rabbit surveys of the project area no burrows were observed, making impacts to pygmy rabbits from the Proposed Action unlikely.

Big Creek 3 Ditch Right of Way

Greater Sage-grouse

The proposed ROW would include the existing BC3 ditch and the proposed pipelines. Initial disturbance associated with the ROW would be for installation of the pipelines, because the remainder of the existing BC3 ditch would remain as is. Areas disturbed during construction would be reseeded or otherwise re-vegetated with native species. Upon successful re-vegetation, habitat condition and availability would be similar to the current condition. Subsequent maintenance of the ROW could result in disturbance up to a maximum of 1.12 acres. Disturbance of sage grouse individuals which may be present in the project area would be short-term displacement during construction and maintenance.

Pygmy Rabbit

Disturbance of 1.12 acres of vegetation could have an impact on pygmy rabbits in the area by potentially removing beneficial vegetation (sagebrush) as well as disturbing any burrows in the area. The majority of the ROW would remain an open existing ditch (approximately 1342 feet long) with vegetation types influenced by proximity to water. As a result, the majority of the ground disturbance along the ditch and pipeline would occur in areas that are not considered suitable pygmy rabbit habitat. During pygmy rabbit surveys of the project area no burrows were observed making impacts to pygmy rabbits from the Proposed Action unlikely.

Big Creek Let-Down Fence

Greater Sage-Grouse

The installation of the seasonal let-down fence along Big Creek would potentially impact sage-grouse through an increased risk of collision and increased raptor perch opportunities. This fence is not within close proximity to an active lek. The objectives of the seasonal fence, to promote successful reclamation and to provide resource protection, are in line with the elements listed in Interim Management for the evaluation of proposed fences. This, combined with the seasonal nature of the fence, would serve to reduce impacts to sage-grouse. Impacts to habitat during construction and seasonal deployment would result in a total of 2.1 acres due to removal or trimming of Wyoming big sagebrush, cottonwood saplings and downed debris necessary to construct the fence, maintain electric charge and to cross the western end of the enclosure.

Pygmy Rabbit

The installation of the seasonal let-down fence along Big Creek would potentially impact pygmy rabbits through an increased amount of raptor perches and habitat alteration.

Establishment of predator perches from installation of 225-250 steel t-posts for the seasonal fence could impact individuals within the immediate project area. The fence has been designed to minimize the amount of permanent infrastructure needed. The potential area of vegetation disturbance is 2.1 acres. Removal of vegetation may impact individuals present in the immediate project area by altering cover and forage.

Alternative 2 - No Action

This alternative would have no additional impacts to threatened, endangered, candidate, and special status species of wildlife. Habitat conditions in the project area, including vegetation and ground disturbance, would remain as described in the affected environment.

Tribal Treaty Rights and Interests.

Affected Environment

The Challis Field Office area falls within the traditional occupation area of the Shoshone-Bannock Tribes. The Fort Bridger Treaty of 1868 (15 Stat. 673) between the United States and the Shoshone and Bannock Tribes specifically reserves the right of the Shoshone-Bannock Tribes to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. Today, members of the Shoshone-Bannock Tribes continue to exercise reserved treaty rights within the CFO area.

The federal government has a unique trust relationship with federally-recognized American Indian Tribes including the Shoshone-Bannock Tribes. BLM has a responsibility and obligation to consider and consult on potential effects to all resources related to the Tribes' treaty rights or cultural use. Resources or issues of interest to the Tribes that could have a bearing on their traditional use and/or treaty rights include but are not limited to: tribal historic and archaeological sites, sacred sites and traditional cultural properties, traditional use sites, fisheries, traditional use plant and animal species, vegetation (including noxious and invasive, non-native species), air and water quality, wildlife, access to lands and continued availability of traditional and treaty-reserved resources, land status, and the visual quality of the environment.

Because the Mill Creek Reconnect Project would impact unoccupied federal lands, tribal treaty rights, as defined, are applicable. To date, the BLM has received no project-specific concerns or issues from the Tribes, but potential impacts to important tribal resources are considered in order to partially fulfill the BLM's federal trust responsibility. Lacking specific concerns associated with treaty-reserved rights and interests, analysis regarding the current condition and nature of affected resources are not presented in this section. Instead, resources also known to be important to the Tribes are discussed under separate headings in this EA, including: **Water Quality, Wetlands and Riparian Zones, Vegetation, Noxious Non-Native Species, Soils, Fisheries, Wildlife, and Visual Resources.**

Environmental Consequences

Alternative 1 - The Proposed Action

There would be no changes in land status or access associated with the proposed action and the project area would retain its unoccupied Federal land status. Therefore, the Shoshone-Bannock Tribes right to access the lands to exercise treaty rights and traditional uses would be unaffected.

The proposed action would, however, result in both adverse and beneficial impacts to some of the natural resources that the Tribes may require to exercise their treaty rights. Minor, short-term adverse impacts would be associated with the construction of the let-down fence because a small amount of vegetation and soil would be disturbed, the potential for the spread of noxious non-native species would increase slightly, the movement of wildlife could be impeded, and the let-down fence would be visible on the landscape. However, the construction of the let-down fence and Mill Creek stream reconnect channel could result in the long-term improvement of water quality, enhancement of riparian areas, and the improvement of fisheries and wildlife habitat. For more detailed analysis relative to these resources, see the respective sections indicated in bold above.

Because adverse impacts would be negligible and short-term in nature, the proposed action would not affect, influence, or contribute to any significant change or increase in cumulative effects. Improvements in riparian habitat and fisheries would increase long-term regional productivity, thus imparting an incremental benefit to resources associated with tribal treaty rights and interests.

Alternative 2 - No Action

Under the no action alternative, Mill and Big creeks would not be reconnected, riparian habitats would not be enhanced, and there would be no long-term benefits to fisheries or wildlife. No Action would result in no change to existing conditions and create no new impacts to tribal treaty rights and interests.

Vegetation Type, Communities and Rangeland Resources

Affected Environment

Vegetation

The Mill Creek proposed project area occurs in the Dry Intermountain Sagebrush Valleys Level IV Ecoregion (17aa) in Idaho which is described as follows (McGrath et al. 2002):

The Dry Intermountain Sagebrush Valleys ecoregion contains stream terraces, floodplains, saline areas, and alluvial fans. Water availability and potential for cropland agriculture are low as this ecoregion lies in the rain shadow of high mountains, receives little mountain runoff, and is underlain by highly permeable valley fill deposits. Sagebrush grassland is widespread and contrasts with the open-canopied forests of more rugged and higher ecoregions.

The potential natural vegetation is mostly sagebrush steppe with Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass and, squirreltail on drier sites. Sedges, tufted hairgrass and rushes occupy wetter sites, with Shadscale and greasewood on alkaline or saline soils. Shadscale and greasewood grow on alkaline soils that receive less than eight inches of precipitation annually. Table 11 summarizes the main vegetation communities in the project area. Riparian vegetation types will be discussed under the Wetland, Riparian Zones, and Floodplains section of the EA.

Table 11. Summary of Key Vegetative Communities associated with the Mill Creek Reconnection Project Area

Vegetative Community	Habitat Characteristics
Forested Conifer	Dry, upland in higher elevations on Mill Creek
Herbaceous and Forested Riparian	Moist, bordering stream channels and irrigation ditches and on the Mill Creek alluvial fan
Wetlands	Wet, inundated areas along Mill Creek, irrigation ditches and depressional or undrained sites inundated by flood irrigation
Sagebrush Steppe/ - Dominated Uplands	Dry, below forested communities on dry upland sites bordering Mill Creek and Big Creek, and on the alluvial fan of Mill Creek
Irrigated Pasture	Dry to wet agricultural areas on Big Creek Ranch

Uplands dominated, including sagebrush and rabbitbrush, occur on the lower slope throughout the project area. This vegetation community extends below BC3 ditch down to the floodplain terrace above the Big Creek channel. Upland bunchgrasses and other grasses provide relatively consistent herbaceous cover under the low shrub layer with observed grass species including: wheatgrass species, cheatgrass, basin wildrye, prairie June grass, and several bluegrass species. Forb abundance and diversity is relatively high in the upland sagebrush and grass community including aster, onion, paintbrush, lupine, longleaf phlox, slender cinquefoil, and plains pricklypear.

Irrigated pasture occurs on the floodplain terrace above the Big Creek channel and below the downhill-most irrigation canal. Meadow foxtail and smooth brome are the dominant species in this area, with scattered forbs including Shepard’s purse, clasping pepperweed, cinquefoil and small tumbleweed mustard.

Range Resources

There are two BLM permitted grazing allotments within the project area. The applicant is the authorized permittee for the County Line and Mill Creek allotments. The Big Creek Allotment is authorized to an adjacent land owner and is not within the project area or associated with any of the ongoing proposals. Work associated with Big Creek is outside of the Big Creek

Allotment area.

The 10,391 acre County Line Allotment consists of 9,751 acres of BLM land and 640 acres of State of Idaho lands. Grazing is authorized for a single permittee with 363 cattle from 5/5-6/15 for 501 AUMs. The allotment is managed as a single pasture. Duration of use for the County Line Allotment is for 45 days during the spring/early summer season. Typically during this season of use livestock are attracted to the uplands by succulent, herbaceous forage and do not loiter in riparian areas. Cattle disperse throughout the uplands especially when water is available. Water is available on the County Line Allotment from several sources. The northern portion of the allotment has the County Line Pipeline with 2 troughs occurring within the allotment. The pipeline had been non-functional, but in 2013 the rider and the BLM range technician were able to conduct maintenance to the pipeline and get water to both of the troughs within the County Line Allotment. Additional maintenance needs are expected to occur to keep this pipeline functional. The Hamilton Ditch currently runs through the center of the allotment. This is an open ditch that livestock use for water. Water in this ditch is important to livestock distribution because the allotment boundary is within a 2 mile radius, with other water sources within a mile of the ditch. Cattle can disperse out from this source and forage in the uplands. The western portion of the County Line Allotment has approximately 0.65 unfenced miles of the Pahsimeroi River; this reach provides livestock water as well. Big Creek flows through the southern portion of the allotment, but because Big Creek is intermittent, it may inconsistently provide water for livestock.

Historically, livestock were turned out from the private lands at the Big Creek Ranch near Big Creek and were allowed to disperse throughout the allotment from there. Use observations for the allotment have indicated 30 to 40% use on upland species at the key area occurring half mile north of Big Creek. The Hamilton Ditch and the Pahsimeroi River being the two consistent water sources within the allotment.

The 3,948 acre Mill Creek Allotment consists of 3,308 acres of BLM lands and 640 acres of State of Idaho lands. Grazing is authorized for a single permittee with 71 cattle from 5/1-6/30 for 97 AUMs. Mill Creek is used for 61 days in the spring/early summer. Cattle disperse into the uplands where there is green succulent grasses to graze. Water sources for the Mill Creek Allotment include: Mill Creek, several undeveloped upland springs, and 1 water hole.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

Vegetation

The Proposed Action would impact existing vegetation composition and vigor in the project area, primarily in the channel construction zone. These areas would be planted with woody vegetation, vegetated with transplanted wetland sod mats or seeded with native grasses and

forbs as a part of the proposed project. Most of these areas would become riparian corridor or stream channel once construction and re-vegetation is complete. The existing sod salvage area (approximately 2 acres) was likely created by a historic and unmaintained diversion. In order to conserve stream flows in Mill Creek, the ditch would be plugged and dewatered as a result of the proposed action. All areas disturbed from sod salvage (0.23 acres) would be reseeded with an upland native seed mix appropriate for the site. The remainder of this area is anticipated to transition to upland species composition, and will warrant invasive species monitoring due to the dewatering disturbance.

Stream reconnection and alignment would change the existing vegetation composition in some areas, moving vegetation from an upland/pasture type to a more riparian composition along the newly constructed stream channel. Temporary impacts to vegetation vigor would occur along the newly constructed stream channel until the new system stabilizes. In addition to re-vegetation efforts along the constructed stream channel, all other areas of disturbance would be regarded and reseeded. Upon the anticipated establishment of project re-vegetation, within 3 to 5 years, the vegetation in the project area is expected to be more vigorous and diverse. Potential impacts to vegetation from stream channel and pipeline construction are listed in Table 12.

Table 12. Summary of Expected Vegetation Disturbance in the Mill Creek Reconnection Project

Vegetation Type	Type of Impact	Estimated Area of Impact
Upland sagebrush shrub	Channel excavation, plug Construction, and vegetation transition to riparian species.	0.20 acres
Cottonwood stands along ditch (non-wetland)	Buried irrigation pipe installation	0.02 acres
Dryland pasture	Alluvium borrow development	0.10 acres
Irrigated pasture	Channel and floodplain excavation	1.30 acres
Total Estimated Area of Vegetation Disturbance		1.62 acres

Range Resources

Reconnection and construction would not directly impact range resources within the Mill Creek and County Line allotments beyond the potential increase in water availability downstream of Mill Creek. In the Mill Creek Allotment, impacts to range resources from the Proposed Action would be limited and temporary. The riparian protection fence would displace cattle from approximately one acre of BLM land, temporarily altering grazing patterns and

removing a small amount of available forage on the allotment. These effects would last until the planting associated with the project has established (anticipated at 5 years) sufficiently to withstand grazing from cattle and wildlife (Table 19). Once the fence is removed range resources within the Mill Creek allotment would no longer be impacted.

The County Line Allotment may receive indirect effects from the Mill Creek reconnect and channel construction. As stated above, potentially more water would be available in Big Creek during the grazing season for the County Line Allotment. Currently, water is available intermittently for livestock. Therefore, cattle use has not been concentrated in this part of the allotment. If water availability becomes more reliable in Big Creek, livestock distribution may change and the use increased in this part of the pasture.

Big Creek 3 Ditch Right of Way

The Big Creek 3 ditch is an existing open ditch that occurs outside of the allotment boundary fence for the Mill Creek Allotment. Its length is 1,662 feet on BLM lands. As part of this project, 320 feet will become a buried siphon pipeline within the same area of disturbance that is occurring now. Additionally, a new lateral pipeline would be constructed for 290 feet. Subsequent operation and maintenance of the ROW would affect up to 1.2 acres of vegetation.

The issuance of the ROW for BC3 ditch and the lateral pipeline would not impact range resources within BLM grazing allotments.

Big Creek Let-down Fence

Vegetation

The 4.4 mile seasonal fence has been designed specifically to minimize vegetation impacts from its construction. The alignment of the fence follows existing roads as much as practicable and would not require any motorized cross country travel during construction. Some brush would need to be removed alongside the fence and in the area of the crossing. Approximately 1660 feet would be new disturbance for construction of the fence to close the lower end. This would comprise of the removal or trimming of Wyoming big sagebrush, cottonwood saplings and downed debris necessary to cross the western end of the enclosure. The disturbance area for fence was based on the length of the fence (4.4 miles) and anticipated disturbance width of 4 feet. The 4 feet width was used based on need to remove or trim sagebrush and cottonwood saplings, so that the electric fence is not shorted out. Although it is recognized that the 4 feet width of disturbance is not continuous along the fence line because of topography, other site constraints, or close proximity to the existing road. The potential area of disturbance is approximately 2.1 acres.

Range Resources

The proposed let-down fence along Big Creek would occur in the County Line Allotment (Figure 2). The fence would exclude 948 acres from livestock use within the allotment. The stocking rate for the allotment is 19.5 acres per AUM. Reducing the allotment by 948 acres

would reduce the available AUMs by 49 AUMs. This is about a 10% reduction in AUMs. If livestock use patterns/distribution changes so that cattle focus more use along Big Creek because water is more reliable, then the 4.4 miles of let-down fence would be constructed. If this water source is completely removed, grazing patterns within the allotment may be altered with more use occurring along Hamilton Ditch and the Pahsimeroi River. This may further necessitate the maintenance of the County Line Pipeline which would be essential to allotment operation. The intent of the proposed fence would be to allow the permittee to focus more use in the upland portions of the allotment while reducing use on some of the riparian areas along Big Creek. With the potential for greater frequency of stream flow in Big Creek downstream of the County Road, the proposal would be intended to encourage the vegetative response, increase greenline vegetation ecological status and bank stability.

Alternative 2 – No Action

No Action would have no new impacts on vegetation types and communities, or range resources within the project area. Existing vegetation composition and vigor, grazing patterns, and forage resources in the two allotments would remain as described in the affected environment.

Visual Resources

Affected Environment

The project area is in the vicinity of the Mill Creek and lower Big Creek drainages. Landforms include mountain slopes, alluvial fans, terraces, floodplains and irrigated pastures. The vegetation is predominately sagebrush and bunchgrass on the alluvial fans and terraces, while the riparian areas and floodplains include willows, aspen and cottonwoods. The mountain slopes that are viewed in the distance have a mosaic of open sagebrush/grassland with Douglas fir and other conifers at higher elevations.

Irrigation ditches within the project area currently have riparian characteristics, and visually appear as distinct linear features on the landscape. Irrigated pastures give distinct contrast to the natural landscape due to their color and form. These irrigated pastures are typically very green, and those irrigated by pivot lines are circular in form. The surrounding natural vegetation, however, is characterized by subtle hues of tan and sage green.

The County Road, several ranch roads, and various jeep trails are present in or near the project area. These linear features are predominately on flat ground and thus are not as visually obtrusive as roads on steeper ground with cut and fill slopes. Allotment and property boundary fences are evident when viewed up close, but are not obvious to the casual observer when viewed at a distance.

The project area is located entirely within the Visual Resource Management (VRM) Class II as designated in the Challis RMP (USDI 1999a). Class II is categorized for Retention. The objective of this class is to design proposed alterations that retain the existing character of the landscape. With Retention, the level of change to the landscape should be low. Management

activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the existing landscape.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

Under the Proposed Action the existing Mill Creek channels on the alluvial fan would be enhanced to provide adequate flow capacity and a new channel would be constructed from BC3 ditch to the confluence of Mill Creek and Big Creek. To restore connectivity it would be necessary to place approximately 300 feet of BC3 ditch in an underground pipe and re-grade the obsolete ditch and adjacent berm to eliminate the interception of Mill Creek and allow for construction of a new channel over BC3 ditch. Other unused ditches on the Mill Creek alluvial fan would be plugged to prevent flow interception.

The proposed action is not likely to result in a landscape change that would be noticeable to a casual observer. Visual changes would generally be beneficial or temporary. For example, channel construction and restoration would change the visual landscape on the Mill Creek alluvial fan to a more a more natural appearance. The predominant riparian feature on the alluvial fan would be the Mill Creek channel rather than irrigation ditches. The new line and form would appear as a natural stream channel with its associated riparian corridor. The irrigation ditches, which appear as distinct linear features on the landscape running across the slope contour, would no longer be the dominant feature on the landscape following project implementation.

Areas disturbed for channel construction and pipeline installation would be visually apparent until re-vegetated. This effect would be expected to be short term because of the planned planting and reseeded of the disturbed areas. Re-vegetation would be expected to be successful within five years. Areas disturbed for the channel construction would be predominately out of sight and would only be visible from a ranch access road. They would not be seen from any high use areas on public land.

A temporary (approximately 5 years) eight foot high fence would be constructed around the new Mill Creek riparian corridor to protect the new plants from grazing and trampling by wildlife and livestock. The riparian protection fence would encompass approximately 1 acre of BLM lands. This fence would be fit with markers to increase visibility for wildlife and would be expected to remain in place for approximately five years. This fence would be visible from a ranch access road on private land, but would not be seen from any high use areas on public land. The visual effects of this fence would be expected to be short term as the fence would be removed in approximately five years when the new channel and riparian area are successfully revegetated. The fence will be removed by Trout Unlimited when the re-vegetation success criteria and the channel stability criteria specified in Table 19 have been achieved.

Big Creek 3 Ditch Right of Way

Issuing a ROW for the existing BC3 ditch on lands administered by the BLM would have minimal effects on the visual character of the landscape as this ditch is already in existence.

Big Creek Let-Down Fence

The proposed let-down fence on the County Line Allotment would be visually apparent at a local scale. Other livestock fences are present in the project area and are evident when in close proximity, but are not obvious to the casual observer when viewed at a distance. If livestock concentrate along the fence line or trail along the fence line there would be the potential to create soil disturbance and thus a visual contrast to the surrounding vegetation. However, because of the flat topography and proposed fence route alignment along previously disturbed areas (e.g. existing road), this vegetation contrast would only be evident when viewed from up close and should not attract the attention of the casual observer.

Because the fence would only be utilized up to a maximum of two months out of the year, could only be viewed on a local scale, and fences are already a common feature on the landscape in the project area, the proposed fence would not be expected to adversely impact the visual landscape or prevent the area from attaining the objectives of VRM Class II-Retention.

Alternative 2 - No Action

Under the No Action Alternative the visual landscape would not be expected to change from the Affected Environment described above. Landforms and vegetation patterns would not be altered in the landscape. Irrigation ditches would continue to be the dominant feature on the Mill Creek alluvial fan and would appear as distinct unnatural linear features on the landscape. Roads and fences would continue to be evident when viewed on a localized scale. The area would continue to be in conformance with the VRM Class II of Retention.

Water Quality

Affected Environment

Big Creek

The Clean Water Act (CWA) requires that the state of Idaho identify water quality limited surface waters and develop a plan to restore beneficial use support to these waters. The CWA also requires the states to establish water quality standards. Designated beneficial uses for the Pahsimeroi River are domestic water supply, cold water biota, salmonid spawning, primary contact recreation and special resource water. Waters not specifically designated in the Idaho water quality standards are undesignated waters which are generally protected for coldwater aquatic life use and primary or secondary contact recreation until designated. All waters of the state are also designated for agricultural and industrial water supplies, wildlife and aesthetics.

An evaluation of water quality in the Pahsimeroi Subbasin was conducted by IDEQ in 2001; the

results are presented in the Pahsimeroi River Subbasin Assessment and Total Maximum Daily Load (TMDL) (IDEQ 2001). This assessment is based on the 1998 303(d) list prepared by IDEQ and approved by the EPA in 2000. This document identifies water quality limited stream segments that are not fully supporting their designated beneficial uses.

Of particular importance in the Pahsimeroi Subbasin are the water quality criteria for sediment and the relationship between water quality standards and intermittent waters. Because of the intermittent nature of many streams in the subbasin, the TMDL addresses the applicability of the water quality standards to intermittent streams. Water quality standards in Idaho apply to intermittent waters only during periods of optimum flow sufficient to support the beneficial uses for which the intermittent water body has been designated. In the case of the Pahsimeroi Subbasin, most intermittent waters have not been designated and are protected for the default uses of cold water biota and secondary contact recreation. Optimum flow is described as at least one CFS for cold water aquatic life and at least five CFS for recreation uses. When flows drop below these threshold values, water quality standards no longer apply to the water body (IDEQ 2001).

Big Creek is one of the largest tributaries to the Pahsimeroi River with a drainage area of approximately 70 square miles (Meinzer 1924). The headwaters of Big Creek include the North and South Forks of Big Creek located on the Salmon-Challis National Forest. Below the Forest boundary there are several irrigation canals that divert a large portion of Big Creek flows. During high water Big Creek provides surface flow to the Pahsimeroi River, however because of irrigation diversions and percolation losses in the deep floodplain alluvium it does not maintain perennial flow. This intermittent reach includes approximately the lower eight miles of Big Creek. Currently, several restoration projects are either ongoing or planned to enhance flows in Big Creek and provide additional connectivity with the Pahsimeroi River (USDI 2014).

In the project area, Big Creek is a B channel type (Rosgen, 1994). This channel type has a moderate gradient (2-4%), moderate sinuosity and a moderate width/depth ratio. In this perennial reach of Big Creek, the riparian vegetation consists of cottonwood in the overstory with an understory of woody shrubs including willow and alder. Big Creek is a dynamic system with evidence of the stream alternating between the current main channel and another channel located to the south of the project area.

The streamflow regime on Big Creek is typical for a snowmelt dominated system with high flows in May-June and low flows from late summer until early spring. The US Geological Survey (USGS) maintained a gaging station on Big Creek from 1910 to 1913 (#13301500). The gaging station was located below the confluence of the North and South Forks of Big Creek.

Young and Harenberg (1973) estimated mean monthly flows on Big Creek using the historic USGS data and additional flow measurements taken in 1971. The 1971 measurement site was approximately 0.3 mile upstream from the historic gage location. Their estimates of mean

monthly streamflows on Big Creek ranged from flows around 25 CFS during the low flow periods to a June mean monthly flow of 380 CFS. This flow regime characterizes the perennial reach of Big Creek.

The intermittent reach of Big Creek begins below Mill Creek. Big Creek goes dry in this reach when flows recede following high water. Flow measurements taken by the IDEQ on Big Creek in the summer of 1995 document this loss of perennial flow (IDEQ 2001). A flow measurement taken on Big Creek below the confluence of the North and South Forks of Big Creek at an elevation of 6,520 feet showed a discharge of 61 CFS. Approximately 4-5 miles below the Forest Boundary at an elevation of 5,851 feet, the streamflow was 75 CFS. During the same period Big Creek was dry approximately 1.5 miles above the confluence with the Pahsimeroi River at an elevation of 5,440 feet.

Water Quality

Beneficial water uses have not been designated for Big Creek. As an undesignated water it would be protected for coldwater aquatic life use and primary or secondary contact recreation until designated. All waters of the state are also designated for agricultural and industrial water supplies, wildlife and aesthetics.

Big Creek from the USFS boundary to the Pahsimeroi River (12.37 miles) has been listed as a water quality limited stream by the IDEQ (2011). The pollutants of concern are sediment and nutrients. In this stream reach, Big Creek is dewatered by irrigation diversions and flow loss to the highly permeable substrates along the stream. IDEQ determined that insufficient flow is available in this reach to transport sediment and nutrients and that this reach of Big Creek from the forest boundary to the mouth be listed as impaired for flow alteration only. Based on this determination, a TMDL was not developed to restore beneficial use support to these waters through limitation of pollutants entering the stream.

In 2013, the IDEQ completed an Addendum to the Pahsimeroi Subbasin Review and TMDL. This addendum and five year review was submitted to the EPA in January, 2014 but has not been approved to date. In this updated review IDEQ proposes to delist Big Creek for sediment and nutrients, but leave it listed for flow alteration (IDEQ 2014). If these recommendations are approved by the EPA, the reaches would be delisted effective with EPA approval of the 2014 Integrated Report. IDEQ does not recommend preparing a TMDL for Big Creek to restore full support of beneficial use.

The BLM has collected water quality data through the MIM method at the BGC-KA-02 DMA on Big Creek. Stream channel conditions were evaluated at the end of the grazing season in 2010 and 2013 and data were collected on streambank stability, streambank alteration (hoof action from livestock), streambank cover and percent fine sediment (Table 7). In 2010, monitoring indicated that streambank stability was 67%, which is below the target level of 90% stable banks. Percent fine sediment (<6 mm intermediate diameter) was measured at 8%. Streambank alteration levels were low (0 - 1%), indicating no current year impacts from

livestock grazing on bank stability. In 2013, monitoring data indicated that streambank stability was 75%, which is an improvement, but still not meeting the stability requirement described in the RMP. The percent fine sediment was low (6-8%). Streambank alteration levels were low (0-1%), indicating minimal impacts from current years grazing.

Groundwater

Groundwater occurs in virtually all the geologic formations in the Pahsimeroi basin. Groundwater recharge to the basin aquifer is primarily through irrigation, streamflow and canal/ditch losses, and mountain block recharge. Groundwater discharge occurs mainly as springs and base flow to perennial streams (Young and Harenberg 1973).

Several groundwater studies have evaluated the relationship between ground water and surface water in Big Creek. Meinzer (1924) estimated that groundwater recharge along Big Creek represented 12% of the streamflow per mile. In November 1971, Young and Harenberg (1973) performed a seepage run on Big Creek below the confluence of the North and South Forks of Big Creek and determined that surface water losses through the alluvium were approximately 2.6 CFS/ mile.

These groundwater studies indicate that Big Creek has reaches where it is gaining flow from groundwater recharge, and reaches where it is losing flow to groundwater. This losing reach has been described as approximately the lower six miles of Big Creek, which includes the reach adjacent to the proposed livestock management fence on the County Line Allotment.

Mill Creek

General Stream Characteristics

Mill Creek is a small perennial stream that is located just upstream of the intermittent reach of Big Creek and is the lowest tributary to Big Creek. Mill Creek has a drainage area of approximately three square miles.

In the upper reaches, Mill Creek flows in a steep, narrow canyon. Mill Creek would be characterized in this reach as an A3 channel type having a step-pool channel with cobble substrate (Rosgen 1996). This reach of Mill Creek is relatively undisturbed, except for some localized areas of instability from historic livestock grazing practices, wildlife (the drainage is winter range for a large herd of elk), and anthropogenic influence from irrigation practices.

Near the project area Mill Creek leaves the confined canyon and flows across an alluvial fan. Water was historically diverted from Mill Creek at the upper northwest edge of this fan. Big Creek Ranch owns all of the water rights on Mill Creek.

In 2012, the irrigation ditch was plugged, allowing the 2 CFS water right to remain in the channel. Below the POD to a point approximately 2,500 feet downstream, Mill Creek flows in a well-defined, single thread channel. Below this point, there are numerous overflow channels, as well as a historic diversion that is currently irrigating BLM administered land southeast of the project area. Near the lower end of the fan, the Mill Creek channels are intercepted by the

BC3 ditch. Below BC3 ditch there is no apparent Mill Creek channel.

It is probable that there was a surface channel that historically connected Mill Creek to Big Creek. However the amount of disturbance on the fan and the manipulation of the surface water and landform on the Big Creek floodplain that has occurred to facilitate agriculture make it impossible to verify any historic connection. A review of aerial photos by Geum (2014a) showed that most of the irrigation diversions were in place in 1939 and a General Land Office survey also showed some development of pastures and irrigation ditches as early as 1897. Subsurface flows from Mill Creek could also have hydrologic connection to Big Creek.

Limited streamflow data are available for Mill Creek, but the flow regime is expected to be a snowmelt dominated system with high flows in May-June and baseflows sustained from groundwater recharge from late summer until early spring. Streamflow measurements were taken by Geum and the BLM during the spring/summer of 2013 (Table 13).

Table 13. Mill Creek Streamflow Measurements (CFS)

Reach	April 5, 2013	May 22, 2013	June 11, 2013
Upper end of alluvial fan	0.5	2.36	3.21
Middle of alluvial fan	no data	2.99	no data
Combined flow of split channels above BC3	no data	0.51	3.60

A flood frequency analysis was conducted on Mill Creek to assist in project design (Geum 2014a). The flood frequency analysis in combination with numerous hydraulic calculation methods were used to determine the bankfull discharge for the project design.

Water Quality

Beneficial water uses have not been designated for Mill Creek. As an undesignated water it would be protected for coldwater aquatic life and primary or secondary contact recreation until designated. All waters of the state are also designated for agricultural and industrial water supplies, wildlife, and aesthetics. IDEQ has completed a water quality assessment of Mill Creek and has determined that Mill Creek is fully supporting beneficial uses (IDEQ 2011). This determination is based on the measurement of water quality, hydraulic, and habitat quality indices collected through the Beneficial Use Reconnaissance Program (BURP) at one location on Mill Creek.

The BLM has collected water quality data on Mill Creek as part of their range monitoring program. The Mill Creek Allotment did not have any livestock use from 2010-2012, but 71 head of cattle were permitted to graze the allotment in 2013. Stream channel conditions were evaluated via MIM in 2010 and 2013. Parameters monitored on Mill Creek included streambank stability, streambank alteration, streambank cover and percent fine sediment (USDI-BLM 2014). The data show an improving trend for streambank stability and cover. Streambank stability did not meet the target of 90% or greater stable banks in 2010, but the

target was achieved in 2013. Streambank alteration levels were low (0 - 1%), indicating no current year impacts from livestock grazing on bank stability. Percent fine sediment levels in Mill Creek were high in both 2010 and 2013 (Table 8).

Groundwater

No specific groundwater studies have been done on Mill Creek, but some assumptions can be made based on the streamflow measurements taken in 2013. Flow measurements taken along Mill Creek in May-June 2013 show some flow gain between the upper end of the alluvial fan to the middle. Below there, in the reach with multiple flow channels, the stream lost flow to groundwater before being intercepted by BC3. In June, the combined discharge in the split channels was greater than the flow higher up on the fan, indicating that the channel was gaining flow from groundwater. These flow measurements indicate that surface and groundwater across the fan are interconnected with the stream both gaining and losing flows to the groundwater table depending on the location and time of the year. This behavior is not atypical for streams in the Pahsimeroi Basin.

Shallow groundwater moving through the fan is also likely intercepted by BC3. Deeper groundwater moving through the alluvial fan may contribute to the aquifer present in the Big Creek floodplain below the alluvial fan.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

The Proposed Action would not affect the Big Creek stream channel because the new Mill Creek channel would be reconnected to Big Creek but not disturb any other portions of the Big Creek stream channel.

The Proposed Action would have a beneficial effect on the flow regime by augmenting surface flows in Big Creek. It is unknown if Mill Creek would maintain perennial flow to Big Creek because of infiltration losses across the alluvial fan. However, Mill Creek would be connected to Big Creek during high flows and for a longer duration of the year over existing conditions. In addition, shallow groundwater currently intercepted by BC3 may reach the Big Creek floodplain and provide additional groundwater recharge to surface flow.

The Proposed Action includes the enhancement of existing channels on the alluvial fan and construction of new channel(s) for Mill Creek below BC3. Above BC3 there are two channels that convey Mill Creek streamflows. The northwestern channel would not be enhanced but the southeastern channel would be enhanced by enlargement where needed to convey design flows and by the installation of structures for bank stabilization and for grade control.

Below BC3 two channels would be constructed to a point approximately at the toe of the alluvial fan where they will merge into one larger channel. From this point, one channel would be constructed across the floodplain to the point where it merges with a side channel of Big

Creek. In this reach, a hardened ford would be constructed at the point where the new channel crosses an existing ranch road.

The design for the hardened ford was completed by Geum (2014a). During construction of this feature, the site would be over-excavated approximately 1.5 feet to allow for placement of geotextile fabric and clean graded rip-rap. Once the excavation is complete, geotextile fabric would be placed on the sub-grade surface extending across the channel and up both approaches to the channel. The fabric edges would be keyed into toe trenches and pinned in place to secure the material. Graded rip-rap (2 to 12 inches in diameter) would be placed on the fabric and bucket compacted. All of this work on the hardened crossing would be done in the dry.

Channel and hydrologic data were collected by Geum (2014a) to assist in designing an appropriate channel(s) for the site. The data they collected includes a longitudinal profile for Mill Creek, stream cross sections, pebble count, streamflow measurements, photographs and a detailed topographic survey of the alluvial fan within the project area. Hydraulic calculations were completed using the cross section data to estimate bankfull streamflow. Regional flood frequency relationships were calculated to provide a check of the modeled bankfull flows.

Calculated bankfull discharges ranged from 8 to 16 CFS for the three cross sections depending on the method used. For the restoration design, a discharge of 12 ± 2 CFS was used to develop the channel design dimensions. The design flow is an average of the bankfull discharges computed using various methods. This flow also generally correlates with the Q2 (flow with a recurrence interval of approximately every 2 years) estimate from the flood frequency analysis.

Based on the channel slope and bed material, appropriate channel geometry was developed for each of the new channels. The gradient and channel characteristics would vary from a steep A3 type channel on the alluvial fan with a gradient of approximately 0.08 ft/ft to a relatively low gradient C4 channel type in the lower reaches above Big Creek (Rosgen 1996). In between these two areas there would be a transition reach of a moderate gradient (0.02 – 0.04 ft/ft) B channel type.

Five types of channel structures are proposed for the new channels. These structures include those designed to deflect flow away from banks, such as rootwad and log vane structures and woody debris jam structures. Other structures are designed to provide channel grade control and maintenance of the thalweg in the center of the channel. These types of structures include cobble and boulder grade control structures and rock cross vanes. A third type of structure, woody brush matrix, is designed to provide streambank roughness and to provide bank conditions that support the development of woody riparian vegetation.

To allow for the new channel construction, approximately 320 feet of BC3 would be placed in an underground pipe and the ditch would be re-graded to eliminate the interception of Mill Creek flows and restore surface flow connections between Mill Creek and Big Creek. A lateral underground pipe would be installed from the BC3 pipeline to a lower lateral ditch to provide water for irrigation of a pasture on the Big Creek Ranch. During construction, inactive

channels on the alluvial fan and unused irrigation ditches that cross the fan would be plugged to prevent interception of Mill Creek flows. Areas to be plugged are shown in Figure 1.

The Mill Creek POD does not have a diversion structure, and is located at the upper end of the fan. Big Creek Ranch, LLC is the sole water right owner for this POD, and they intend to maintain their water right and POD, while allowing the flows to remain in the Mill Creek channel. During the channel construction, the existing ditch plug would be removed and Mill Creek flows would be diverted into this ditch so that the construction activities can be done under dry conditions. Following the completion of the channel construction and planting activities, the ditch would be plugged again and flows would be restored to Mill Creek.

The construction activities in the Proposed Action have the potential to adversely impact the water quality in Mill Creek and Big Creek, however, these effects are expected to be minimal and of short duration. Construction activities would result in site disturbance from sod removal, ditch plugging, and channel enhancement and construction activities. Sediment from these construction activities could be transported to channels in the project area during precipitation events of sufficient magnitude to produce overland flow. The construction activities also have the potential to introduce hazardous substances into the irrigation canals or stream channels from fuel storage and equipment refueling.

Numerous BMPs have been incorporated into the project design to limit the potential adverse effects. Most importantly, it would be possible to divert Mill Creek away from the project area so that all the construction activities can be done in the dry. This would prevent erosion and stream sedimentation during the construction activities and any potential maintenance activities.

To prevent any spill of hazardous material from reaching the streams during the construction activities, all equipment staging would occur at least 100 feet away from Mill Creek and Big Creek. Fuel storage and refueling would not occur within 300 feet of perennial drainages and wetlands or within 150 feet of ephemeral drainages. In the event that a spill occurs, the contractor would be required to have fuel spill containment cleanup materials readily available on site for immediate cleanup. All cleanup materials would be disposed of in an appropriate offsite waste handling facility.

Erosion control structures, such as weed free straw bales, straw waddles, or silt fence would be installed between the areas of disturbance and any live water, wetlands or other channels to prevent erosion and stream sedimentation during and after the construction activities. These structures would trap any eroded material before it reaches a live stream, and they would be left in place until the disturbed areas are revegetated. Erosion control structures would likely be removed concurrent with removal of the riparian protection fence, after approximately 5 years, depending on attainment of vegetation and bank stability objectives.

Material stockpiles would be designated to minimize site disturbance and prevent sediment delivery to streams or wetlands. A supply of erosion control materials would be kept on hand

to respond to any emergency situations.

One of the most critical times for sediment control occurs when the water is reintroduced into the new channel. It is imperative to slowly introduce water into the new channel to limit the erosion and/or mobilization of fine sediments from the new channel. A straw bale dam would be placed at the downstream end of the new Mill Creek channel above the confluence with Big Creek prior to reintroducing water into the new channel. Filtration of water by this structure would substantially reduce the potential for adverse impacts to water quality from stream sedimentation. However, even with the straw dam some turbid water is expected to reach Big Creek during this period of wetting the new channel, but these effects should be localized and of short duration. With implementation of the BMPs the Proposed Action is not expected to have any long term adverse impacts on water quality from stream sedimentation or a material spill.

The Proposed Action is expected to have a beneficial effect on the water quality of Big Creek by enhancing streamflows. Both surface and subsurface flows from Mill Creek to Big Creek would be increased by constructing a surface channel between the two streams and reducing the interception of shallow groundwater by BC3. Increased streamflows may enhance the riparian vegetation along Big Creek below the confluence with Mill Creek. The restored riparian areas along Mill Creek and the reconnect channel would improve streambank stability and riparian vegetation. Over time, the improvement in riparian vegetation along both streams could provide for additional stream shading and an improvement in water temperature. Increased subsurface flows to Big Creek would provide cold water inputs that will help maintain water temperatures suitable for cold water aquatic life.

In summary, the Proposed Action is expected to have a long term beneficial effect on the water quality in Mill Creek and Big Creek. The Proposed Action is consistent with the water quality goal established in the Pahsimeroi TMDL to reduce streambank erosion and water temperature within the Pahsimeroi Subbasin (IDEQ 2001). It is unknown if this action will improve conditions enough to achieve full support of beneficial uses in Big Creek because of other factors impacting Big Creek, such as irrigation diversions and natural stream flow infiltration.

The Proposed Action would have a beneficial effect on groundwater resources in the project area. Connecting Mill Creek to Big Creek would reduce the interception of surface water by the irrigation ditches that transect the alluvial fan. Plugging the unused ditches with an earthen berm and placing a portion of BC3 in a pipe would also reduce the interception of groundwater on the alluvial fan. Shallow subsurface water moving through the fan would not be as readily intercepted by the irrigation ditches and more groundwater is expected to be delivered to the Big Creek floodplain than under current conditions. The Proposed Action could also improve floodplain conditions and enhance hydric soils, thus enhancing water retention and recharge to groundwater resources.

Big Creek 3 Ditch Right of Way

The Proposed Action also includes the issuance of a ROW for BC3 where it crosses public land administered by the BLM. Approximately 300 feet of BC3 would be put in a pipe so that a new Mill Creek channel can be constructed across the ditch to connect Mill Creek to Big Creek. The remainder of the ditch across the fan does have the potential to intercept surface flows across the fan, particularly if Mill Creek avulses during a high flow event, and remains in a different channel on the alluvial fan. Future maintenance on the new Mill Creek channels may be necessary to ensure that flows are routed across the fan in the location where BC3 is in a buried pipeline. Any potential maintenance activities would be subject to the same BMPs and stipulations used during construction to minimize the potential for impacts or result in only minor or immeasurable impacts.

The proposed ROW for BC3 and the pipeline is not expected to have any adverse effects on water quality in Mill Creek or Big Creek. Future ditch maintenance has the potential for soil disturbance and localized soil erosion. However, any material eroded during ditch maintenance is not expected to be transported to either Mill Creek or Big Creek because of the distance and the presence of a well vegetated filter strip between the ditch disturbance and the streams.

Issuing a ROW for operation and maintenance is not expected to have any adverse impacts on groundwater, because the majority of the ditch will remain unchanged.

Big Creek Let-Down Fence

This fence would not have any effect on the flow regime of Big Creek, nor is it expected to have any effects on groundwater, either during construction or during future fence maintenance.

The livestock management fence located along lower Big Creek on the County Line Allotment should have a beneficial effect on the lower Big Creek stream channel by limiting livestock access to the channel and riparian area. Limiting livestock access has the potential to improve streambank stability and enhance the recovery of the riparian vegetation along this stream reach, thus reducing streambank erosion and stream sedimentation.

Where the proposed fence would cross Big Creek there is a potential for the fence to catch debris and a potential for the fence to be washed out by high flows. The time that livestock are in this pasture coincides with high flows in Big Creek. The fence would be strategically deployed only as needed, and/or removed early to reduce the potential for the fence washing out during high flows, or deployed after high-flows which would limit livestock access to Big Creek in absence of the fence.

Alternative 2 - No Action

Under the No Action Alternative there would be no change in the current condition of the stream channels, flow regime, or stream connectivity of Mill Creek or Big Creek. Mill Creek would continue to be disconnected from Big Creek and both surface and subsurface flows

across the Mill Creek alluvial fan would continue to be intercepted by the BC3 ditch. Both Mill Creek and Big Creek would continue to have natural flow regimes until they are diverted/intercepted by irrigation canals.

The No Action Alternative would not change the existing water quality in Big Creek or Mill Creek. There would not be any short term adverse impacts on water turbidity in Mill Creek or Big Creek associated with construction activities. There would not be any long term beneficial effects on water quality under the No Action Alternative. Big Creek would continue to not fully support beneficial uses due to sediment and nutrient loading and flow alteration due to irrigation diversions and natural flow losses to the alluvium.

Under the No Action Alternative there would not be any changes to groundwater resources in the analysis area. Groundwater would continue to be intercepted by the irrigation ditches on the Mill Creek alluvial fan and would be routed to irrigated pastures rather than downstream to the Big Creek floodplain.

Wetland and Riparian Zones

Affected Environment

Wetland/Riparian Areas

Waters of the US and wetlands are present in the project area. These features include Mill Creek, Big Creek, irrigation canals and the wetlands adjacent to these waters. A wetland delineation was completed in the project area by Geum Environmental Consulting (Geum 2014a).

Waters of the US comprise 0.77 acres of the project area (Table 14). The Mill Creek and Big Creek channels fall within the Cowardin classification: riverine system, upper perennial subsystem, unconsolidated bottom class, cobble gravel subclass with a permanently flooded water regime (Geum 2014a). The irrigation canals in the project area would be classified as: riverine system, intermittent subsystem, streambed class, seasonally flooded water regime, and excavated special modifier (Cowardin et al. 1979).

Wetlands in the project area include forested, emergent and scrub-shrub wetlands, totaling 3.28 acres (Table 14). The forested wetlands are found along Mill Creek and Big Creek. Emergent wetlands are found along the main Mill Creek channel and along several side channels of Mill Creek. Emergent wetlands are also found along the fringes of the irrigation canals and in some of the irrigated pastures. There are dead, relict sagebrush plants present in these areas indicating recent change in water availability. The emergent wetlands in the irrigated pastures are fed by irrigation canals.

Table 14. Waters of the US and Wetlands in the Mill Creek Project Area

Waters of the US and Wetlands	Area (acres)
Waters of the US	0.77
Mill Creek	0.41
Big Creek	0.05
Irrigation canals	0.31
Palustrine Forested Wetlands	0.24
Palustrine Scrub Shrub Wetlands	0.03
Palustrine Emergent Wetlands	3.01
Total Wetlands	3.28

In the project area, Mill Creek flows to the southwest out of a mountainous canyon through an alluvial fan toward Big Creek. As Mill Creek leaves the canyon, the riparian area is dominated by riparian tree species including black cottonwood and quaking aspen in the overstory. Shrub species include gray alder, chokecherry, currant, Woods' rose, and willow. Understory riparian vegetation consists of numerous sedges and some rushes in the wettest areas along the channel.

As the Mill Creek channel flows over the alluvial fan above BC3, the woody riparian vegetation community transitions to herbaceous-dominated riparian and wetland vegetation communities before the creek is intercepted by BC3. Herbaceous riparian and wetland vegetation communities occur as narrow fringes along the multi-thread Mill Creek channels. In these areas, there are numerous willows present but most are very small due to browse. Dead or dying sagebrush are present in some of the now herbaceous-dominated riparian vegetation communities along Mill Creek indicating somewhat recent changes in channel location and water availability.

Cottonwoods and willow are also found in narrow bands along irrigation ditches in the project area. Wet herbaceous vegetation occurs along the ditches in the project area and is dominated by Nebraska sedge.

The Big Creek channel lies at the downhill extent of the project area where there is a slope break that drops from the irrigated pasture down to the Big Creek floodplain. The Big Creek riparian area is dominated by a forested vegetation community consisting of black cottonwood with less quaking aspen than the Mill Creek riparian area. Meadow foxtail is the dominant herbaceous species in the backwater areas of Big Creek that are included in the project area.

Data on the condition of riparian areas and wetlands have been collected by the BLM on both Big Creek and Mill Creek (Table 15). This data was collected using the MIM method. The data shows that the Seral Stage or Greenline Ecological Status was at late to Potential Natural

Community at both monitoring sites. This indicates a healthy riparian plant community with desirable native species present. Both monitoring sites showed an improvement in the Wetland Rating from 2010 to 2013.

Table 15. MIM Riparian Data for Big Creek and Mill Creek

	Big Creek		Mill Creek	
	BGC-KA-02 9/30/2010	BGC-KA-02 8/1/2013	MLC-KA-01 10/12/2010	MLC-KA-01 8/27/2013
Seral/Greenline Ecological Status	Late	Potential Natural Community	Late	Late
Wetland Rating	Fair	Good	Fair	Good

Floodplains

Floodplains in the project area are found adjacent to Mill Creek and Big Creek. Because of the steep channel gradient of Mill Creek, floodplains adjacent to Mill Creek are limited and evident in only a few places adjacent to the stream channel. Big Creek has a well-developed floodplain that is evident along the entire length of channel in the project area.

Environmental Consequences

Alternative 1 - The Proposed Action

Mill Creek Channel Reconnection and Construction

Wetland/Riparian Areas

The components of the Proposed Action that would impact wetland/riparian areas include channel construction, ditch filling, and pipeline installation. These areas would be impacted both by excavation and placement of fill. A total of 0.82 acres would be impacted as a result of the Proposed Action (Table 16). This total includes 0.51 acres of waters of the US and 0.31 acres of wetlands. The impacted wetlands include emergent wetlands bordering Mill Creek, along irrigation canals and within the sod salvage area.

Table 16. Anticipated Net Gain in Waters of the US and Wetland for the Mill Creek Reconnection Project

Waters of the US and Wetlands	Impacted Areas (acres)	Expected Development (acres)	Net Change (acres)
Waters of the US	0.51		-0.51
Wetlands	0.31	1.58	+ 1.27
Total Gain	0.82		+ 0.76

A large emergent wetland is located along the east edge of the project area. The proposed sod salvage area is located in this wetland. The hydrology for this wetland is a historic diversion channel from Mill Creek. As part of this project, this channel would be plugged so that Mill Creek flows remain in the channel to restore connectivity to Big Creek. Plugging this ditch would alter the hydrology of this area and it is expected that this area would be drier and would transition to more native conditions for this upland location over time.

Overall, the project would be expected to have a net gain in wetlands acres by constructing new stream channels and creating floodplain and riparian corridors along the new and enhanced stream channels. The location of the areas expected to develop into wetlands are shown in Appendix A. The new wetland areas include 0.38 acres of riverine wetland adjacent to the newly constructed stream channel and 1.2 acres of scrub/shrub wetland created in the floodplain and riparian areas along the stream channels. The amount of time for wetland development in the floodplain adjacent to the new channels would depend on numerous factors, including the hydrology of the new channels and the characteristic of the existing and placed soils.

The effects on the floodplains in the analysis area are limited to those already described above for wetlands. Other than the effects of the excavation and fill described, no other effects on floodplains are expected from implementation of the Proposed Action.

Big Creek 3 Ditch Right of Way

No effects to wetlands or floodplains are anticipated as a result an issuance of a ROW for this project.

Big Creek Let-Down Fence

Where the proposed fence would cross Big Creek there would be some posts and braces installed within the floodplain of Big Creek. This would result in some minimal disturbance of the floodplain adjacent to Big Creek. The fence would not be expected to change the function or values of the floodplain.

No effects to wetlands are anticipated as a result of the construction of the proposed let-down fence.

Alternative 2 - No Action

Under the No Action Alternative the wetland/riparian areas and floodplains in the analysis area would not be expected to change from the condition described in the Affected Environment. The existing wetland/riparian areas have developed in response to the site hydrology and without any changes to the hydrology the wetland areas would be expected to remain in their current condition. No changes to the Big Creek floodplain would be expected under the No Action Alternative.

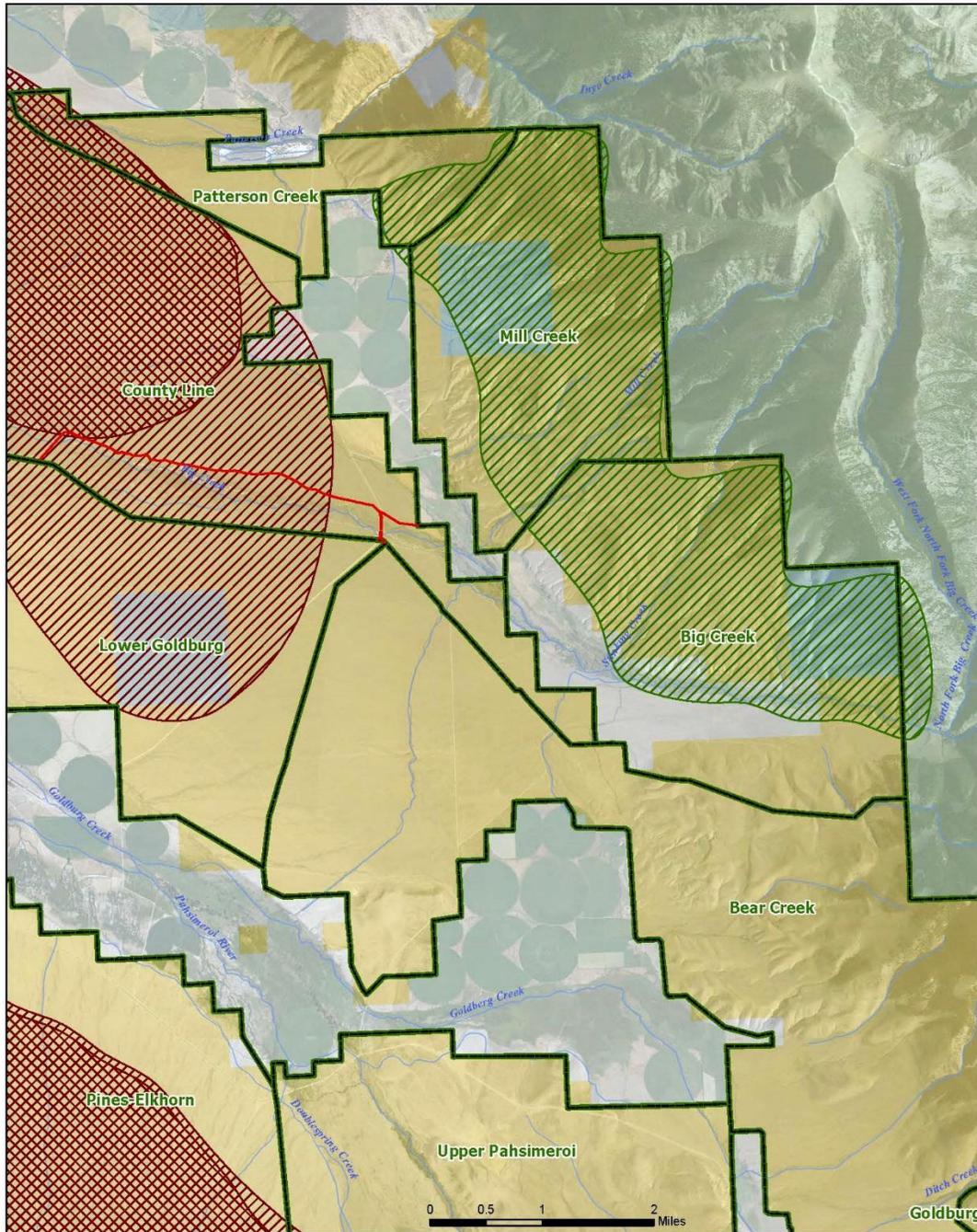
Wildlife

Affected Environment

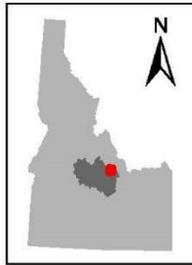
Mule deer, elk and pronghorn antelope are the primary big game species to use the project area. Big game species have the potential to use the project area at all times of the year. The eastern edge of the proposed project area is designated as elk winter habitat in the Challis RMP. The western portion of the project area along Big Creek contains antelope winter habitat (Figure 9).

No designated gray wolf pack territory is present in or near the project area (Holyan et al. 2011), however, the gray wolf is a highly mobile species that ranges over large territories in pursuit of its prey and has the potential to be present in all habitat types during the year.

Figure 9. Mill Creek Reconnection Project Big Game Habitat



- | | |
|------------------------------------|----------------------------------|
| Proposed Letdown Fence | Surface Management Agency |
| Pronghorn Antelope Crucial Habitat | Bureau of Land Management |
| Pronghorn Antelope Winter Range | Private |
| Elk Crucial Habitat | US Forest Service |
| Elk Winter Range | State |
| Allotments | Other |
| | Rivers/Streams |



No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed. Map date: May 2014

Environmental Consequences

Alternative 1 – The Proposed Action

Mill Creek Channel Reconnection and Construction

The Proposed Action is intended to create a riparian corridor that fully connects Mill Creek to Big Creek. A healthy, diverse riparian community along Mill Creek could provide increased cover and forage for big game animals in the area. Some displacement of big game may occur during the 4-6 week construction phase of the project because of increased noise and traffic in the project area. Some minor impacts to wildlife habitat for deer, elk and antelope would occur from riparian disturbance. These impacts would be short in duration, lasting only until the re-vegetation of the area is complete.

The temporary riparian protection fence along the newly constructed Mill Creek channel would encompass approximately one acre of BLM land and one acre of private land. This enclosure would impact big game by excluding them from approximately two acres of the lower portion of Mill Creek. The small area enclosed by the fence would be easily navigated around and would restrict wildlife access to a minimal amount of forage. The fence would be marked with BLM approved methods to reduce the likelihood of negative wildlife impacts. Upon re-establishment of the vegetation, the fence would be removed by Trout Unlimited, ending any impacts to big game from the temporary fence.

Big Creek 3 Ditch Right of Way

The proposed ROW would include the existing BC3 ditch and the proposed pipelines. Initial disturbance associated with the ROW would be for installation of the pipelines, because the remainder of the existing BC3 ditch would remain as is. Areas disturbed during construction would be reseeded or otherwise re-vegetated with native species. Upon successful re-vegetation, habitat condition and availability would be similar to the current condition. Subsequent maintenance of the ROW could result in disturbance up to a maximum of 1.12 acres. Disturbance of wildlife which may be present in the project area would be short-term displacement during construction and maintenance.

Big Creek Let-Down Fence

The installation of a let-down fence along Big Creek downstream of the channel reconnection would impact big game by potentially restricting access to a portion of Big Creek. These impacts would be lessened by the seasonal deployment of the fence along with wildlife friendly fencing guidelines followed during the construction of the fence.

Alternative 2 – No Action

The No Action Alternative would result in no change to existing conditions for wildlife within the proposed project area and are expected to remain at applicable environmental and

management levels.

Chapter 4. Cumulative Impacts and Monitoring

Cumulative impacts are defined as “...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time” (40 CFR§ 1508.7). Cumulative impacts analysis for each resource impacted by the Proposed Mill Creek Project included a review of both the incremental contribution to past, present, and reasonably foreseeable actions, and if those impacts, when analyzed cumulatively, would be significant. Due to the infeasibility of quantitative analysis for many of the affected resources, cumulative effects are discussed qualitatively in the sections below. Impacts are described both in the text below, and in Table 17 for fisheries, water quality, invasive and non-native species, soils, vegetation, range resources, visual resources, wetlands and riparian zones, wildlife, TES wildlife, and migratory birds.

Cumulative Impact Assessment Area

The Pahsimeroi subbasin was chosen as the Cumulative Impact Area of Analysis (CIAA) for fisheries and water quality because these are the resources that are most affected by the proposed action. Guidance from Council on Environmental Quality (1997) indicates that watersheds are commonly used for CIAA boundaries. This area includes about 531,909 acres in both Lemhi and Custer counties. There are approximately 220,373 acres of BLM administered land; 246,721 acres of USFS administered land, 45,489 acres of private land, 19,326 acres managed by the State of Idaho, which includes 200 acres managed by Idaho Department of Fish and Game for fish propagation.

The scale of this project in acres disturbed (approximately 4.8 acres), is miniscule in comparison to the total acreage in the Pahsimeroi subbasin. The CIAA has been impacted by European-American settlement since 1869 (Meinzer, 1924), with the highest level of impacts to the subbasin occurring from water diversion, which impacts fisheries, vegetation, and water quality and quantity. Other anthropogenic impacts include fire suppression, road construction, livestock grazing, agricultural development, development of homes and towns, mineral development, and timber harvest (USDA/USDI 2001). These activities have resulted in the past and present reduction in native vegetation, increased non-native plants, fragmented fish habitat, reduced flow of instream water, increased evapotranspiration and disturbed soils.

In the Pahsimeroi subbasin, biological resources such as vegetation, wildlife and invasive species are in constant flux between disturbance and re-colonization or reclamation as land use changes. The present and foreseeable actions related to these resources include loss of habitats with development of lands and, in contrast, creation of habitats with conservation actions on

lands. The project's incremental contribution to this fluctuating total is small, arguably imperceptible at the subbasin scale. Table 17 provides a discussion of cumulative impacts for these resources.

Threatened/Endangered Fish; Sensitive Fish; Fisheries

The legal framework for water diversions for irrigation in Idaho began in the 1840's. The first Euro-American settlements in the Pahsimeroi Valley occurred in 1869 (Meinzer, 1924). The land patent system encouraged people to "reclaim" as much land as possible. As a result, the trend was for settlers to turn as much water onto irrigated fields as possible. With the Pahsimeroi Valley being water limited, this system ultimately resulted in the adjudication of the water rights within the valley during the early parts of the 1900's with the water rights associated with the proposed action being decreed on April 1, 1910. It was during this time period that the Pahsimeroi Valley water district was organized to administer water rights which had been decreed within the valley. It is important to note that, historically, water was only administered during times of scarcity which allowed water users to divert as much water as they could during times of high water. The formation of the water district limited water development because afterwards only "high water" was available for new diversion works in the valley.

In 1987, the State of Idaho commenced the Snake River Basin Adjudication, which reviewed and adjudicated all water rights which were tributary to the Snake River, including the Pahsimeroi River. The majority of water rights within the Pahsimeroi subbasin were confirmed through adjudication, and as a result continued operation and maintenance of historic ditches and points of diversion is likely to continue in the foreseeable future. Due to the continuance of irrigation practices, the Pahsimeroi River and many of its tributaries will continue to be heavily diverted and hydrologic disconnection will continue to be exacerbated. In contrast, there has been considerable effort over the last two decades to implement irrigation efficiency and consolidation projects, as well as stream restoration activities, which should in the foreseeable future result in improvement of habitat and benefits to aquatic resources as a result.

There are other ongoing or foreseeable projects to eliminate fish passage barriers, conserve water availability and connectivity, and enhance fish habitat within the CIAA and the Big Creek subwatershed. These projects were described as part of the environmental baseline in the Aquatic Biological Assessment prepared for the proposed action, and are described below as actions with the potential for beneficial cumulative effects (USDI 2014):

- Pahsimeroi Big Creek Phase 1: Project Partner – Trout Unlimited. Replaces an undersized and perched culvert that is currently a fish migration barrier at the County Road crossing on the Big Creek channel. The replacement bridge has been purchased and delivered and is scheduled to be implemented in August, 2014. The goal of this project is to improve upstream migration of native salmonids during low flows to avoid stranding and allow more natural stream process to occur within Big Creek.

- Elimination of Big Creek Diversion #2 (BC2/Hamilton Ditch): Project Partners - Custer County Soil and Water District, Natural Resources Conservation Service, Bureau of Reclamation, Idaho Department of Fish and Game. Project partners have entered into agreements with the water right holders on BC2 to eliminate its need by incorporating on farm improvements and changes in POD's from Big Creek to the Pahsimeroi River. The goal of this project is to increase flow to approximately seven miles of lower Big Creek and in a reach of the Pahsimeroi River below the confluence with Big Creek.
- Big Creek Diversion #3 (BC3) Fish Screen: Project Sponsor - IDFG Screen Shop. This project would include the design and installation of a rotary fish screen at the head of BC3 to avoid stranding of native salmonids captured by the diversion structure providing the BC3 water right to Big Creek Ranch. Currently, BC3 is unscreened and requires a channel wide push up dam to divert water into the ditch.

The incremental impact from the Mill Creek Reconnect Project would constitute a beneficial impact to Threatened, Endangered, and Sensitive Fish and Fisheries. The water conveyance created through the project would have a beneficial impact on fisheries resources in Big Creek, as it would provide a conveyance and contribution of water to Big Creek that has been historically disconnected. This contribution would contribute cumulatively to other reasonably foreseeable projects on Big Creek, potentially bolstering the benefits of those proposed actions. The largest cumulative impact to TES Fisheries is the beneficial contribution of the proposed project to restoration of flow and fish habitat connectivity. Mill Creek connectivity to Big Creek would be restored, and this would serve as an incremental contribution to reconnection of Big Creek to the Pahsimeroi River.

In context of climate change, the abiotic factors most likely to be affected which influence salmonid distribution are water temperature and streamflow (Isaak et al. 2011). Removing fish passage barriers, reducing fragmentation, and providing for fish access to thermal refugia habitats represents one of the primary management / restoration strategies available to counter impacts of climate change. Habitat fragmentation, reduced streamflows, and altered water temperature regimes are common in the Pahsimeroi River watershed. The proposed action addresses all of these factors (streamflow, water temperature, habitat fragmentation) on a subwatershed scale (Mill Creek) only of minor significance in context of the entire CIAA / Pahsimeroi River subbasin.

Water Quality

The Mill Creek Project in combination with past, present and reasonably foreseeable future actions is expected to have a beneficial effect on water quality in the Big Creek drainage, but would only be of minor contribution in context of the entire CIAA / Pahsimeroi River watershed.

While specifically designed to improve fish passage conditions and streamflow regimes,

restoration projects will also improve water quality by increasing baseflows in Big Creek and potentially the Pahsimeroi River. Increased streamflows during periods of low flow helps to lower water temperature and provide thermal refuge when it may be limited. Increased base flows will also enhance the recovery of degraded riparian areas which, in turn, will improve streambank stability and reduce bank erosion and stream sedimentation.

It is not likely that Big Creek or the Pahsimeroi River will achieve full support of beneficial uses following implementation of the Proposed Action. Though these projects will improve water quality, the level of improvement is not expected to allow these streams to become fully supporting of their designated beneficial uses because of the magnitude of effects on water quality from irrigation diversion, agricultural practices, and natural infiltration already occurring within the Pahsimeroi subbasin.

Table 17. Cumulative Impact Analysis by Affected Resource

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
<p>Invasive, Non-Native Plant Species</p>	<p>The CIAA contains weed infestations that are small, localized, and usually associated with some sort of disturbance; however, many species of noxious weeds are found in adjacent counties and it is probable that they will eventually be found in the assessment area. Weeds within the watershed are treated by means of chemical, biological, and mechanical methods. A total of approximately 350 acres of the watershed has been treated to address noxious weeds. Generally, invasive species have been introduced to the project area in crop seed, or as “hitchhikers” on vehicles or animals. Past actions that are most responsible for the establishment of invasive species in the area are agricultural and infrastructural development</p>	<p>Agricultural and residential development is expected to continue and will create disturbed ground suitable for non-native invasive species. Control efforts are expected to continue as is the threat weeds pose to biodiversity. Vegetation treatments in the watershed are anticipated to focus on restoring the balance between sagebrush overstory and herbaceous understory, especially on Wyoming big sagebrush sites that are important to wildlife and livestock.</p>	<p>The Proposed Action would result in an estimated total of 4.8 acres potential ground disturbance. Areas disturbed by the Proposed Action could increase the possibility of non-native species becoming established in the project area. Re-vegetation success criteria for seeding and riparian planting require a 70-80% success rate. Areas that do not meet this criteria would be replanted. Monitoring and re-vegetation of these areas would be conducted to reduce this possibility.</p>	<p>Past, present and future ground disturbing activities have and will continue to provide microsites where non- native invasive plants may establish. Within the scope of the CIAA, disturbances in the project area have little cumulative impact on non-native invasive species.</p>

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
	<p>and livestock grazing. These activities have provided ground disturbance, thus allowing invasive species to become established. Any activities that remove native vegetation and expose bare soil are likely to create niches where there is a potential for weed invasion.</p>			
Soils Resources	<p>Erosion and sedimentation have increased due to disturbances associated with agricultural and residential development and recreation. Agricultural activity has altered soil chemistry and natural soil horizons. Soils within the CIAA have been impacted by all of the past and present actions considered in this analysis. Within the CIAA, 82% of the lands are available for livestock grazing on State and Federal lands. The primary impact to soils from infrastructural development has been disturbance, runoff and off-</p>	<p>The forecasted increase in residential development, recreation and agriculture use will increase soil disturbance and runoff leading to higher levels of erosion and sedimentation.</p>	<p>The Proposed Action would result in an estimated total disturbance area of approximately 4.8 acres. The Proposed Action would alter soils resources through excavation and channel construction, and sod salvage in the project area. Project reclamation efforts would be expected to stabilize impacted soils. Successful stream reconnection could be expected to result in a more natural composition of soil resources in the project area.</p>	<p>Soil disturbances associated with agricultural and residential development and increased recreation such as OHV use would increase runoff, erosion and sedimentation to a modest degree. Within the scope of the CIAA, soil disturbances within the project area would have little cumulative impact on soil resources.</p>

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
	<p>site sedimentation associated with road construction and use. The nature and extent of the impact varies with the type of road, the extent of use, and the level of maintenance.</p>			
<p>Vegetation Type, Community and Range Resources</p>	<p>Natural vegetative communities in the CIAA have been and continue to be altered by agriculture and residential development since the late 1800s. Past livestock grazing has influenced the composition of vegetation due to dietary preference and selectivity of forage by livestock. These impacts include: removal of vegetation and/or crushing or trampling vegetation. Concentration areas, especially at water sources and along fence lines, impact the vegetation. Within the CIAA, 82% of the lands are available for livestock grazing on State and Federal lands. Vegetation is also impacted by roads, agricultural field</p>	<p>A projected increase in residential and agricultural development and recreational activity would further degrade and reduce natural vegetative communities and fragment plant communities.</p> <p>Improved grazing practices and restoration actions in the upper Pahsimeroi are expected to stabilize and improve vegetation within the CIAA.</p>	<p>The Proposed Action would result in an estimated total of 4.8 acres potential disturbance. This is anticipated to be mitigated through replanting and seeding. The Proposed Action would have a short term impact to existing vegetation in the project area. The temporary fence enclosure and let-down fence will limit impacts to vegetation within the project area along water ways and the proposed fence. In the long term, vegetation would be left in a more natural condition following successful stream reconnection. Impacts from the temporary and seasonal fences in the project area would lead to a better</p>	<p>Within the scope of the CIAA, the impacts to vegetation types, communities and range resources from the Proposed Action would have little cumulative impact on these resources within the CIAA.</p>

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
	development, and home sites in the area. The abundance of some bunch grasses has been reduced by past grazing practices.		utilization of range resources.	
Visual Resources	The past and present actions which have contributed to the characteristic landscape of the CIAA include all visible human alterations to the environment. These alterations are primarily represented in the CIAA by range improvements, vegetative manipulations, land use conversions and infrastructural development.	The past and present actions that have contributed to the characteristic landscape of the CIAA would be expected to continue into the future.	Impacts to visual resources from the Proposed Action would result in a more natural appearance of Mill Creek. Temporary fencing would result in a short term impact. The seasonal fence would be apparent on a local scale. The proposed action is not likely to result in a landscape change that would be noticeable to a casual observer. Visual changes would generally be beneficial or temporary.	Within the scope of the CIAA, impacts to visual resources from the Proposed Action would have little cumulative impact on these resources in the CIAA.
Wetlands, Riparian Zones and	Within the watershed the natural condition of riparian areas and wetlands was probably one of a shifting mosaic of variable seral communities at the watershed scale prior to white-European settlement. Water diversions	Agricultural activity and associated diversions are expected to continue to require water. The consequent effects on riparian zones and wetlands will depend on future precipitation levels and irrigation efficiency. Mill	The Proposed Action is expected to result in an increase in riparian areas and wetlands as a result of implementation of the Proposed Action. Re-vegetation success criteria for seeding and riparian planting require a 70-80% success	Riparian zones are likely to be adversely impacted by increased water demands associated with residential development and water diversions associated with agricultural activity. The incremental impact to wetland

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
	<p>associated with agricultural activity and grazing have adversely affected some riparian areas. There are approximately 164 diversions that dewater streams, impacting vegetation within riparian areas. Historic grazing activity has negatively affected riparian vegetation in some areas. Within the CIAA, 82% (Table 33) of the lands managed by state and federal agencies are allocated for grazing, but portions of these lands are fenced by exclosures. Also, a number of fences enclose spring wetland areas.</p>	<p>Creek will no longer be diverted, however hydrologic disconnection in the upper Pahsimeroi subbasin will continue to be exacerbated potentially limiting the size of riparian zones. The recent and foreseeable trend of irrigation efficiency improvements, diversion consolidation, conveyance improvements, and stream restoration are expected to result in maintenance or expansion of riparian zones and wetlands. The continued improvement in grazing management may improve riparian systems in the CIAA.</p>	<p>rate. Areas that do not meet this criteria would be replanted. Overall, the project would be expected to have a net gain in wetlands acres by constructing new stream channels and creating floodplain and riparian corridors along the new and enhanced stream channels. The new wetland areas include 0.38 acres of riverine wetland adjacent to the newly constructed stream channel and 1.2 acres of scrub/shrub wetland created in the floodplain and riparian areas along the stream channels.</p>	<p>and riparian zones by the Proposed Action would not impart a substantial reduction in the total effects of the past and current or foreseeable water diversions on wetlands and riparian zones in the CIAA</p>

Resource	Impacts of Past and Present Actions	Impacts of Reasonably Foreseeable Actions	Impacts of Proposed Action	Cumulative Impact
Wildlife, threatened and endangered wildlife and migratory birds	The past and present actions which have impacted wildlife within the CIAA are primarily represented by livestock grazing, vegetative manipulations, land use conversions, and infrastructural development. The CIAA used here is delineated to encompass the majority of the population of each specific species that use the habitat influenced by the actions proposed in this document in conjunction with the cumulative impacts occurring to the habitat within the CIAA boundary.	The level and character of livestock grazing and infrastructure are expected to remain consistent into the future. Vegetation treatments are expected to focus on restoring the balance between sagebrush overstory and herbaceous understory. Land use is anticipated to change from agricultural to other uses.	Impacts to wildlife from the proposed action include increased fence densities in the project area and ground and vegetation disturbance in the short term. In the long term, wildlife would be impacted beneficially by an increase in riparian vegetation and naturalness of the project area.	With the past, present and reasonably foreseeable projects expected to continue in the CIAA, impacts to wildlife from the Proposed Action would have an immeasurable cumulative impact within the scope of the CIAA.

Monitoring and Maintenance

The Mill Creek Project will require monitoring and maintenance to ensure that project goals and objectives are achieved. Post project monitoring will be necessary to evaluate the re-vegetation success and determine maintenance needs. Channel monitoring will be needed during and following high water events to evaluate how the channel responded to these events and to determine the need for maintenance of the channel features or structures. Monitoring for weeds will be needed to ensure that weeds do not become established in the disturbed areas.

Maintenance needs may include maintenance of the new channels and structures, maintenance of the hardened crossing, maintenance of the ditch and pipeline, fence repair and supplemental watering of the plantings. Maintenance responsibility for the project components are listed in Table 18.

Supplemental watering of the riparian area plantings should be done to enhance the survival of the plantings. Watering should be done twice in August during the first two growing seasons. Each plant should receive a minimum of 5 gallons of water when watering to ensure that water extends deep into the soil profile to reach the new roots. This schedule should be increased during drought conditions. During drought conditions it may also be necessary to provide some supplemental watering to the seeded areas.

Reseeding or supplemental seeding of the constructed floodplain and sod salvage area may be necessary depending on the success of the initial seeding. In addition to achieving the desired ground cover, it will also be necessary to determine if the desired species are colonizing these sites. Re-vegetation success criteria are listed in Table 19.

A temporary fence will be constructed around the new channel and floodplain features. This fence is designed to restrict livestock and wildlife access to these areas until they are re-vegetated and the stream channel is stable. The fence is anticipated to remain in place for approximately 5 years. The fence will be removed after the criteria for re-vegetation and channel stability have been achieved. Stream channel stability criteria are based on goals established in the Pahsimeroi TMDL for reducing sediment loading to streams (IDEQ 2001).

Table 18. Monitoring and Maintenance Responsibility for Mill Creek Reconnect Project

Project Components	BLM	Trout Unlimited	Big Creek Ranch
New Channel Construction	Responsible for on-site archeological monitoring during channel construction on private land	Responsible for short term monitoring and maintenance of new channels and structures of new channels and structures should any erosion, re-seeding or unforeseen required	Responsible for long term monitoring and maintenance of channels and structures

Project Components	BLM	Trout Unlimited	Big Creek Ranch
		maintenance of instream structures occur	
Re-vegetation		Responsible for monitoring re-vegetation success and reseeding or replanting, if necessary	Responsible for supplemental watering of plantings for 2 growing seasons
Weeds	Monitoring and weed treatment on public land		Monitoring and weed treatment on private land
Fence Construction and Maintenance	Establish DMA and evaluate livestock use pattern and intensity	Responsible for maintenance of fence along new channel and removal of fence along new channel once re-vegetation goals are achieved	Installation and maintenance of the seasonal let-down fence along Big Creek in the County Line Allotment
ROW for ditch and pipeline	Compliance inspection following project construction and subsequent periodic compliance inspections during the term of the ROW		Responsible for maintenance of ditch and pipeline
Hardened Crossing			Responsible for maintenance of hardened crossing

Table 19. Re-vegetation Success and Channel Stability Criteria for Mill Creek Project

Parameter	Success Criteria
Seeding success in upland areas	Achieve 70% cover in upland areas with 20% of aerial coverage in desired species. Desired species are those in initial seed mix or native species appropriate for the site. If monitoring after two growing seasons shows that this criteria is not being met or that the site is not moving towards this criteria, than areas not meeting this criteria should be reseeded. Cover includes live plants, litter and rock.
Seeding success in wetland areas	Achieve 90% cover in wetland areas with 20% of aerial coverage in desired species. Desired species are those in initial seed mix or native species appropriate for the site. If monitoring after two growing seasons shows that this criteria is not being met or that the site is not moving towards this criteria, than areas not meeting this criteria should be reseeded. Cover includes live plants, litter and rock.
Riparian planting success	Achieve 80% survival in riparian plantings after the first two growing seasons. If 80% is not achieved the area should be replanted unless natural recruitment of woody species is occurring in sufficient quantity to achieve the initial planting density of 1,000 plants

Parameter	Success Criteria
Channel Stability	80% stable streambanks

Chapter 5. Consultation and Coordination

Governments, Agencies, and Persons Consulted

On October 18, 2013 the BLM-Challis Field Office sent written correspondence to the Shoshone-Bannock Tribes notifying Fort Hall Business Council Chairman Nathan Hall and tribal technical staff of the opportunity to consult and comment on the Mill Creek Reconnect proposed project. Because the project was in the early stages of NEPA analysis, the letter provided a description of the proposed project (including maps), a timeline for the analysis process, and a list of potential issues and possible outcomes. To date, the BLM-Challis Field Office has received no communication from the Business Council or tribal technical staff regarding this proposed project. The BLM-Challis Field Office will again invite the Shoshone-Bannock Tribes to consult and comment on this proposed project following the completion of the draft EA.

Multiple efforts were made to consult and coordinate with individuals, organizations, and agencies during the development of resource issues and alternatives analyzed in this document. The CFO conducted internal scoping initially during three project proposal pre-planning meetings, held between January and March of 2013. This project proposal was also reviewed and ranked by the Upper Salmon Basin Watershed Project Technical Team on April 3, 2013. The Technical Team consists of representatives from the Idaho Office of Species Conservation, IDFG, Shoshone-Bannock Tribes, NRCS, Lemhi Soil and Water Conservation District, BLM, Salmon-Challis National Forest, NMFS, USFWS, The Nature Conservancy, Trout Unlimited, Idaho Department of Water Resources, Idaho Department of Environmental Quality, Custer SWCD, and the U.S. Bureau of Reclamation. The priority ranking was 88 (“high”) based on beneficial impacts to habitat limiting factors for instream flow and physical barriers.

On August 16, 2013, the project was uploaded to the BLM E-Planning site. A public scoping letter was prepared by the CFO and was initially placed on the E-planning site on September 26, 2013, prior to the federal employee furlough which occurred in fall 2013. Upon return of CFO employees, the scoping letter was updated and mailed to interested publics (list below) on October 18, 2013. Written feedback, generally in support of the project proposal, was received from the IDFG on November 15, 2013 and Idaho Conservation League on November 18, 2013.

In May 2014, the CFO began consulting with the NMFS and the USFWS. The BA and request for concurrence were submitted, to conclude ESA Section 7 consultation (informal), on August 4, 2014. Informal consultation is anticipated to be completed with receipt of letter of concurrence prior to September 15th. Preliminary concurrence with the BLM determination that the proposed action May Affect, but is Not Likely to Adversely Affect was achieved through ESA streamlining procedures.

Interested Publics List:

L&M Cattle Co. – Permittee

Shively Brothers – Permittee

Idaho State Department of Agriculture

Idaho State Department of Fish and Game

Idaho State Department of Lands

Chairman, Tribal Business Council, Shoshone-Bannock Tribes

U.S. Fish and Wildlife Service

Western Watersheds Project

Table 20. List of BLM Preparers

Section of EA	Specialist
Rangeland Resources, Vegetation types, Communities	Carren Morgan, Rangeland Management Specialist and Peggy Redick, Supervisory Resource Management Specialist
Farm Lands (prime or unique), Existing and Potential Land Uses	Joni Cain, Land and Realty Specialist
Economic and Social Values, Environmental Justice	Ryan Beatty, Fisheries Biologist and BLM Project Lead
Geology, Minerals	Antonia Hedrick, Geologist
Cultural Resources, Native American Religious Concerns, Indian Trust Resources, Tribal Treaty Rights, Paleontological Resources	Carol Hearne, Archeologist and Supervisory Resource Management Specialist
Access, Recreation, Wilderness, Wild and Scenic Rivers, Visual Resources	Benjamin Roundtree, Recreation Specialist
Botany, TES Plants, ACECs	Leigh Redick, Fire Ecologist
Forest Resources	Leigh Redick, Fire Ecologist
Wastes, Hazardous or Solid	Mike Whitson, Hydrologist
Invasive, Non-native Species	Leigh Redick, Fire Ecologist
Threatened and Endangered Fish, Sensitive Fish, Fisheries	Ryan J. Beatty, Fisheries Biologist and BLM Project Lead
Wetlands and Riparian Zones, Floodplains, Water	Mike Whitson, Hydrologist

Section of EA	Specialist
Quality, Soils, Air Quality	
Wildlife, TES Animals, Migratory Birds	Bart Zwetzig, Wildlife Biologist

Table 21. List of Third-Party NEPA Contractor Perparers¹

Section of EA	Specialist
Rangeland Resources, Vegetation types, Communities	Skeet Townley, Range Specialist; Michelle Tucker, Botanist, Riparian Restoration Specialist
Visual Resources	Skeet Townley, Range Specialist
Botany, TES Plants	Michelle Tucker, Botanist, Riparian Restoration Specialist
Invasive, Non-native Species	Michelle Tucker, Botanist, Riparian Restoration Specialist
Threatened and Endangered Fish, Sensitive Fish, Fisheries	Jim Gregory, Fisheries Biologist; Michelle Tucker, Botanist, Riparian Restoration Specialist
Wetlands and Riparian Zones, Floodplains, Water Quality, Soils, Air Quality	Betsy Rieffenberger, Hydrologist; Michelle Tucker, Botanist, Riparian Restoration Specialist
Wildlife, TES Animals, Migratory Birds	Skeet Townley, Range Specialist; Michelle Tucker, Botanist, Riparian Restoration Specialist

¹Aspect Consulting, LLC

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