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LEMHI-HAWLEY CREEK-03 DIVERSION IMPROVEMENT PROJECT ENVIRONMENTAL ASSESSMENT

DOI-BLM-ID-I040-2013-0004-EA

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BLM Salmon Field Office

June 2014

INTRODUCTION

BACKGROUND

Historically, the Hawley Creek Watershed in the Lemhi River Subbasin was a major anadromous fish producer (Warren & Bliss, 2006). Currently, Hawley Creek supports populations of Endangered Species Act (ESA) listed Columbia River bull trout, resident rainbow trout, and is Snake River spring/summer Chinook salmon designated critical habitat. An unscreened irrigation diversion on lands managed by the Bureau of Land Management Salmon Field Office (BLM SFO) diverts a 15.7 cubic feet per second (cfs) of Hawley Creek water right from LHaC-03 into an open ditch. The ditch flows through BLM lands to McFarland Livestock Company Inc.'s (McFarland Livestock) private land point-of-use (POU). The Proposed Action would construct a new point-of-diversion (POD), new headworks, fish screen, and pipeline to conserve instream flow, facilitate fish migration, and improve juvenile rearing and bull trout habitats.

The Proposed Action is a cooperative effort between the Idaho Office of Species Conservation Upper Salmon Basin Watershed Program (OSC-USBWP), the Lemhi Soil and Water Conservation District (LSWCD), the Natural Resources Conservation Service (NRCS), Idaho Department of Fish and Game Screen Program (IDFG), McFarland Livestock, and the BLM SFO to facilitate anadromous fish migration, and improve juvenile rearing and bull trout habitats. The project concept was reviewed by the OSC-USBWP Technical Team. This Team consists of regional resource professionals (biologists, hydrologists, etc.) who provide technical expertise for project development and ranking, based on a projects' biological merit. The project was further reviewed and supported by the LSWCD Board and OSC-USBWP Advisory Board. Upon submission for funding to the Pacific Coastal Salmon Recovery Fund, the project was reviewed and approved by a board of state resource professionals.

PURPOSE AND NEED

The existing diversion structure is a fish passage barrier that entrains fish into the ditch and may dewater the stream during seasonal low flow (Figure 1and Figure 2). The Proposed Action would move the POD structure upstream, install a fish screen system, and pipe water to the head of the existing irrigation ditch. These modifications would provide passage, prevent entrainment, and provide up to 5.2 cfs (3,841 acre feet per year) of instream flow to Hawley Creek during the irrigation season.

The need for action is established by the 1976 Federal Land Policy and Management Act (FLPMA) direction to respond to the right-of-way (ROW) requests and to grant ROWs to qualified individuals.

Figure 1: Current LHaC-03 diversion structure

Figure 2: Current LHaC-03 diversion structure (right of photo) and ditch (left of photo)

LOCATION OF PROPOSED ACTION

The LHaC-03 diversion project is in the U.S. Geologic Survey (USGS) 5th field hydrologic unit code Hawley Creek Watershed (HUC 170602040202) on public land managed by the BLM SFO. Hawley Creek is a tributary to Eighteenmile Creek in the Lemhi River Subbasin. The POD is approximately 8.5 miles southeast of Leadore, Idaho in Lemhi County (Figure 3).

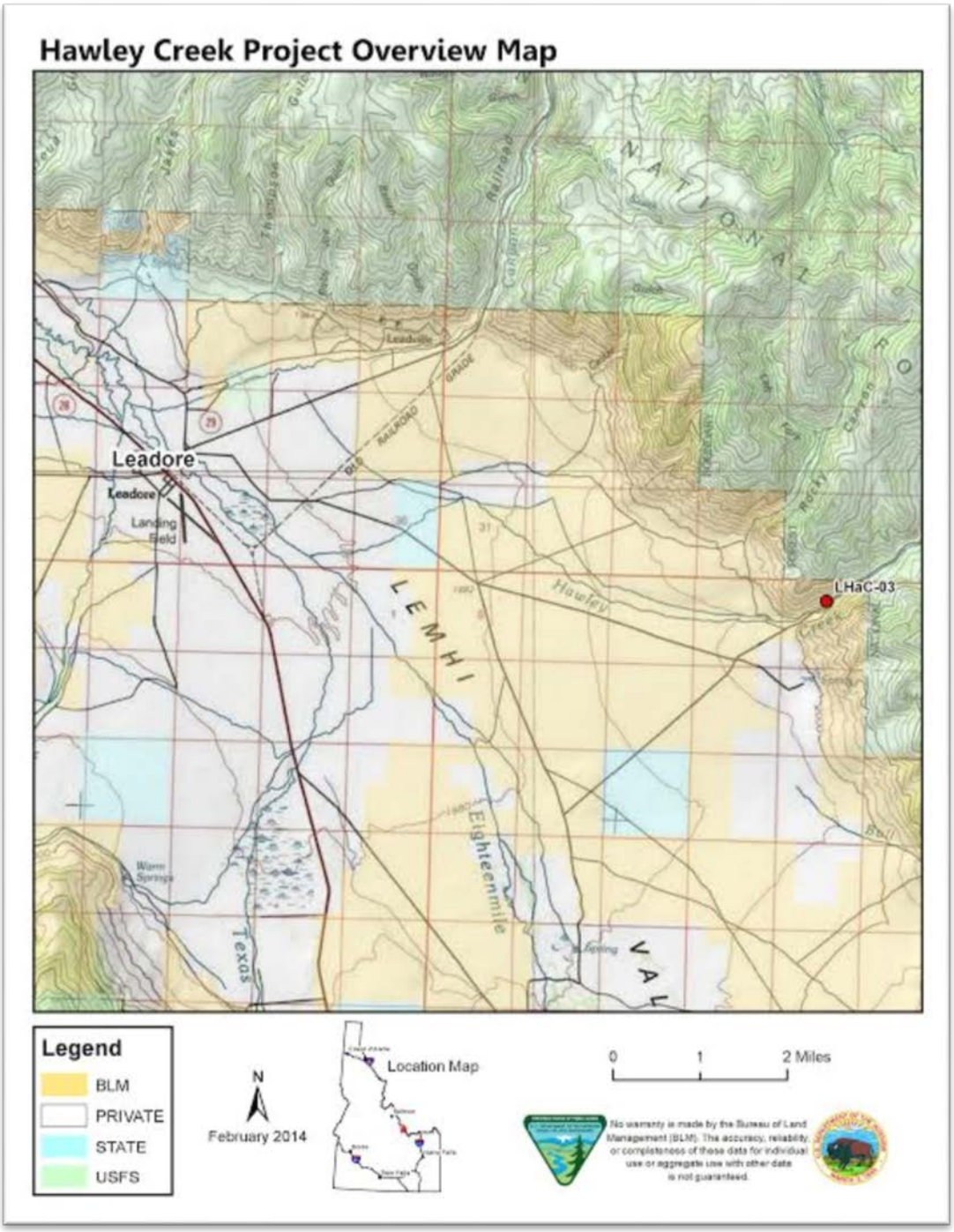

Figure 3: LHaC-03 project area map

The new POD and fish screen system would be installed near the mouth of Hawley Creek canyon on land managed by the BLM SFO in T. 15 N., R. 27 E., section 2, NWSENE, Boise Meridian (lat.44.66155, long.113.20134) (Figure 4). A new POD would be built approximately 350 feet upstream from the existing POD to facilitate the installation and operation of a NMFS approved fish screen (Figure 4).

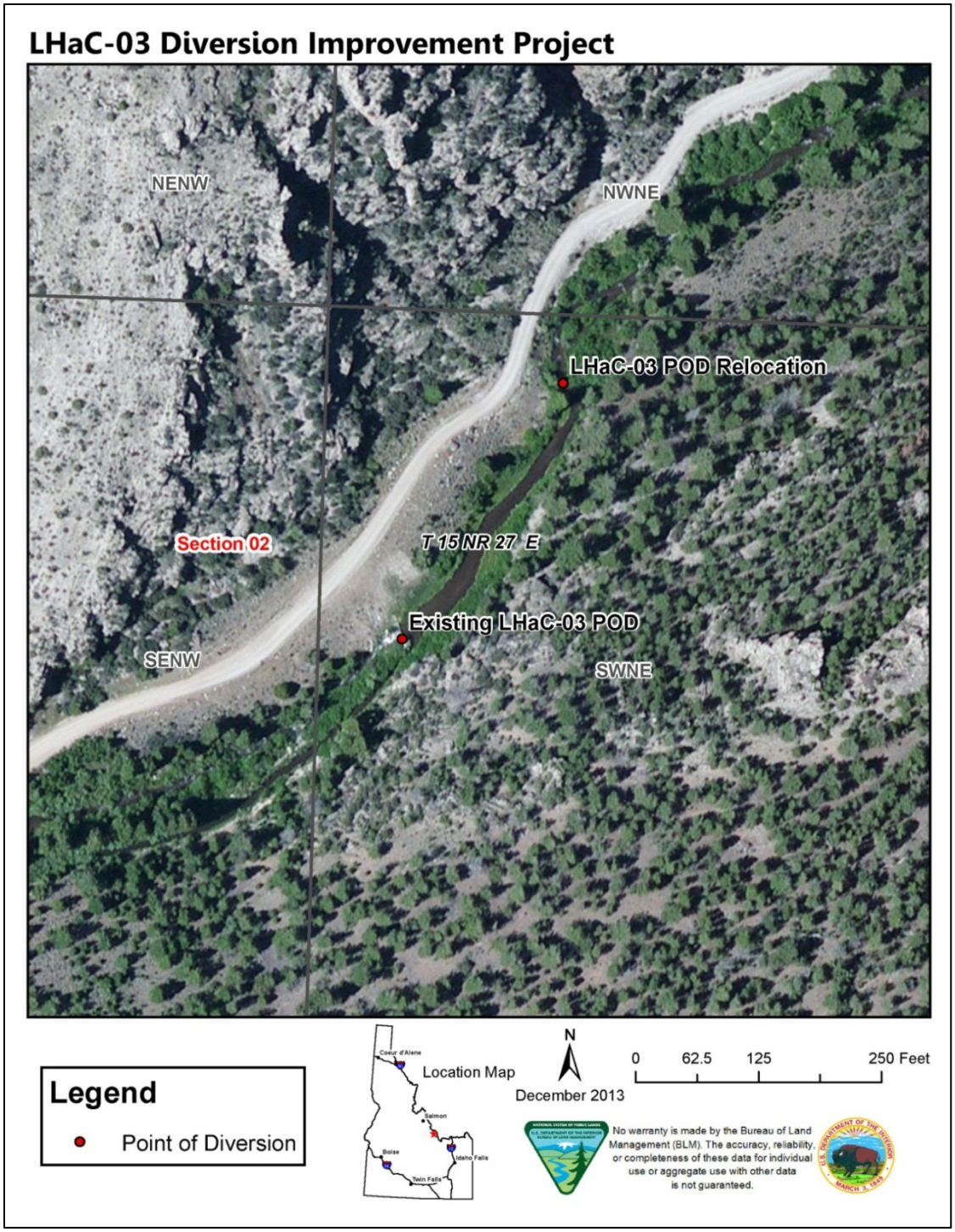

Figure 4: Existing and proposed points of diversion

CONFORMANCE WITH APPLICABLE LAND USE PLAN

The Proposed Action has been reviewed for conformance with the 1987 Lemhi Resource Management Plan, as amended (RMP). The Proposed Action is in conformance with the Lemhi RMP objectives to benefit threatened and endangered species and complete Section 7 consultation for actions that "may affect" these species (RMP pg. 5), and the allowable uses in the Standard Operating Procedures (RMP pg. 27).

RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

- Federal Land Management Policy Act of 1976, as amended
- ESA Section 7 consultation Endangered Species Act (ESA) of 1973, Section 7, as amended
- Lemhi Resource Management Plan 1987, as amended
- Interim Strategies for Managing Anadromous Fish-producing Watershed in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (1995)
- Bald and Golden Eagle Protection Act 1962
- Migratory Bird Treaty Act of 1918 (MBTA)
- Coordinated Implementation Plan for Bird Conservation in Idaho
- BLM 6840 Manual on Special Status Species Management 2008
- BLM National Sage-Grouse Habitat Conservation Strategy 2010
- Idaho Sage-grouse Conservation Strategy 2006
- Greater Sage-grouse Interim Management Policies and Procedures (IM-2012-043)
- Challis Sage-grouse Local Working Group Plan 2007
- Clean Air Act of 1970 (amended 1990)
- Clean Water Act of 1972
- Code of Federal Regulations (CFR); Title 40; Part 1500 – Council on Environmental Quality 2009
- CFR; Title 43; Part 4100 – Grazing Administration – Exclusive of Alaska 2006
- Idaho Comprehensive Wildlife Conservation Strategy 2005
- American Indian Religious Freedom Act of 1978
- Archaeological Resource Protection Act of 1979

The 1868 Fort Bridger Treaty, between the United States and the Shoshone and Bannock Tribes, reserves the Tribes right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone-Bannock have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall Reservation that were ceded to the federal government under the Agreement of February 5, 1898, ratified by the Act of June 6, 1900. Under this treaty and those agreements, the federal government has a unique trust relationship with the Shoshone-Bannock Tribes. BLM has a responsibility and obligation to consider and consult on potential effects to natural resources related to the Tribes treaty rights or cultural use.

SCOPING, ISSUES, AND DECISIONS TO BE MADE

SCOPING

BLM SFO internal project scoping meetings were held in 2012 and 2013.

Project planning meetings and field reviews with BLM SFO, BLM Idaho Falls District (District), IDFG, OSC-USBWP, LSWCD, McFarland Livestock, NRCS, and Lemhi Cooperative Weed Management Area staff were held in 2012 and 2013.

This project proposal was reviewed and ranked by the Upper Salmon Basin Watershed Project Technical Team (Technical Team) during the scoping process. The Technical Team consists of representatives from the OSC-USBWP, IDFG, Shoshone-Bannock Tribes, NRCS, LSWCD, BLM, Salmon-Challis National Forest, NMFS, USFWS, TNC, Trout Unlimited, Idaho Department of Water Resources, Idaho Department of Environmental Quality, Custer SWCD, and Bureau of Reclamation.

Field reviews of the project ESA Action Area with the BLM SFO fish biologist and the Level I Team NMFS and USFWS biologists were held in 2013 as part of the ESA Section 7 consultation streamlining process. The ESA Action Area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (Federal Register, 2010). This is the area where the action and any interdependent and interrelated actions may result in direct, indirect, or cumulative affects to ESA Endangered, Threatened, Proposed, and Candidate species, and Chinook salmon designated critical habitat and essential fish habitat addressed in this BA. The project Action Area is: (1) Hawley Creek downstream of the new LHaC-03 diversion to the LHaC-02 diversion ¾ mile downstream that may capture all the flow in Hawley Creek depending on the water year, (2) the BLM SFO land disturbed by construction of the new POD and installation of the new fish screen system, (3) the existing ditch on land managed by the BLM SFO, and (4) the surrounding BLM SFO sagebrush steppe habitat that is flooded by the LHaC-03 ditch during spring high flow.The BLM SFO posted the proposed project on the BLM e-Planning website[1] on April 4, 2013.

SCOPING COMMENTS

No written scoping comments were received.

ISSUES

Through the interagency scoping, project planning, and ESA consultation processes, the BLM interdisciplinary team identified the following issues.

Sediment: Fine sediment has accumulated behind the existing check structure. Downstream transport of this sediment following removal of the check structure and construction of the new diversion structure is a potential impact on fish and aquatic habitat.

Blasting: IDFG found bedrock in the construction site when they dug test pits for the fish screen system. Blasting to complete construction of the fish screen structures is a potential impact on juvenile and adult bull trout.

[1] https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do

Noxious and Invasive Weeds: Ground disturbance in the construction site are potential sites for noxious and invasive weed expansion or establishment.

DECISIONS TO BE MADE

The BLM SFO Field Manager is the authorized officer responsible for the decisions regarding management of public lands within the project area. The EA will provide information for the authorized officer to make an informed decision. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required.

If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information for the authorized officer to make an informed decision whether to authorize: (1) construction of an instream rock A-weir diversion structure and a rock grade control structure, (2) a ROW to IDFG for a fish screen system, and (3) a ROW to McFarland Livestock for an irrigation pipeline that would span Hawley Creek between the fish screen on the north bank and the head of the existing ditch on the south bank.

THE PROPOSED ACTION AND THE NO ACTION ALTERNATIVES

PROPOSED ACTION

Summary of Proposed Action

A ROW would be authorized to IDFG for a fish screen system comprised of: (1) a headworks structure, (2) a pipeline from the headworks structure to a sediment basin, (3) a fish screen, (4) a secondary debris screen, and (5) a fish return pipe.

A ROW would be authorized to McFarland Livestock to connect the fish screen system with a pipeline which would span Hawley Creek between the fish screen on the north bank and the head of the existing ditch on the south bank.

A new instream rock A-weir diversion structure and a rock grade control structure would be constructed. The existing POD and new POD are in the same legal location so an IDWR transfer is not required.

Details of these project components are described in sequence below.

Construction Schedule

This project would be implemented in 2014. Construction would begin on August 1, and is expected to take 6-7 weeks. The project duration would be reduced to the shortest time possible to complete project objectives safely and effectively.

Channel Dewatering and Fish Bypass System

A temporary bypass system would be used to dewater the project reach during construction of the instream structures and headworks structure and to provide downstream fish passage around the site (Appendix A). The instream work area would extend about 350 feet upstream of the existing diversion structure, requiring about 6,300 square feet (0.14 acre) of the stream to be

dewatered during construction. Currently this section is low gradient, run habitat with no pools or large woody debris. The stream flow would be diverted around the construction area using a temporary bypass system consisting of a cofferdam and some minor excavation near the streambank (Appendix A). A temporary channel-spanning coffer dam of washed gravel bags, plastic sheeting, and native material would divert water down the bypass system. Gravel bags would be used for a downstream coffer dam to keep the construction area dewatered. Approximately 10 feet downstream of the bypass POD the water would enter a smooth interior, 3.5-foot diameter, polyethylene pipe which would convey the water and fish downstream of the construction site and daylight the water into the existing stream channel. There is no upstream fish passage at the existing LHaC-03 diversion now, and none would be provided during construction.

The construction would occur in August and September when instream flows are at a seasonal low. The flows are expected to be less than 15 cfs during time of construction. All of the Hawley Creek water would be diverted through the bypass system by gravity flow, without the aid of pumps.

Bypass system construction limits would be established (Appendix A) and Best Management Practices (BMPs) would be implemented in accordance with the drawings and specifications prior to the clearing, grubbing, and excavation.

The instream work area would be dewatered gradually to encourage fish to emigrate from the area and decrease the risk of stranding. IDFG would conduct fish salvage by electrofishing and netting in the dewatered section after water is turned into the bypass channel.

After initial drawdown, the work area would be dewatered using construction pumps. The water would be pumped using a 3/32-inch diameter screen as per NMFS' specifications (Appendix B). The water from the dewatered work area would be pumped into the existing irrigation ditch, or other measures would be used to filter the water before it is returned to the stream.

After the instream work is complete, water would be reintroduced slowly to the stream channel. The stream would be allowed to cut a new channel through the deposition, down to the underlying boulder-cobble substrate. The LHaC-02 diversion, ¾ mile downstream would be closed while the turbid water is released at LHaC-03 to prevent sediment from clogging the LHaC-02 ditch and pipeline.

Once construction is complete, the bypass system would be backfilled and returned to the pre-construction elevation using soil stockpiled from the excavation.

New Diversion Structures

The proposed diversion would include a rock A-weir, a rock grade control structure, and a lockable, H-style low profile metal headgate structure (Appendix A). The POD would be moved 350 feet upstream of the existing POD, and to the north side of Hawley Creek (SW¼NE ¼, Section 2, T. 15 N., R. 27 E.) (Figure 5 and Figure 6; Appendix A).

The rock A-weir and grade control structures would stabilize the stream below the POD. These structures would provide irrigation water and fish passage 90 percent of the time during high and low flows. Subangular boulders 2.5-3 foot diameter, 18-inch diameter riprap, and aggregate would be used to build the structures (Table 1). As per NMFS criteria, there would be a

maximum 0.7-foot elevation difference between each of the notches in the A-weir to provide upstream passage for juvenile fishes. The structures would facilitate sediment transport through the project area, dissipate the stream's energy, and create small cascades to facilitate fish passage. The pools below the A-weir and the grade control structure would provide fish holding habitat. Construction would be supervised by an IDFG Screen Program engineer to establish top of structure elevation and by an IDFG fisheries biologist to meet fish passage requirements.

The new headworks would be a low profile, steel inlet structure with a lockable slide gate and trashrack fabricated by IDFG (Appendix A). A grated operating deck behind the slide gate would be installed to improve access and safety when the water user is adjusting flows. Elevation of the deck would be above the 50-year flood event. The headgate would be lockable, and a flow measuring device would be installed.

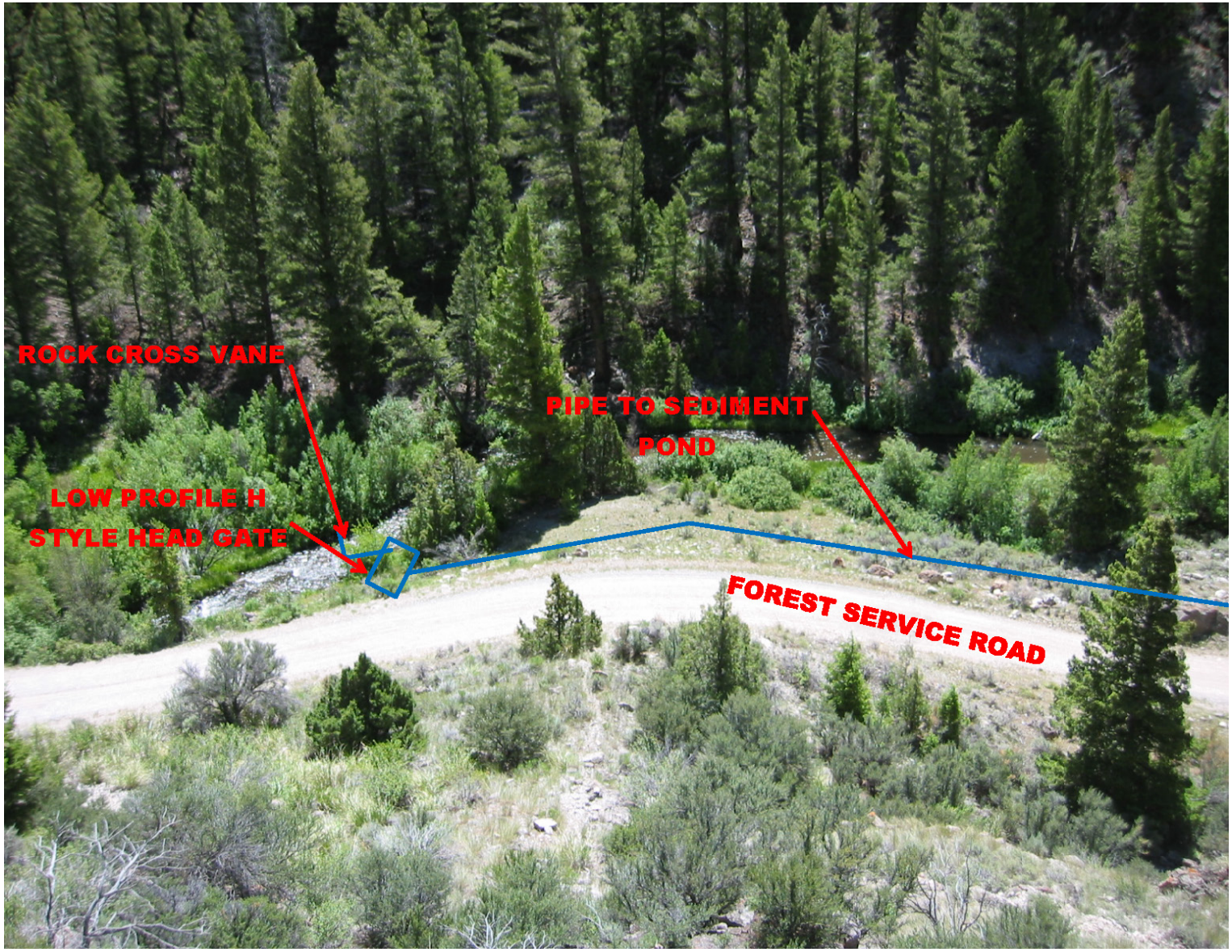

Figure 5: Location of the proposed headworks and pipeline to fish screen

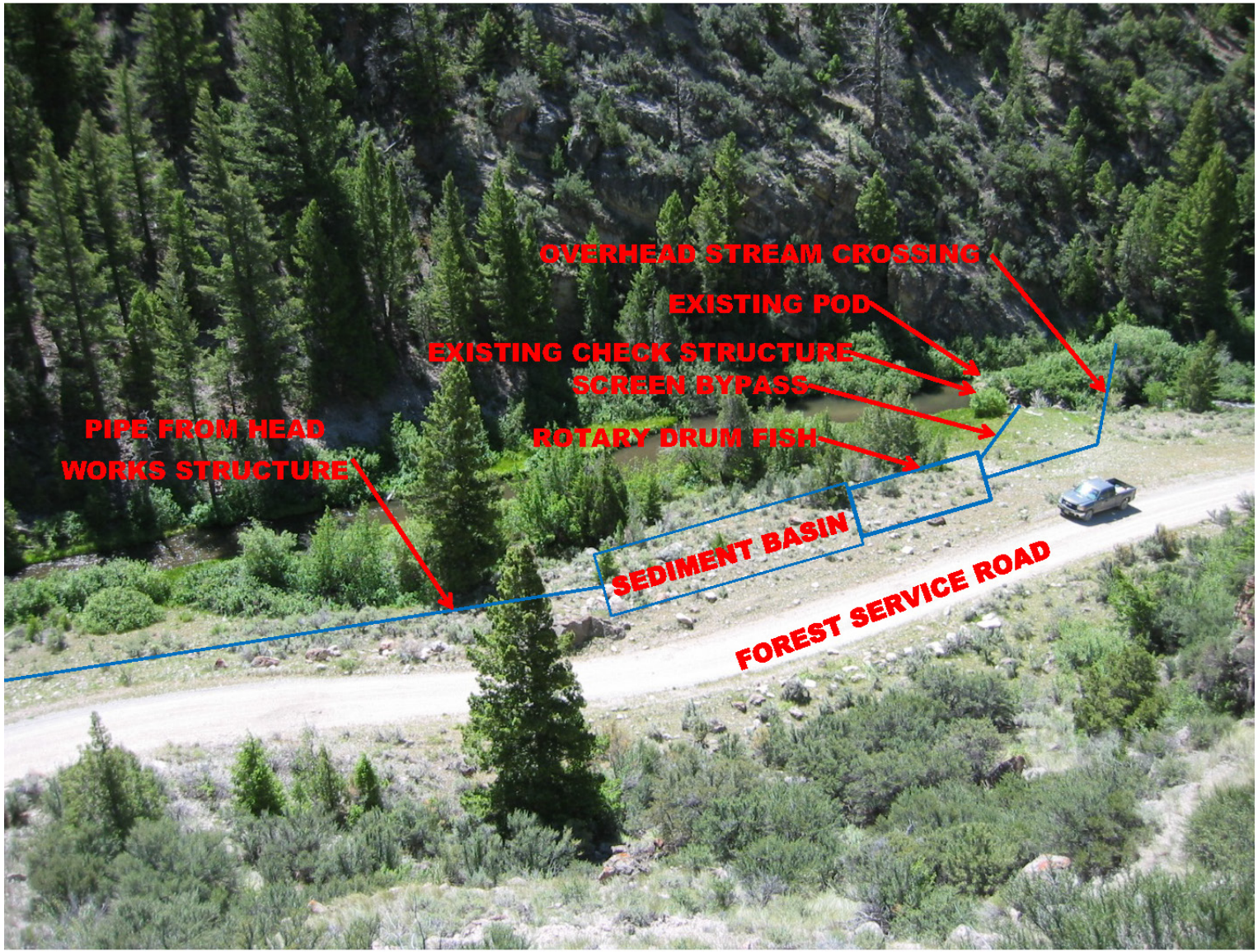

Figure 6: Proposed fish screen system, pipeline across Hawley Creek to beginning of buried pipeline

One cubic yard of concrete would be needed to anchor the headbox against uplift. No uncured concrete would come in contact with flowing water. About 15 cubic yards of riprap would be used to reinforce the streambank and protect the structure (Table 1). Several Douglas-fir trees may be removed during construction (*see Vegetation Plan*, below).

Table 1: Estimated instream excavation and fill volumes

Action	Instream Excavation Volume (yd3)	Fill Volume (yd^3)		
		Large Rock 2.5-3 ft.	18" Riprap	Compacted Aggregate
Rock A-weir & grade control structure	25	15	5	5
Bank stabilization adjacent to inlet, A-weir, and grade control structure	10	0	10	0

Fish Screen System

A water delivery pipeline would be installed from the new diversion structure to the fish screen. The pipeline would be approximately 50 ft. from the Hawley Creek Road and a minimum of 20 horizontal feet from the stream (Appendix A). The pipe would be buried from five feet to over ten feet deep on a 2:1 slope. There is about four feet of unconsolidated rocky soil over bedrock that begins about 70 feet below the new headbox structure. The bedrock would require blasting to install the pipeline. IDFG anticipates the blasting activities would be completed in a week or less.

The pipeline would connect to an open sediment basin (Appendix A). The purpose of the sediment basin would be to decrease the velocity of the piped water so that sediment would drop out in the basin before water enters the fish screen. Large rock would be used to riprap the inlet and outlet of the fish screen sediment basin. The basin would be approximately 30-feet long, 27-feet wide at the top, and 7-feet wide at the bottom. The basin sides would be a 2:1 slope.

IDFG would install a 24-foot long by 10-foot wide rotary drum, self-cleaning fish screen approximately 260 feet below the new headworks structure to prevent fish entrainment into the pipeline (Appendix A).

The fish screen was designed in accordance with NMFS anadromous salmonid passage facility design (USDC NMFS, 2011). The design flow is for 12.54 cfs at 85% submergence, which includes 10.46 cfs for irrigation, 0.8 cfs for the fish return flow, and 1.0 cfs for the screen cleaning bubbler.

The screen would be set in a double, concrete bay with a trash rack on the intake side of the screen. The screen floor and walls would be cast-in-place concrete. The screen and other mechanical components would be fabricated steel built off-site. The completed fish screen structure would measure 24 by 50 feet.

To meet NMFS criteria, the fish screen would utilize a bypass pipe to transport entrained fish back to the stream (Appendix A). The 60 foot long bypass pipe would be a buried 10-inch

diameter PVC pipe. The pipe would start at the fish screen and be sloped at 4% towards the stream where it would daylight far enough into the stream channel to prevent injury to fish. Construction of the fish bypass pipe would require excavation of a 15 ft. wide ditch. Ten linear feet of 3 to 15 inch diameter riprap would be used to harden the streambank at the outfall. The riprap would be 2-feet thick on a 1.5 to 1 maximum side slope (Appendix A: Typical Riprap Cross Section Detail).

Figure 7: Proposed fish screen site and stockpile area for excavated materials adjacent to the existing diversion

The maximum surface area of ground disturbance for construction of the new diversion, temporary bypass, fish screen system, and the irrigation conveyance pipe from the fish screen to the head of the existing ditch is about 0.5 acre (Appendix A). The sites that would be disturbed by construction of the existing diversion structure and pipeline construction in Table 2 have been previously disturbed. The fish screen and sediment basin would permanently occupy 0.02 acre. The disturbed areas around the fish screen system and along the pipeline would be reseeded and treated for noxious weeds following construction (see: *Vegetation Plan*).

Table 2: Short-term surface site disturbance

Action	Estimated Surface Disturbance
construction of the new diversion and fish screen system	0.5 acre on BLM land
stockpiling and equipment staging area near the new Hawley Creek bridge	0.1 acre on BLM land
stockpiling and equipment staging by the BLM cattleguard	0.7 acre on BLM land

BLM Right-of-Way

BLM would authorize two ROWs: one to IDFG for the fish screen system and one to McFarland Livestock for the new pipeline between the fish screen and the head of the ditch.

The McFarland Livestock ROW for the pipeline would be 200-feet long by 25-feet wide. Total ROW encumbrance would be 0.11 acre.

The IDFG ROW for the fish screen system would be 400-feet long by 25-feet wide. The construction disturbance area would parallel the Hawley Creek Road, approximately 50 feet from the road (Appendix A). A 25-foot long by 20-feet wide parking area that is used to maintain the existing diversion would be used as a parking area to maintain the proposed fish screen system. Total ROW encumbrance would be 0.24 acre.

Materials Stockpiling, Equipment Staging, and Refueling Areas

All construction equipment would be pressure washed before bringing on-site to preclude the transfer of noxious weeds and to inspect for oil leaks. Project managers would inspect equipment prior to arriving on site.

The construction equipment would access the staging, fueling, materials stockpile, and the work areas via Hawley Creek Road (Forest Road 275). Equipment that may be stored on-site includes track excavators, rubber-wheeled loader, pickup trucks, construction/cargo trailers, dewatering pumps, larger haul trucks, and other small tools. A fuel spill kit would be maintained on site in case of a broken hydraulic hose or other small spill of petroleum products.

The largest equipment staging, refueling, and material stockpile area would be located at the BLM boundary fence and cattleguard on Hawley Creek Road (Figure 8). This a 350-foot long by 82 foot wide area (0.7 acre) is bounded by an irrigation ditch to the south, and the 25-foot wide road and an abandoned irrigation ditch to the north.

Figure 8: Equipment staging, refueling, and materials stockpile area at the BLM boundary fence and cattleguard. An abandoned ditch parallels the north side of the road (left of photo). An active irrigation ditch parallels the south side of the staging area (right of photo).

The second equipment staging, refueling, and material stockpile area would be on the south side of Hawley Creek Road, west of the new Hawley Creek bridge (Figure 9). This area was used as an equipment staging area during the bridge construction in April 2013. The 60-foot wide by 90-foot long area (0.1 acre) is bounded by the LHaC-03 ditch to the south and the 25-foot wide road to the north. Hawley Creek is another 130 feet from the north side of the road.

Figure 9: Equipment staging, refueling, and stockpile area west of the new Hawley Creek bridge. The LHaC-03 ditch is to the left of the photo; Hawley Creek is to the right of the road.

A temporary stockpile area for excavated material would be located between existing diversion check structure and Hawley Creek Road, in a 25 x 20 foot area (0.01 acre) that was previously excavated to build the existing diversion structure and is currently used as a parking area to access/maintain the existing diversion structure (Figure 10). Sediment barriers would be used to contain the stockpiled material. This area would also serve as the parking area for future fish screen maintenance. Equipment would not be staged or refueled in this area.

Trucks and equipment would not be staged or parked downstream of the current diversion structure in the area flagged by the BLM archaeologist to protect cultural resources (Figure 10).

Topsoil and organic matter (if any) would be stockpiled separately from C-horizon soil and rocks to be used for site reclamation.

Figure 10: Parking and materials stockpile area adjacent to the existing diversion, and the flagged cultural resource protection buffer. The buffer area cannot be used for materials storage, equipment staging or parking to protect cultural resources.

Vegetation Plan

Vegetation removal and ground disturbance would be limited to the project areas described above. Most of these areas have been previously disturbed. All existing native vegetation would be preserved and replanted whenever possible. Several Douglas-fir trees would be removed to build the new diversion and the fish screen system. The other vegetation adjacent to the stream is expected to be undisturbed. If willows or other woody riparian shrubs are disturbed during construction, they would be cut back to encourage re-sprouting. Any willows or other woody riparian shrubs that need to be removed during construction would be replanted to stabilize and revegetate the disturbed banks. Following construction, the new, larger floodplain area between the old POD and the new POD would be planted with native sedge plugs from the adjacent floodplain after the stream has cut a new course.

The head of the ditch would be plugged with large rock, material excavated from the ditch, sedge plugs, and the Douglas-fir rootwads removed during construction. Mature willow clumps would be planted into the upstream face of the plug. The mature willow clumps would be salvaged from the section of the ditch that parallels the Hawley Creek Road or crosses through the sagebrush.

IDFG would reseed the area around the fish screen system with the BLM approved seed mix and seeding rates specified in Appendix C, and treat this area and the parking area for noxious weeds annually.

LSWCD would hydro-seed the rest of the disturbed BLM land along the pipeline with the seed mix and seeding rates specified in Appendix C.

Lemhi Cooperative Weed Management Area (LCWMA) crews and BLM staff would treat noxious weeds in all of the other disturbed areas on BLM land for three years, or as long as required following implementation.

Operation and Maintenance

The fish screen would operate during the irrigation season, typically May 1 to September 30. The IDFG summer crews would check and maintain the fish screen on a regular basis; typically every other day during operation.

IDFG would be responsible for maintaining the sediment basin and removing the accumulated sediment. This maintenance would occur after the irrigation season when the headgate is closed and the fish screen system is dry. Sediment removed from the basin would be taken to private land upland sites.

Permit Requirements and Contractual Agreements

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 has reviewed and concurred in the findings and determination of effect.

A fish screen agreement between IDFG and McFarland Livestock for 10.46 cfs would be completed prior to construction.

The existing and new PODs are in the same legal location so an IDWR transfer is not required.

OTHER ACTIONS, NOT PART OF THE PROPOSED ACTION

While the decision-maker's authority does not extend beyond the Proposed Action, other actions have occurred or would co-occur in conjunction with the Proposed Action include a new irrigation system that would increase the efficiency and profitability of McFarland Livestock operation into the future. These actions are described below.

Existing Diversion Structure

McFarland Livestock would remove the existing LHaC-03 diversion structure under the supervision of the Lemhi Soil and Water Conservation District (LSWCD) or Idaho Department of Fish and Game (IDFG) Screen Program personnel.

Private Land Pivot System

The land irrigated by the LHaC-03 diversion is owned by McFarland Livestock. Four new pivots would be installed on McFarland Livestock's private land (Figure 11 and Figure 12).

Approximately 2.1 miles of open ditch would be replaced with an irrigation pipeline to efficiently convey the water diverted at LHaC-03 as described in the Proposed Action, to the new pivot system. All work would be completed within the existing ditch located on public land. NRCS designed the 24-inch diameter to 12-inch diameter pipeline to supply 9 gallons per minute to four new pivots based on climate, soil water holding capacity, crop consumptive use, return time, slope angle, and precipitation (Figure 12). These pipe diameters are needed to: (1) meet NRCS standards to not exceed velocities of 5 feet per second in the pipe, (2) convey the amount of water needed to operate the entire system, and (3) preserve the head needed to provide full gravity pressure to the whole system.

Two 2-inch diameter stockwater lines would be routed through the ditch to supply the three existing BLM water troughs in the Hawley Creek and Bull Creek allotments, and a trough system on private land. All the pipelines would be buried in the same trench as the irrigation pipeline.

Construction of this new pipeline and pivot system are dependent on implementation of the Proposed Action. Funding for the new diversion structure, irrigation water supply pipeline, and pivot system would be provided by Bonneville Power Administration (BPA) and Pacific Coastal Salmon Recovery (PCSRF).

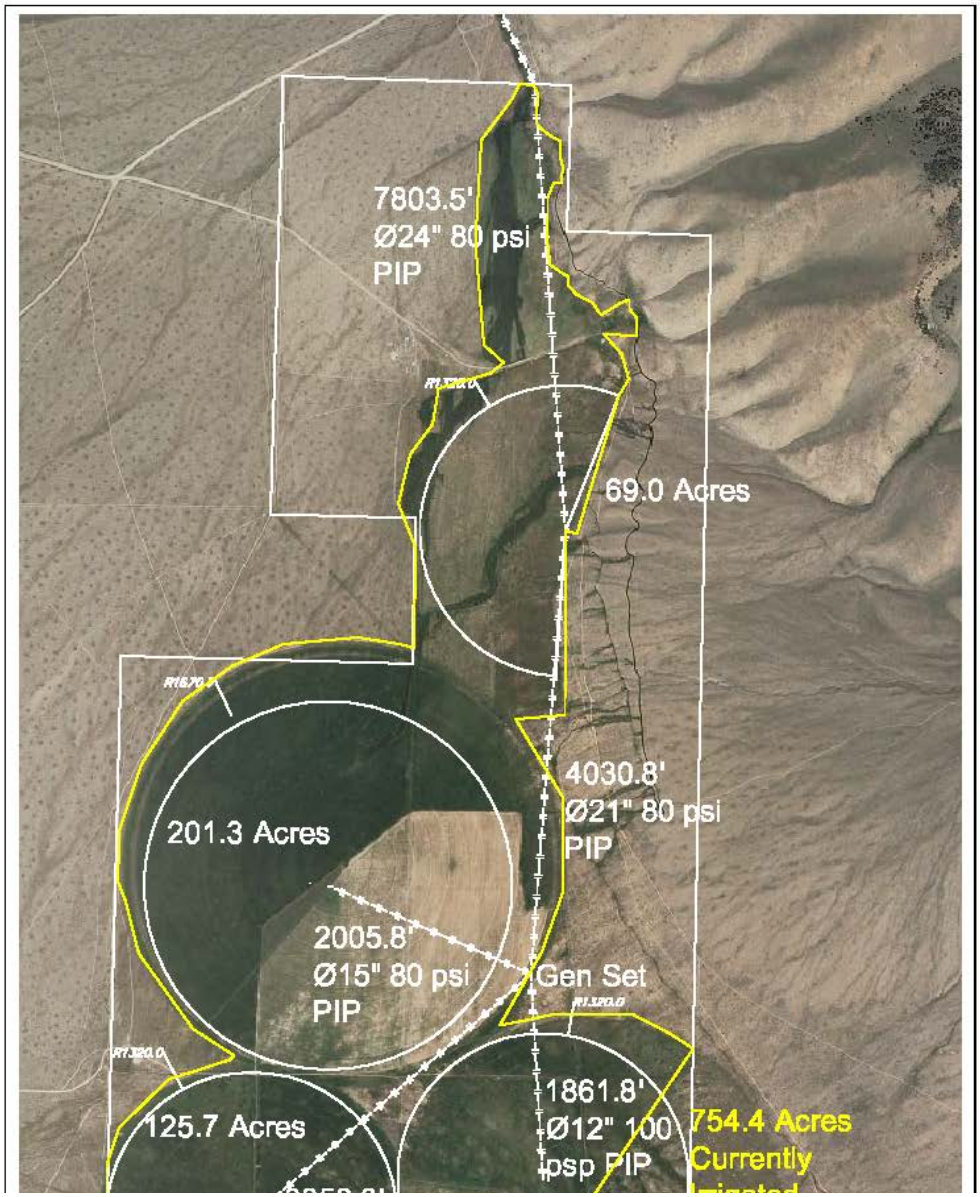

Figure 11: Current pivot configuration

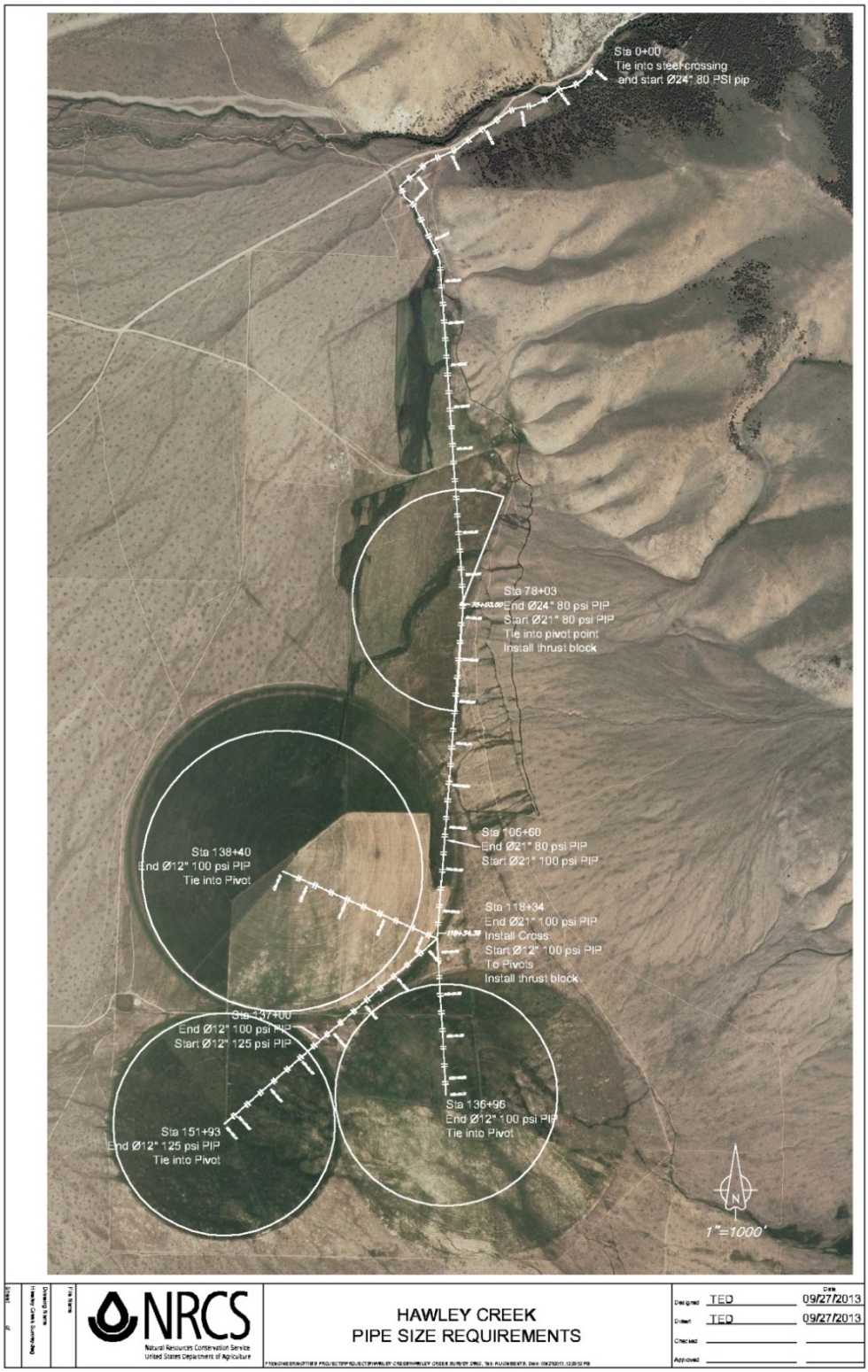

Figure 12: New pipeline and pivot specifications and configuration

Contractual Agreements

McFarland Livestock would have a 20-year Diversion Modification Agreement with LSWCD. This agreement is dependent on implementation of the Proposed Action.

NO ACTION ALTERNATIVE

McFarland Livestock would continue to operate the unscreened LHaC-03 diversion, the pre-FLPMA ditch, and the existing pivots as they do now.

BLM would deny the IDFG Screen Program and McFarland Livestock ROW applications. The ROW permits would not be issued and the instream rock A-weir diversion structure and a rock grade control structure would not be constructed.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

GENERAL SETTING

The Hawley Creek Watershed is located near the headwaters of the Lemhi River along the southwestern slopes of the Beaverhead Mountains. The northeastern border of this watershed lies on the Montana-Idaho state line.

Hawley Creek is the largest tributary to Eighteenmile Creek, but is often completely diverted before it reaches their confluence. Historically, Hawley Creek entered Eighteenmile Creek approximately two miles above the town of Leadore (Figure 3).

Mainstem Hawley Creek is formed by the confluence of Reservoir and Big Bear creeks, both of which have numerous headwater tributaries (Warren & Bliss, 2006). At the higher elevations, slopes vary from 20 to 80 percent and the headwater streams are located in high to very high gradient U-shaped and V-shaped valley bottom (Warren & Bliss, 2006). At mid-elevations, the streams flow through low gradient alluvial valleys. Slopes range from 2 to 8 percent in the lower elevation fan terraces and outwash areas.

Below the Salmon-Challis National Forest boundary, Hawley Creek flows through a moderate gradient, steep-sided canyon until it reaches the broad, alluvial Lemhi River valley. The LHaC-03 diversion is about 0.5 mile below the Forest boundary and 0.7 mile above the mouth of the canyon (Figure 3).

RESOURCES CONSIDERED IN THE IMPACT ANALYSIS

This section provides a description of the general environmental setting and resources within that setting that could be affected by the alternatives, and presents an analysis of the direct, indirect, and cumulative environmental impacts likely to result from the implementation of the various alternatives. The resources considered in the analysis are listed in Table 3.

Table 3: Resources considered in the impact analysis

Resource	Resource Status	Rationale
Access	Present, Not Affected	There are many existing road access areas on both private and public lands in the proposed project area. The alternatives would not result in changes in access to the area.
Air Quality	Present, Not affected	The implementation of the alternatives would not result in the production of vehicle or equipment emission or particulate matter above incidental levels as required by the Clean Air Act.
Areas of Critical Environmental Concern (ACECs)	Not Present	There are no ACECs located in the proposed project area.
Cultural Resource	Present, Not Affected	A Class III inventory was conducted as a component of Section106 of the NHPA. SHPO concurrence has been completed; no historic properties are affected.
Economic and Social Values	Present, Affected	Impacts are disclosed under Environmental Consequences.
Environmental Justice	Present, Not Affected	There are some scattered minority and low-income populations in the project area however, the projects and actions described in the Alternatives would not affect these 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 Uses	Present, Not Affected	The proposed action would not affect the current or future authorized uses occurring in the proposed project area. Uses include ROWs, Land Use Permits, grazing allotment, etc. McFarland Livestock ranching operations would be maintained.
Fisheries	Present, Affected	Impacts are disclosed under Environmental Consequences.
Floodplains	Present, Affected	Impacts are disclosed under Environmental Consequences.
Forest Resources	Not Present	There are no forest resources in the project area.
Invasive, Non-Native Species	Present, Affected	Impacts are disclosed under Environmental Consequences.
Mineral Resources	Not Present	There are no mineral resources known to exist in the proposed project area.
Migratory Birds	Present, Affected	Impacts are disclosed under Environmental Consequences.
Native American Religious Concerns	Not Present	There are no known ceremonial sites or resources associated with ceremonial practices in the proposed project area.

Resource	Resource Status	Rationale
Paleontological Resources	Not Present	There are no paleontological resources located in 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, Affected	Impacts are disclosed under Environmental Consequences.
Threatened, Endangered, and Sensitive Plants	Not Present	TES plant species do not occur within the project footprint. Plains milkvetch (*Astragalus gilviflorus*), a BLM type-3 Special Status Plant, is present north of the project area, although its habitat does not occur within the project footprint. Known sites have calcareous substrates, often loose scree, with little soil development on barren knolls, hilltops, outcrops and gullied badlands.
Threatened, Endangered, and Sensitive Animals	Present, Affected	Impacts are disclosed under Environmental Consequences
Threatened, Endangered, and Sensitive Fish	Present, Affected	Impacts are disclosed under Environmental Consequences
Range Resources	Present, Not Affected	A pipe would be installed to supply water to the existing BLM livestock troughs. The pipe would not affect the current function or location of the troughs. None of the other activities and improvements associated with permitted livestock grazing (e.g. fencing) would be affected.
Recreational Use	Present, Not Affected	There are no developed recreational facilities in the proposed project area. The dispersed recreational use in the proposed project area would not be affected.
Tribal Treaty Rights and Interests	Present, Affected	Impacts are disclosed under Environmental Consequences.
Vegetation	Present, Affected	Impacts are disclosed under Environmental Consequences.
Visual Resources	Present, Not Affected	The Hawley Creek Watershed is managed according to VRM Class III guidelines (RMP Amendment 2001). The objective of this class is partial retention of the existing character of the landscape; level of change should be moderate. The proposed fish screen system would be similar to, and within the disturbance footprint of, the existing diversion and the Hawley Creek Road. The top 0.5 ft. of the screen frame would be above the top of the ditch bank and the upper 3 ft. of the paddle wheel would be exposed. The rest of the fish screen system would not be visible from Hawley Creek Road.
Wastes, Hazardous	Not Present	There are no solid or hazardous wastes in the project area and none

Resource	Resource Status	Rationale
and Solid		would be created during the implementation of the alternatives.
Water Quality (Surface and Ground)	Present, Affected	Impacts are disclosed under Environmental Consequences.
Wetland and Riparian Zones	Present, Affected	Impacts are disclosed under Environmental Consequences.
Wild and Scenic Rivers	Not Present	There are no wild and scenic rivers near the proposed project area.
Wild Horse and Burro HMAs	Not Present	There are no wild horse and burro HMAs in the Salmon Field Office.
Wilderness/WSA	Not Present	There are no wilderness areas or WSAs within the proposed project area.
Wildlife Resources	Present, Affected	Impacts are disclosed under Environmental Consequences.
Lands with Wilderness Characteristics	Not Present	There are no lands with wilderness characteristics in the proposed project area.

SOIL RESOURCES

Affected Environment

The soils within the project area include six soil map units, as mapped by the Custer-Lemhi area, Idaho, Parts of Blaine, Custer, and Lemhi counties, Natural Resource Conservation Service (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm). Figure 13 depicts the soil map units within the project area.

The soils in this area have developed over time from colluvium, mixed slope alluvium, mixed colluvium, and/or mixed alluvium. The current condition of the soils in this area is generally good.

The areas that have impacted by construction and maintenance of the Hawley Creek Road and the existing diversion structure, and the proposed staging areas adjacent to the Hawley Creek Road exhibit signs of disturbance, however the majority of soils in the area are stable.

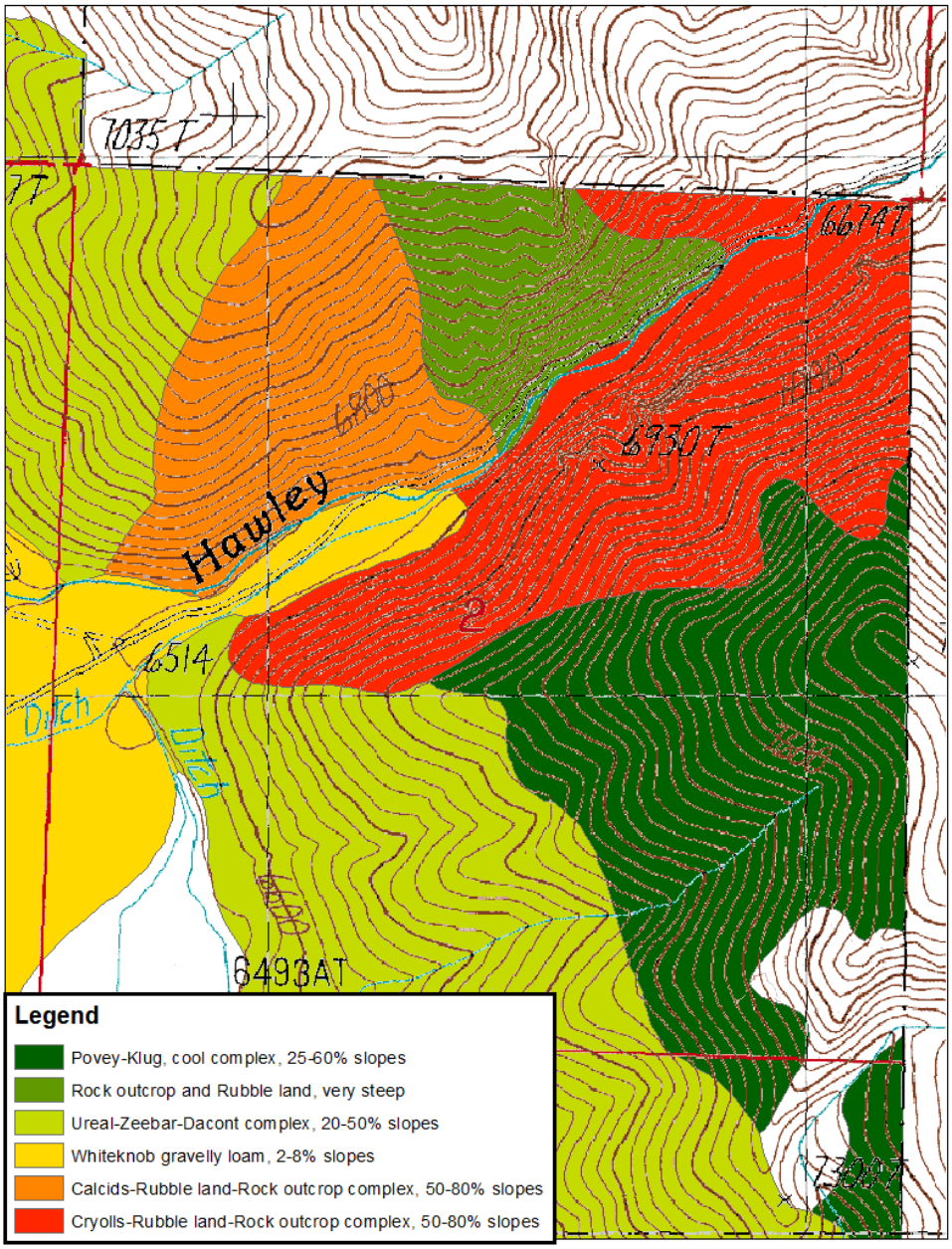

Figure 13: Soil map units within the project area (Source: NRCS Ver. 10)

Alternative 1 – Proposed Action Direct/Indirect Impacts

Under the Proposed Action, less than 0.5 acre would be disturbed during construction of the new fish screen system. The disturbance area would parallel the Hawley Creek Road, approximately 50 ft. from the road. An existing 0.01 acre parking area that is used to maintain the existing diversion would be used as a parking area to maintain the proposed fish screen. This parking area and the completed 24 x 50 foot fish screen structure would be permanently disturb 0.04 acre for the life of the project. Piping the irrigation water between the diversion inlet structure and

the fish screen would limit the amount of ground disturbance and eliminate a potential safety hazard associated with a deep open ditch.

The soils on the slope of hillside cut would have the potential for erosion to occur due to the steepness of the 2:1 gradient (Appendix A). Erosion from this hillslope according to the Water Erosion Prediction Project (WEPP) (Elliot & Hall, 2010) is expected to be low due to the amount of stones and cobbles that are present. Erosion from the hillslope once it is revegetated with native plants such as a mountain big sagebrush community is expected to have no annual soil loss. However, reclamation of these soils once they have been disturbed can be difficult due to low organic matter content, cobble and/or stone content, droughty conditions, and carbonate content.

An additional 0.8 acres would be disturbed for staging and/or temporary stockpiling of excavation material at two sites adjacent to the Hawley Creek Road. These sites are currently used as vehicle and equipment parking areas and dispersed campsites, so the soils have been previously disturbed and generally exhibit signs of compaction. The soils within staging and/or temporary stockpiling areas would be disturbed for the duration of construction. Further compaction is expected to be minor since the soil has already been compacted from previous activities, and disturbance in these areas is not expected to increase erosion.

Alternative 2 – No Action Direct/Indirect Impacts

The current level of soil disturbance in the proposed construction, equipment staging, and stockpile areas is expected to continue after construction, independent of the Proposed Action. The soils would remain stable, well vegetated, and the potential for erosion to occur would continue to be minimal.

VEGETATION

Affected Environment

Lower elevations of the Hawley Creek Allotment are dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) with a bluebunch wheatgrass (*Pseudoroegnaria spicata*) dominated understory, mostly in the lower, drier areas. Three-tip sagebrush (*Artemisia tripartita*) with an understory of Idaho fescue (*Festuca idahoensis*) and low sagebrush (*Artemisia arbuscula*) with a bluebunch wheatgrass understory also exist on the allotment. These two types tend to occur in the transition areas between the Wyoming big sagebrush sites and the higher elevation, moister sites that support mountain big sagebrush (*Artemisia tridentate* ssp. *vaseyana*). As the elevation and amount of precipitation increases, there is a shift to mountain big sagebrush with an Idaho fescue dominated understory. Forbs typically found in these systems include, but are not limited to, various species each of *Antennaria* (pussytoes), *Eriogonum* (buckwheat), *Erigeron* (fleabane or daisy), *Castilleja* (indian paintbrush), *Arenaria* (sandwort), *Astragalus* (milkvetch), *Mertensia* (bluebells), *Crepis* (hawksbeard), *Penstemon* (beardstongue) and *Phlox*.

Because of historical grazing management practices, the allotment is not meeting Standard 4 (Native Plant Communities) for Rangeland Health; this is due to a reduction in deep-rooted perennial grass and an increase in Sandberg bluegrass compared to what is expected for the site. Management changes in recent years have resulted in the allotment making significant progress toward meeting Standard 4. Half the grazing use in the allotment was moved from the growing

season to fall use, after the grasses in the allotment have completed their growth cycles. Because of this shift in season of use, significant progress is being made toward meeting the Native Plant Community Standard.

Alternative 1 – Proposed Action Direct/Indirect Impacts

About 0.5 acre of upland habitat would be disturbed for construction of the new diversion and fish screen system; the fish screen and sediment basin would permanently occupy 0.02 acre. Vegetation removal and ground disturbance would be limited to the project areas described in the Proposed Action. Much of this area has been previously disturbed by construction and maintenance of the existing diversion and Hawley Creek Road. All existing native vegetation would be preserved and replanted whenever possible. IDFG would reseed the area around the fish screen system with the BLM approved seed mix and seeding rates specified in Appendix C. LSWCD would hydro-seed the rest of the disturbed BLM land along the pipeline with the seed mix and seeding rates specified in Appendix C. These measures are expected to prevent invasive plant components or weed-dominated communities from becoming established following construction.

As described in Table 2, stockpiling and equipment staging would occur at two different locations. The first would be about 0.1 acre in size and would be located near the Hawley Creek bridge (Figure 9). This site is already disturbed and was used as a staging area in 2013 during the bridge construction. The second area would be about 0.7 acre and is an existing vehicle pull-out and dispersed camping area that is located along Hawley Creek Road, downstream of the new Hawley Creek bridge near the BLM cattleguard (Figure 8). The existing vegetation in these sites would be mechanically crushed as vehicles are parked or soil is stockpiled and moved throughout the duration of construction. The vegetative cover in both of these areas has been reduced by previous and on-going vehicle disturbance. Weed species on BLM lands in the Hawley Creek Watershed, including the proposed staging sites have been vigorously treated by LCWMA and BLM staff under assistance agreements in the last two years. These weed reduction efforts would continue for the foreseeable future.

Alternative 2 – No Action Direct/Indirect Impacts

Construction impacts to parking or mobilization areas would not occur, nor would any ground disturbance related to project implementation. The current level of disturbance and its effect on vegetation in the proposed equipment staging and stockpile areas is expected to continue after construction, independent of the Proposed Action. LCWMA and BLM staff would continue to treat weeds on BLM land for the foreseeable future.

WETLANDS AND RIPARIAN ZONES

Affected Environment

The narrow floodplain between the existing and proposed diversion structures is bounded by steep topography on the south side and Hawley Creek Road on the north side. The riparian dependent species include Nebraska sedge (*Carex nebrascensis*), Northwest Territory sedge (*C. atriculata*), mountain rush, (*Juncus balticus*), coyote willow (*Salix exigua*), Booth willow (*S. boothii*), and redosier dogwood (*Cornus sericea*) (Figure 14). These sedges are rhizomatous

species that grow in dense, mat-like patches that protect streambanks. The woody riparian species also provide strong, deep root systems that protect streambanks, and canopy cover that provides stream shade and habitat for macroinvertebrates.

During most of the last 100 years, Hawley Creek has been dry in late August from LHaC-03 to the Eighteenmile Creek-Hawley Creek intercept (about 6.9 miles) because of irrigation withdrawals. As a result, the riparian vegetation is greatly reduced or lacking along the historic Hawley Creek channel. Instead, the riparian corridor follows the LHaC-03 ditch and the Tyler-McFarland Livestock ditch that carry perennial flow. In 2005, a permanent earthen dam at LHaC-02, ¾-mile downstream of LHaC-03 was removed. Now Hawley Creek flows in the natural channel below LHaC-02 when water isn't being diverted for irrigation, and sagebrush that had encroached into the historic channel has begun to die-off.

The LHaC-03 ditch is lined with coyote willow and a few booth willow (Figure 15). Coyote willow is a rhizomatous species that occurs along stream edges and bars below the high water line (Brunsfeld & Johnson, 1985). This subspecies occurs in open riparian habitats in mountain big sagebrush dominated valleys within or just below the forest zone (Brunsfeld & Johnson, 1985). Booth willow prefers moist-wet, coarse soil but it may also grow in fine-textured soils (Hoag & Fripp, 2002).

Figure 14: Hawley Creek floodplain between the existing and proposed diversions

Figure 15: Coyote and booth willow on the LHaC-03 BLM ditch

Alternative 1 – Proposed Action Direct/Indirect Impacts

Following construction, the stream would be allowed to cut through the fine sediment that has accumulated upstream of the existing diversion structure, down to the underlying rocky substrate. As a result, the stream would narrow, the channel would deepen, and the accumulated sediment along the stream margins would become part of the active floodplain. The sedges, willow, and redosier dogwood would naturally colonize the new floodplain area. To increase the rate of colonization, sedge plugs will be hand-planted in the new floodplain. The benefits of the larger post-project floodplain and riparian zone include increased sediment filtering, increased canopy cover to provide stream shade and maintain water temperature, increased bank stability, and decreased scour and velocity during periods of high flow.

Alternative 2 – No Action Direct/Indirect Impacts

The Hawley Creek wetland-riparian corridor in the project reach would be unchanged.

INVASIVE, NON-NATIVE SPECIES

Affected Environment

The soil at the proposed fish screen system site and the staging areas is rocky, the vegetative cover is sparse, and spotted knapweed is present. These sites have been previously disturbed by

construction of the Hawley Creek Road and the existing diversion. On-going disturbance occurs during the maintenance of the road and the diversion.

There are also populations of leafy spurge, black henbane, and cheatgrass in the watershed. An isolated patch of rush skeleton weed has been found on the north side of Hawley Creek Road at the junction with the Rocky Canyon Road, approximately 0.5 mile by road from the project area.

Alternative 1 – Proposed Action Direct/Indirect Impacts

There is potential for the spotted knapweed population to increase, or for other weed species to become established at the fish screen system and staging area sites due to soil disturbance. IDFG would reseed the area around the fish screen system with the BLM approved seed mix and seeding rates specified in Appendix C. LSWCD would hydro-seed the rest of the disturbed BLM land along the pipeline with the seed mix and seeding rates specified in Appendix C. These measures are expected to prevent invasive plant components or weed-dominated communities from becoming established following construction.

LCWMA and BLM staff would continue to treat weeds on BLM land, including in the proposed staging areas on Hawley Creek Road for the foreseeable future.

Alternative 2 – No Action Direct/Indirect Impacts

No new soil disturbance would occur at the fish screen system construction site. LCWMA and BLM staff would continue to treat weeds on BLM land for the foreseeable future.

WATER QUALITY

Affected Environment

The primary influence on Hawley Creek water quality is decreased streamflow due to irrigation withdrawals. There is a one diversion on Big Bear Creek upstream of the Forest boundary. This private land diversion has a 2 cfs water right. Three diversions take water out of mainstem Hawley Creek below the Forest boundary. LHaC-01 is on private land and has a 3 cfs water right. LHaC-02 and LHaC-03 are on land managed by the BLM SFO. LHaC-02 has a 4 cfs water right; LHaC-03 has a 15.7 cfs water right. Additional water is diverted during periods of high flow. These diversions withdraw the majority of the water, and the historic channel is frequently dry during the irrigation season. When water is present, it sinks rapidly into the alluvium. Lower Hawley Creek, from the LHaC-03 diversion to the confluence with Eighteenmile Creek is recommended for listing as Category 4c: impaired for low flow alteration (IDEQ, 2012).

Hawley Creek's mean annual flow at the Salmon-Challis National Forest boundary about 0.5 mile upstream of LHaC-03 is approximately 16 cubic feet per second (cfs) (OSC-USBWP, 2013). Peakflow occurs between May 20 and June 20. Mean peakflow is 80-100 cfs. Mean baseflow measured at the Forest boundary is 12-20 cfs.

IDWR completed Hawley Creek seepage runs in 2007, 2008, and 2011 (Figure 16). The ¾-mile long reach between LHaC-03 and LHaC-02 downstream is a gaining reach whether or not water is being diverted at LHaC-03. The springs surface about 350-400 feet below the existing LHaC-03 diversion. Hawley Creek is a losing reach below LHaC-02 whether or not water is being

diverted at LHaC-03. When water overtops the channel and fans out over the dry floodplain, additional water loss occurs as water infiltrates the floodplain. High water years and channel braiding may cause this to occur.

Alternative 1 – Proposed Action Direct/Indirect Impacts

Turbidity and Sediment Transport

A bypass system would be used to minimize turbidity and sediment transport during construction of the new diversion structure. It is expected the bypass system would pass clear water back to the stream after the brief initial turbidity plume. After the in-channel work is complete, water would slowly be reintroduced to the channel to reduce turbidity. The WEPP model (Elliot & Hall, 2010) does not predict any terrestrial sediment delivery from the fish screen system construction because of the high rock content in the soil.

Fine sediment has accumulated behind the existing check structure. After the new diversion is in place, Hawley Creek would be allowed to cut a new channel through the deposition, down to the underlying boulder-cobble substrate. Allowing the stream to cut its own course through the accumulated sediment would create a narrower and deeper channel and a wider floodplain / riparian area than could be accomplished with dredging / sediment removal. In the short-term, the sediment transport would exceed the State turbidity standard of 50 NTUs over background level. This turbid, sediment laden water would be released to the historic channel downstream of LHaC-03 when the LHaC-02 headgate is closed. In the long-term, the stored sediment that is released and transported downstream is expected to benefit the historic Hawley Creek channel that currently lacks substrate and structural diversity.

Flow Restoration

The proposed action would provide up to 5.2 cfs of instream flow below the LHaC-03 diversion, depending on available baseflow. An additional 0.8 cfs would be provided by the fish screen return flow and 1.0 cfs for the screen cleaning bubbler. The IDWR seepage runs indicate the water conserved at LHaC-03 would allow the natural, historic channel below the LHaC-02 to recharge (Figure 16).

Alternative 2 – No Action Direct/Indirect Impacts

The current water quality impacts due to water withdrawals – decreased flow, increased temperature - would be unchanged between LHaC-03 and LHaC-02.

Fine sediment would continue to accumulate behind the existing LHaC-03 diversion structure. There would be no short-term increase in turbidity.

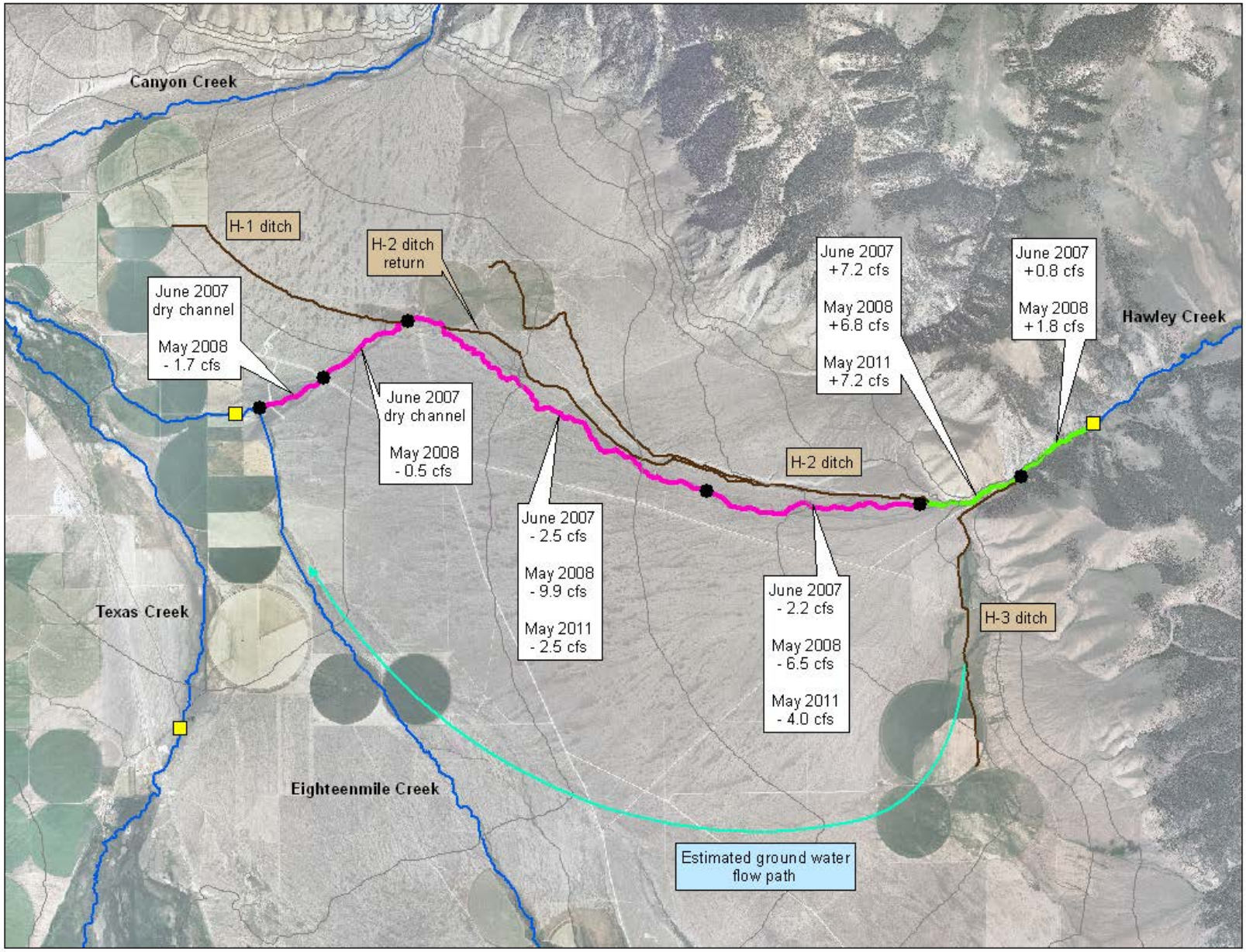

Figure 16: Hawley Creek seepage run summary (Source: IDWR 2011)

FISHERIES, ESA-LISTED FISHES AND DESIGNATED CRITICAL HABITAT

Affected Environment

Historically, Hawley Creek Watershed supported anadromous Chinook salmon and steelhead populations, and fluvial bull trout (Warren & Bliss, 2006). Private and public land management practices including livestock grazing, private land agriculture/ranching, water diversion for irrigation, the road network including fish barrier culverts and low water fords, and dispersed and developed recreation have adversely affected riparian and aquatic habitat in the Hawley Creek Watershed to varying degrees since European settlement. Today Hawley Creek is inaccessible to all life stages of anadromous fishes and fluvial bull trout because of seasonal dewatering and man-made barriers.

The 2009-2012 IDFG Integrated Status and Effectiveness Monitoring Program (ISEMP) found the watershed currently supports resident populations of bull trout (*Salvelinus confluentus)*, rainbow trout (*Oncorhynchus mykiss*), westslope cutthroat trout (*O. clarki lewisi*), hybrid rainbow trout x cutthroat trout, and shorthead sculpin (*Cottus confuses*). The Hawley Creek Watershed ISEMP survey sites are shown in Figure 17. The corresponding electrofishing results are displayed in Table 4 by ISEMP site number, in ascending order.

There are man-made physical barriers associated with road culverts and diversions structures, dewatering, and entrainment into unscreened ditches that prevent anadromous Chinook salmon and steelhead and fluvial bull trout from accessing Hawley Creek, and limit the resident fish populations. Very few fish and no bull trout have been found downstream of LHaC-03 when the diversions are in operation.

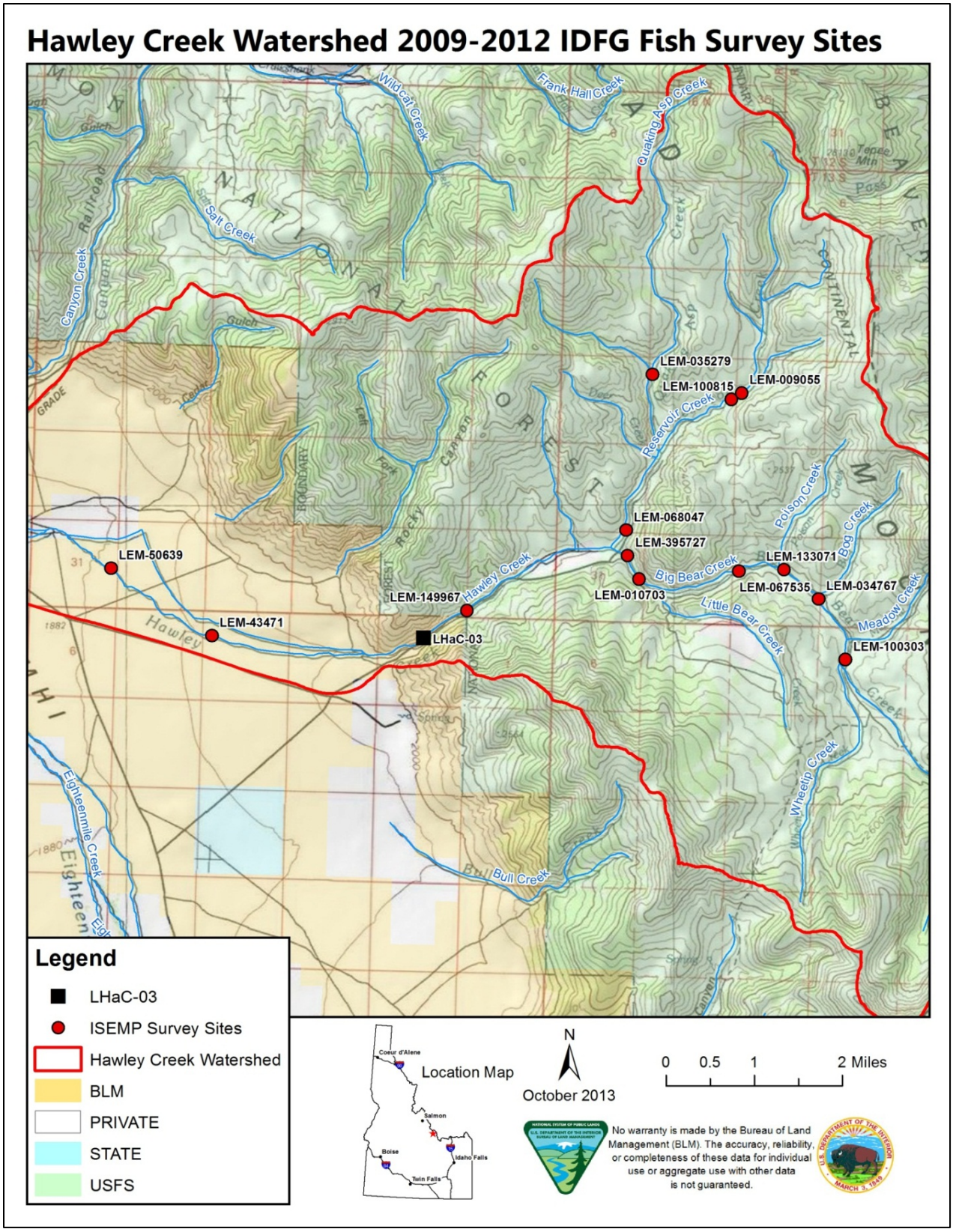

Figure 17: ISEMP Hawley Creek Watershed 2009-2012 fish survey sites (Source: IDFG)

Table 4: ISEMP 2009-2012 and IDFG 2005 electro-fishing results

Stream	Site[a]	Date	Bull Trout	Westslope Cutthroat	*O. mykiss*	*O. mykiss* x cutthroat
Hawley	LEM-50639	7/20/2011	0	0	1	0
	LEM-50639	2005	0	0	27	1
	LEM-43471	7/20/2011	0	2	2	0
	LEM-43471	2005	0	2	39	3
	LEM-149967	6/27/2012	2	6	40	0
	LEM-149967	2005	2	8	8	0
Big Bear	LEM-395727	6/25/2012	6	2	10	0
	LEM-010703	8/6/2009	16	10	1	0
	LEM-133071	8/2/2010	1	12	0	0
	LEM-034767	8/20/2009	2	8	1	0
	LEM-100303	7/30/2009	1	7	0	0
	LEM-067535	8/2/2010	0	9	0	0
Reservoir	LEM-068047	8/17/2012	1	22	51	1
	LEM-100815	7/2/2010	0	34	1	0
	LEM-009055	6/20/2010	0	36	2	0
Quaking Aspen	LEM-035279	6/20/2010	0	9	0	0

[a]The sites are listed in order from downstream to upstream

SNAKE RIVER SPRING/SUMMER CHINOOK SALMON

Snake River spring/summer Chinook salmon was listed as Threatened under ESA on April 22, 1992 (57 FR 14653), with some modifications on June 28, 2005 (70 FR 37160).

NMFS designated critical habitat for the Snake River spring/summer Chinook salmon on December 28, 1993, effective January 27, 1994 in the Federal Register (58 FR 68543); revised on October 25, 1999 (64 FR 57399). Chinook salmon designated critical habitat consists of all river reaches presently or historically accessible by Chinook salmon, including 300 feet from either side of the ordinary highwater mark. Hawley Creek is designated Chinook salmon critical habitat and essential fish habitat.

The current Lemhi River Subbasin Chinook salmon population is a fraction of historic levels and is supplemented with hatchery fish. Hayden Creek and the Lemhi River above the confluence with Hayden Creek (IDFG, 2006) are the only streams that currently support Chinook salmon spawning in the subbasin. The project area is inaccessible to Chinook salmon due to man-made barriers and dewatering in Eighteenmile and Hawley Creeks. The Eighteenmile Creek-Hawley Creek intercept, about 6.9 miles downstream of LHaC-03, is a fish passage barrier that captures Hawley Creek water, co-mingles it with Eighteenmile Creek water and diverts it into a ditch

(Figure 18; Figure 19). Currently the water user does not divert water at the intercept after May through a water transaction agreement with IDWR. The transaction agreement is in place through 2015.

Juvenile Chinook salmon reside in rearing areas for approximately one year before migrating downstream the following spring. Historically, juvenile Chinook salmon utilized the coldwater tributaries in the Lemhi River Subbasin for rearing and thermal refuge during the summer months when the temperatures in the river increased. Currently the juvenile Chinook salmon rearing habitat is limited to the Lemhi River, Big Springs Creek, Hayden Creek, and the lower reaches of the connected tributaries. The Hawley Creek Watershed is inaccessible to juvenile Chinook salmon due to man-made barriers and dewatering in Eighteenmile and Hawley creeks.

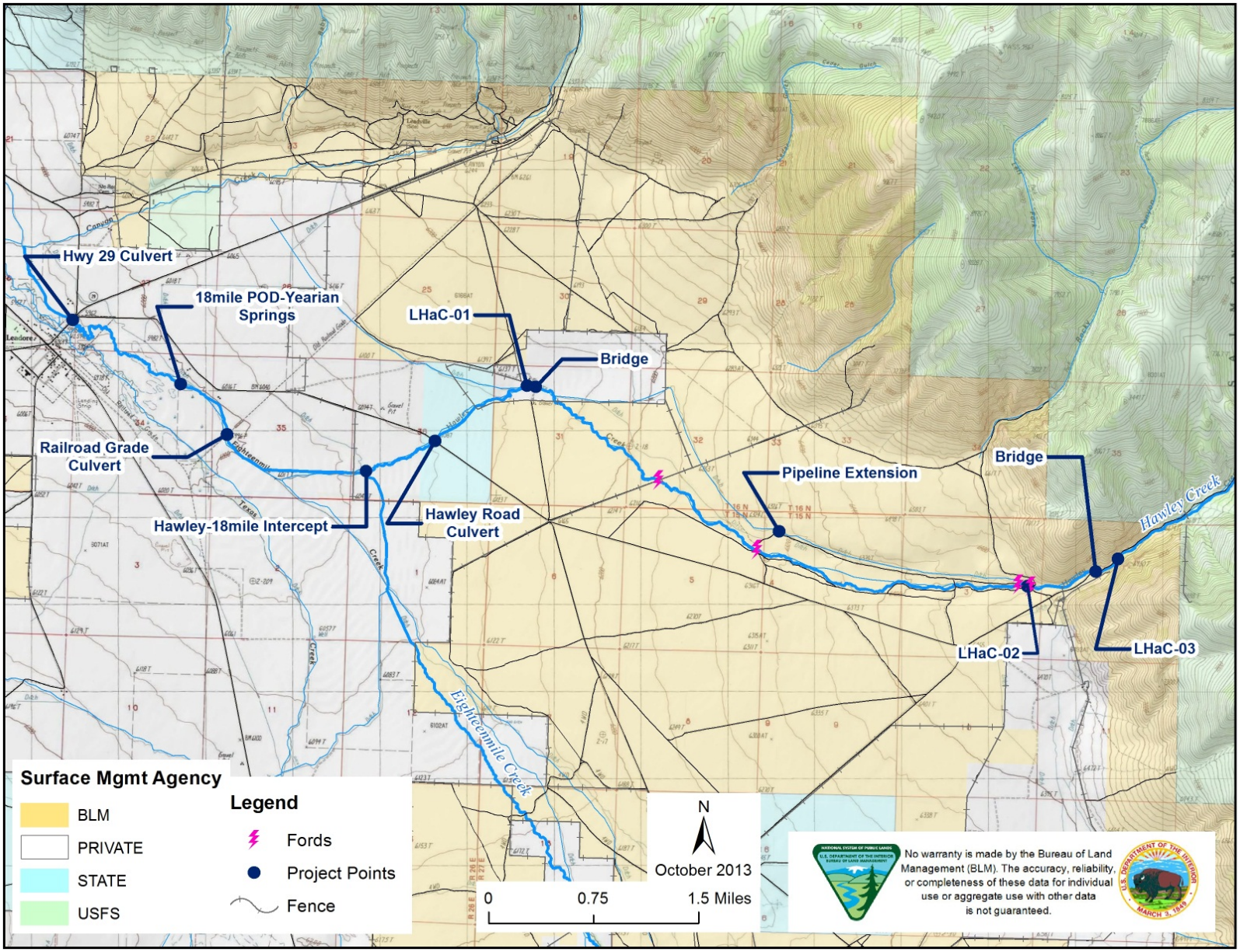

Figure 18: Eighteenmile Creek and lower Hawley Creek diversions, culverts, and bridges

Figure 19: Eighteenmile Creek-Hawley Creek intercept

SNAKE RIVER BASIN STEELHEAD

Snake River Basin steelhead was listed as Threatened in the Federal Register on August 18, 1997 (Vol. 62, 43937) with an effective date of October 17, 1997. The listing was modified on January 5, 2006 (71 FR 834) to clarify the status of some hatchery stocks and to adopt the Distinct Population Segment designation for the species. This rule assessed the effectiveness of the six artificial propagation programs that are a part of the Snake River Basin steelhead distinct population segments and determined that those programs, collectively, do not substantially reduce the extinction risk of Snake River Basin steelhead. The Snake River Basin steelhead Evolutionarily Significant Unit includes all naturally spawned anadromous populations below natural and man-made barriers in streams tributary to the Snake River in southeast Washington, northeast Oregon and Idaho, and also includes stocks from six artificial propagation programs located throughout the same region (USDC NMFS, 2013).

NMFS designated critical habitat for Snake River Basin steelhead on September 2, 2005 (70 FR 52630). Designated critical habitat includes the stream channel with a lateral extent as defined by the ordinary highwater line or the bankfull elevation where an ordinary highwater line has not been defined. Hawley Creek is not designated steelhead critical habitat (USDC NMFS, 2005).

The current steelhead population in the Lemhi River Subbasin is a fraction of historic levels and is supplemented with hatchery fish. Hatchery steelhead spawn in all reaches of the Lemhi River but most of the natural origin steelhead spawn in the Hayden, Basin, Bear Valley, Texas, and

Agency tributaries. The Action Area is inaccessible to spawning steelhead due to man-made barriers and dewatering in Eighteenmile and Hawley creeks.

Juvenile *O. mykiss* are present in the Lemhi River Subbasin year-round[2]. Like Chinook salmon, juvenile steelhead utilize coldwater tributaries for rearing and thermal refuge during the summer months when the temperatures in the river increase. *O. mykiss* (redband/rainbow/steelhead) may express either resident or anadromous life histories. Currently, resident rainbow trout is the only form of *O. mykiss* that occurs in the Hawley Creek Watershed (Figure 17 and Table 4). The Hawley Creek Watershed is inaccessible to juvenile steelhead due to man-made barriers and dewatering in Eighteenmile and Hawley creeks.

COLUMBIA RIVER BULL TROUT

Columbia River bull trout were listed as Threatened in the Federal Register on June 10, 1998 (63 FR 31647) with an effective date of July 10, 1998.

USFWS designated bull trout critical habitat in October 2010 (USDI FWS, 2010). Hawley Creek is not bull trout designated critical habitat.

Radio-tracking indicates bull trout move out of the Lemhi River and up into the perennial tributaries as spring peakflows subside to spend the summer and then spawn in the cooler water (Schoby, 2006). The number of migratory bull trout is severely diminished in the subbasin. There are no fluvial bull trout in Hawley Creek because of seasonal dewatering and year-round migration barriers between Hawley Creek and the Lemhi River.

Low numbers of resident bull trout persist in the upper Hawley Creek Watershed, primarily in Big Bear Creek (Figure 17 and Table 4).

OTHER RESIDENT SALMONID FISHES

The Hawley Creek Watershed has reproducing populations of native westslope cutthroat trout, non-native brook trout, and hatchery strain rainbow trout (*O. m. irideus*) that support recreational fisheries (Figure 17 and Table 4). Westslope cutthroat trout is a BLM Special Status Species found primarily in the upper watershed, above the proposed project site.

Until 1997, IDFG stocked Hawley Creek with rainbow trout to provide a readily accessible fishery for the intensive recreation occurring on this stream. Stocking stopped when high levels of naturally-reproducing rainbow trout appeared to support the sport fishery. Historic stocking with many strains of rainbow trout has most likely altered the original gene pool of native steelhead/redband trout (*O. m. gairdneri*), and hybridized with the native westslope cutthroat trout in Hawley Creek (OSC-USBWP, 2013).

Alternative 1 – Proposed Action Direct/Indirect Impacts

CHINOOK SALMON AND STEELHEAD

The proposed construction activities would not affect any life stage of Chinook salmon and steelhead because dewatering, diversion structures including the Eighteenmile Creek-Hawley

[2] Native redband trout, non-native rainbow trout, and steelhead are indistinguishable as juveniles.

Creek intercept about 6.9 miles downstream, and other man-made barriers have prevented anadromous fish from accessing Hawley Creek for the past 100 years.

CHINOOK SALMON DESIGNATED CRITICAL HABITAT

The Proposed Actions have the same discountable short-term effects and long-term beneficial effects on Chinook salmon designated critical habitat as described in *Bull Trout*, below.

BULL TROUT

The Proposed Actions are expected to have discountable short-term effects and long-term beneficial effects for bull trout and their habitat, as described below.

SHORT-TERM EFFECTS

The instream work area would be dewatered gradually to encourage fish to emigrate from the area and decrease the risk of stranding. IDFG would conduct fish salvage by electrofishing and netting in the dewatered section after water is turned into the temporary bypass channel. During construction downstream fish passage would be provided by a smooth interior, 3.5-foot diameter polyethylene pipe which would convey the water and fish downstream of the construction site and daylight the water into the existing stream channel. There is no upstream fish passage at the existing LHaC-03 diversion now, and none would be provided during construction. No impact to the floodplain or stream channel would occur during or after construction of the pipeline.

The blast sites would begin a minimum of 70 feet horizontal distance from the wetted channel, above the dewatered construction site. A blasting seismograph would be used to monitor the blast induced ground vibrations and air pressures for each blast. NMFS has not published guidelines for assessing impacts of blasting noise on fish, but recommends the use of an underwater peak sound pressure level of 208 dB for assessing injury to fish from impulse sounds; this roughly converts to 0.5 in/sec peak particle velocity (PPV) or 13 mm/sec (URS Corporation, 2008). Less than or equal to 5 pounds of explosive charge be used to ensure the PPV remains below 0.5 in/sec based on the relationship between explosive charge weight in various substrates and distance from a waterbody occupied, or potentially occupied by listed fish species. This PPV would produce up to 2 psi hydrostatic overpressure on the swim bladders of fish, or 0.5 in/sec vibration velocity for incubating eggs (Kolden & Aimone-Marten, 2013) (Wright & Hopky, 1998). This blasting criteria is conservative to ensure protection of the most sensitive, early life stages from explosions transmitted through water.

These actions would have discountable effects on juvenile and resident bull trout because the probability of bull trout being in the project area during the scheduled construction is extremely unlikely. If a bull trout does enter the above ground, temporary by-pass pipe it would be rapidly transported around the construction site.

There is no bull trout spawning habitat in the project area, so these actions would have no effect on bull trout eggs, embryos, or larvae.

LONG-TERM EFFECTS

The habitat benefits of the proposed fish screen system include prevention of fish entrainment into the irrigation ditch, unobstructed fish passage at the diversion, an increase in instream flow, and improved instream habitat. The A-weir was designed in accordance with NMFS

anadromous salmonid passage facility design (USDC NMFS, 2011). As per NMFS criteria, there would be a maximum 0.7-foot elevation difference between each of the notches in the new diversion A-weir to provide upstream passage for juvenile fishes. The A-weir construction would be supervised by an IDFG Screen Program engineer to establish top of structure elevation and by an IDFG fisheries biologist to meet NMFS fish passage requirements.

The stream would be allowed to cut a new channel through the fine sediment has accumulated behind the check structure, down to the underlying boulder-cobble substrate. This would create approximately 350 feet of narrower and deeper stream channel for improved fish habitat and a wider floodplain / riparian zone. A scour pool would develop below the A-weir and provide fish holding habitat. The A-weir would also facilitate sediment transport through the project area and dissipate the stream's energy.

Trashrack bar spacing would be 6-inches to prevent "gilling" of adult fish, and to allow fish to swim out of the headgate. The bypass pipe would safely transport entrained fish from the screen back to the stream.

McFarland Livestock's water right is for 15.7 cfs, and the fish screen system capacity would be 10.46 cfs. So the proposed fish screen system would provide up to 5.2 cfs of instream flow between this diversion and LHaC-02, depending on the baseflow conditions (mean baseflow 12-20 cfs). The fish screen return flow would provide an additional 1.8 cfs. The lockable, sliding metal gate would allow control of water flowing into the pipe. These actions would benefit riparian and aquatic habitat in a reach where flows have been severely diminished due to water withdrawals for the past 100 years. Connectivity between LHaC-03 and good quality fish habitat in the upper watershed would be restored.

Moving the POD to the north side of the stream would allow access to the headworks and the fish screen without equipment entering the stream for future maintenance.

OTHER RESIDENT SALMONID FISHES

The Proposed Actions have the same short-term effects and long-term beneficial effects on westslope cutthroat trout, rainbow trout, and brook trout as described in *Bull Trout*, above.

Alternative 2 – No Action Direct/Indirect Impacts

Connectivity between LHaC-03 and good quality fish habitat in the upper watershed would not be restored, flow would not be enhanced between LHaC-03 and LHaC-02 downstream, and the existing check structure would continue to be an upstream fish passage barrier. Fine sediment retained behind the check structure would maintain the over-widened, shallow channel for approximately 350 feet upstream of the structure.

McFarland Livestock could continue to utilize all of their 15.7 cfs water right. This water would be delivered through the existing unscreened diversion that entrains fish into the ditch and does not have a lockable headgate or measuring device. Equipment would continue to enter the stream for maintenance.

WILDLIFE RESOURCES INCLUDING THREATENED, ENDANGERED, AND SENSITIVE ANIMALS AND MIGRATORY BIRDS

Affected Environment

WILDLIFE HABITAT

The wildlife habitats within the area include Forest and Woodland, Semi-Desert Shrubland and Grassland, Mesic Shrubland and Grassland, High Montane Vegetation, and Sparse Vegetation and Natural Barren Areas. Overviews of upland and riparian vegetation communities within the area are discussed above.

WILDLIFE SPECIES

Many wildlife species utilize a variety of habitats in the area. These habitats provide forage, nesting substrate, and cover for a variety of bird, mammal, amphibian and reptile species common to the area. Although all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the area, state, and region. Consequently, the relationship of most of these species to the area is not discussed here in the same depth as species upon which the BLM places management emphasis.

There is one threatened mammal species listed under the ESA in the area, the Canada lynx. In addition the wolverine has been proposed for listing by the USFWS Endangered Species Program (USDC NMFS, 2000). BLM, USFWS, and IDFG maintain an active interest in other special status species that have no legal protection under the ESA.

BLM special status species are: (1) species listed or proposed for listing under the ESA, and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA (USDI BLM, 2008). These species are designated as sensitive by the BLM State Director(s). Special status wildlife species discussed in this document include those listed on the Idaho BLM State Sensitive Species List (USDI BLM, 2003) and those afforded protection under the Bald and Golden Eagle Protection Act (BGEPA) (U.S., 1940) with potential to occur within the area.

Two birds are listed as candidates under the ESA, and four mammals, 13 birds, one reptile, and one amphibian with special status potentially could occur within the area. Common and scientific names of special status wildlife species, their status, and occurrence potential within each allotment are summarized in Table 5.

Table 5: Special status wildlife species and their status and occurrence potential within the Action Area

Common Name	Species	Status (conservation plans)[1]	Occurrence Potential[2]
Canada Lynx	*Lynx canadensis*	ESA T (SGCN)	Possible
Wolverine	*Gulo gulo*	ESA P (SGCN)	Possible
Yellow-billed Cuckoo	*Coccyzus americanus*	ESA P (SGCN/BCC)	Not Present
Greater Sage-grouse	*Centrocercus urophasianus*	ESA C (SGCN/HPBB/BCC)	Present
Bald Eagle	*Haliaeetus leucocephalus*	BGEPA (SGCN/BCC)	Possible
Golden Eagle	*Aquila chrysaetos*	BGEPA (HPBB/BCC)	Present
Gray Wolf	*Canus lupus*	(SGCN)	Present
Pygmy Rabbit	Brachylagus idahoensis	BLM 2 (SGCN)	Present
Black Tern	*Chlidonias niger*	BLM 3 (SGCN)	Not Present
Brewer's Sparrow	*Spizella breweri*	BLM 3 (SGCN/HPBB/BCC)	Probable
Calliope Hummingbird	*Stellula calliope*	BLM 3 (HPBB/BCC)	Improbable
Common Garter Snake	*Thamnophis sirtalis*	BLM 3	Improbable
Fisher	*Martes pennant*	BLM 3 (SGCN)	Not Present
Flammulated Owl	*Otus flammeolus*	BLM 3 (SGCN/HPBB/BCC)	Possible
Fringed Myotis	*Myotis thysanodes*	BLM 3 (SGCN)	Not Present
Hammond's Flycatcher	*Empidonax hammondii*	BLM 3 (HPBB)	Possible
Lewis' Woodpecker	*Melanerpes lewis*	BLM 3 (SGCN/HPBB/BCC)	Possible
Northern Goshawk	*Accipiter gentilis*	BLM 3 (HPBB)	Probable
Olive-sided Flycatcher	*Contopus borealis*	BLM 3 (HPBB/BCC)	Possible
Peregrine Falcon	*Falco peregrinus anatum*	BLM 3 (SGCN/BCC)	Probable
Prairie Falcon	*Falco mexicanus*	BLM 3 (HPBB)	Possible
Spotted Bat	*Euderma maculatum*	BLM 3 (SGCN)	Not Present
Townsend's Big-eared Bat	*Plecotus townsendii*	BLM 3 (SGCN)	Possible
Western Toad	*Bufo boreas*	BLM 3	Possible
Wouldiamson's Sapsucker	*Sphyrapicus thyroideus*	BLM 3 (HPBB/BCC)	Improbable
Willow Flycatcher	*Empidonax trailii*	BLM 3 (HPBB/BCC)	Improbable
California Myotis	*Myotis californicus*	BLM 4	Not Present
Wyoming Ground Squirrel	*Spermophilus elegans nevadensis*	BLM 4	Probable

[1]Status includes Threatened (ESA T) and Candidate (ESA C) species listed under the Endangered Species Act (U.S., 1973), eagles (BGEPA) protected by the Bald and Golden Eagle Protection Act (U.S., 1940), and BLM Type 2 (BLM 2), Type 3, (BLM 3), and Type 4 (BLM 4) special status species (USDI BLM, 2003). Additional designations under state and national conservation plans include Idaho Species of Greatest Conservation Need (SGCN) (IDFG, 2005), Idaho Partners in Flight High Priority Breeding Bird (HPBB) (IPIF, 2000), and U.S. Fish and Wildlife Service Birds of Conservation Concern (BCC) (USDI FWS, 2008).

[2]Categories include species presence documented (Present), species likely to occur based on preferred habitat and local species abundance and nearby occurrences within 5 miles (Probable), species may occur based on preferred habitat and/or occurrences within 25 miles (Possible), species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles (Improbable), and species not present due to lack of habitat (Not Present). Presence of habitat within project area was determined from Idaho Vertebrate Modeling Database (University of Idaho); Idaho BLM unpublished data; and specialist expertise.

With the exception of a few well-studied species, current occurrence and population data for most special status animal species within the area are limited due to a deficiency of surveys and directed research. Therefore, only a few focal special status animal species would be discussed in detail individually. The USFWS has proposed wolverine and yellow-billed cuckoo for listing under the ESA and determined that greater sage-grouse warrant listing (i.e., candidate species) but has been precluded due to higher priorities. These species would be discussed in greater

detail because they occur or possibly could occur within the county, and they have been the subject of targeted surveys and periodic species-specific monitoring studies. Other special status animal species, migratory birds, raptors, and species of socio-economic importance (e.g., big game) would be included in a general discussion by taxonomic groupings.

FOCAL SPECIAL STATUS ANIMAL SPECIES

CANADA LYNX

In Idaho, the Canada lynx inhabits montane and subalpine coniferous forests typically above 4000 ft. Habitat used during foraging is usually early successional forest. Dens are usually in mature forests. Individuals are wide-ranging and require large tracts of forest. The Canada lynx preys on the snowshoe hare, particularly during the winter, as well as a variety of birds and other small mammals (IDFG, 2005). The surrounding SCNF no longer has the Canada lynx included on the list of protected species expected to occur on the forest and no longer consults on Canada lynx for their projects. There are historic records of Canada lynx in the Field Office area, including a couple of records near the project area. The project area is not within a Canada Lynx Analysis Unit. Based on the Canada Lynx Conservation Assessment and Strategy (Ruediger, 2000), public lands managed by the BLM within the area do not provide primary lynx habitat since the forest vegetation is considered a "dry site," which lacks adequate components for species reproduction and foraging. Timbered BLM managed lands, as well as riparian corridors would provide a connectivity corridor for wildlife, as they move through the area.

WOLVERINE

In February of 2013, the USFWS proposed the wolverine for threatened status under the ESA (USDI FWS, 2013). In that proposal they described the primary threat to the wolverine as the loss of habitat and shrinking range due to climate warming. Secondary threats, including harvest and loss of genetic diversity due to small effective population sizes could become significant as habitat is lost due to the primary threat. The USFWS found no evidence to suggest that current levels of transportation infrastructure development or residential development are a threat or would become one in the future. Land management activities, principally timber harvest, wildland firefighting, prescribed fire, and silviculture can modify wolverine habitat, but this generalist species appears to be little affected by changes to the vegetative characteristics of its habitat.

The wolverine requires extensive tracts of land to accommodate large home ranges and extensive movements. The primary habitat during winter is mid-elevation conifer forest, and summer habitat is subalpine areas associated with high-elevation cirques. Summer use of high elevation habitats is related to the availability of prey and den sites and human avoidance. Lower elevation forests likely contain the greatest amount of ungulate carrion in winter. Den sites are often in large boulder or talus fields in subalpine cirques (IDFG, 2005). The BLM SFO does not have records of wolverine in the project area. The timbered habitat above the project area has the characteristics to support wolverine.

GREATER SAGE-GROUSE

The greater sage-grouse is a sagebrush obligate species that requires large areas of relatively undisturbed sagebrush steppe habitat. Sage-grouse were once abundant and concomitant with sagebrush steppe ecosystems across western North America (Schroeder, Young, & Braun, 1999).

Currently, their distribution has been reduced to nearly half of what it was historically (Schroeder, et al., 2004). Despite long-term population declines, sage-grouse persist across more than 250,000 miles^2 of the sagebrush ecosystem (Schroeder, et al., 2004). Within this requisite sagebrush landscape, important seasonal habitats (e.g., wet meadows, higher elevation mesic shrublands) are also necessary (Connelly, Schroeder, Sands, & Braun, 2000).

Because sage-grouse are still broadly distributed, dependent on a diversity of heterogeneous seasonal habitats, and some populations are wide-ranging, they are expected to be vulnerable to changes to the sagebrush ecosystem. In addition, the maintenance of viable sage-grouse populations is of special concern to state and federal resource managers across the species' present range, and their persistence is important in the socio-political, economic, and environmental realms (Sands & Smurthwaite, 1992). On March 5, 2010 the USFWS submitted a new finding to the Federal Register which found that listing the greater sage-grouse was warranted but precluded by the need to take action on other species facing more immediate and severe extinction threats.

The project area is located in the Western Association of Fish and Wildlife Management Agencies (WAFWA) Snake River Plain Management Zone (MZ), a large population that includes portions of Nevada, Oregon, Idaho, Montana, and Utah (Stiver, et al., 2006). The Snake-Salmon-Beaverhead population within the Snake River Plain MZ (Garton, Connelly, Horne, Hagen, Moser, & Schroeder, 2011) includes a large portion of east-central Idaho. Of the five subpopulations identified by Connelly et al. (2004) within the population, the Lemhi-Birch Idaho subpopulation overlaps the project area.

Generally, habitat conditions have deteriorated or been altered to some degree throughout the entire distribution of sage-grouse. This has caused local extirpations or declines in sage-grouse populations throughout their historical range. Connelly et al., (2004) conducted a population analysis by state and not by management zone, population, or subpopulation. Annual rates of change for sage-grouse in Idaho suggest a long-term decline. More recently, Garton et al. (2011) conducted a population analysis of the Northern Great Basin population based on data from 1965 to 2007. During the assessment period, the proportion of active leks decreased and average number of males per active lek declined by 17 percent (Garton, Connelly, Horne, Hagen, Moser, & Schroeder, 2011). Although the Garton et al. (2011) analysis is more detailed than the Connelly et al. (2004) analysis, both indicated similar trends for sage-grouse populations in the Snake River Plain MZ.

Typically, sage-grouse in the area congregate on communal strutting grounds (i.e., leks) from late March to early May. The nesting season occurs soon after, extending from May to early June. Broods remain with females for several more months as they move from early brood-rearing areas (e.g., forb- and insect-rich upland areas surrounding nest sites) to late brood-rearing and summer habitats (e.g., wet meadows and riparian areas) from June to August. Based on locations acquired through lek surveys, telemetry studies, and incidental observations, sage-grouse breeding, nesting, early and late brood-rearing and winter habitats occur within the project area. The nearest sage-grouse lek is approximately three miles to the south of the project area, with additional leks to the west and northwest. The leks are part of the Upper Lemhi and Leadore East lek routes. The Upper Lemhi lek route had a maximum count of 231 males in the spring of 2006, and 154 males in 2011, the second highest count on record. In 2006, the number of birds on a single lek more than doubled that from the years prior and after. Researchers do not

know where the birds came from or where they went. The Leadore East lek route had a maximum count of 55 in 2009 and a count of 43 for 2011.

Recently, Idaho BLM initiated a modeling effort to identify preliminary priority sage-grouse habitat (PPH) within the Snake River Plain MZ (Makela & Major, 2012). Priority habitat includes breeding, late brood-rearing, and winter concentration areas. Because priority habitat areas have the highest conservation value for maintaining the species and its habitat, it is BLM policy (as per WO IM 2010-071) to identify these areas in collaboration with respective state wildlife agencies. Preliminary results indicate that the project area is within PPH and Priority General Habitat (PGH).

The majority of the project area is currently identified by Idaho as "key" greater sage-grouse habitat. Key habitat consists of generally intact sagebrush that provides sage-grouse habitat during some portion of the year by the (Idaho Sage-grouse Advisory Committee, 2006). The CSGLWG has included all habitat within the area in the Upper Lemhi Priority Area. This is an area where the group felt there was a high priority for protection and restoration (CSGLWG, 2007).

YELLOW-BILLED CUCKOO

Suitable habitat for the yellow-billed cuckoo is considered to be a large block (minimum of 25 acres to upwards of 99 acres) of cottonwood canopy and a thick willow understory (Federal Register, 2001). This type of habitat is rare within the BLM SFO area and not found in the project area.

MIGRATORY BIRDS, RAPTORS, AND OTHER BIRDS (INCLUDING SPECIAL STATUS SPECIES)

A variety of special status bird species occur or are likely to occur within the area. The majority of these species are associated with shrub-steppe, grassland, or riparian habitats. Brewer's sparrow and sage thrasher are heavily reliant on sagebrush steppe for nesting and foraging. Green-tailed towhees are less reliant on sagebrush but are dependent on shrubland habitat. Brewer's blackbird, calliope hummingbird, and willow flycatcher typically are associated with riparian areas. Cassin's finch, Lewis' woodpecker, and red-naped sapsucker prefer forest habitat.

Further consideration is given to avian species afforded special management emphasis under the Migratory Bird Treaty Act (MBTA). As of 2010, under a signed Memorandum of Understanding (MOU) with the USFWS, the BLM has a responsibility to "as practical, protect, restore, and conserve habitat of migratory birds, addressing the responsibilities in Executive Order 13186". The area may provide foraging and nesting habitat for up to 185 species of migratory birds.

The North American Bird Conservation Initiative (NABCI) is a comprehensive instrument by which government agencies, such as the BLM, and private partners can promote and achieve integrated continental bird conservation as specified by Executive Order 13186 and the BLM-USFWS MOU. One product of the NABCI is the designation of Bird Conservation Regions (BCR) across North America. BCRs are ecologically distinct regions with similar avian communities, habitats, and management concerns developed as the primary unit within which issues are resolved, sustainable habitats are designed, and priority projects are initiated. Within

BCRs, regional partnerships, or joint ventures, identify Bird Habitat Conservation Areas in which to deliver and implement state or local bird conservation plans.

On a regional scale, the area includes acreage within both the Great Basin and Northern Rockies BCR. Within the two BCRs, partner agencies and organizations have compiled a list of continentally important bird species, based on a variety of bird initiatives and plans.

Riparian habitats support the most diverse migratory bird communities in the arid and semi-arid portions of the Intermountain West. The nesting requirements of many migratory birds are fulfilled within the area from late-April to mid-July and/or during spring and fall migrations. While some migratory bird species use a wide variety of habitats, others are more specialized. Several species can successfully nest and raise multiple broods during a single breeding season if suitable conditions exist. Grasslands and shrub steppe provide nesting and foraging habitat for the majority of migratory bird species within the area. Most of these ground nesting or shrub-dependent species rely on the vegetative structure and cover found in these habitat types for successful breeding.

An assortment of raptor species occur or potentially occur within the area. The forest and woodland, rock outcrops, and shrub steppe located within the area provide nesting and foraging substrate for many of these species. Generally, raptors return to areas in which they have nested in the past, often using the same nesting territories. Nesting activities may be initiated in mid-February to late April depending upon species. Nest occupation continues until chicks are fledged, which usually occurs from early June to mid-August. Raptor nesting is expected to occur in suitable habitats within the area.

Eagle species are afforded additional protection under the Bald and Golden Eagle Protection Act. Bald eagle activities within the area are concentrated along the Lemhi River. Bald eagles generally utilize cottonwoods along the river, although conifers may provide perch or roosting sites. The highest density of bald eagles occurs in the winter months when birds from the north winter along the river and larger streams in the area. There are no bald eagle nests in the project area, but eagles may forage in the area especially during the winter months.

Golden eagles, prairie falcons, and Swainson's hawks prefer open shrub steppe, sagebrush and grassland habitats. Golden eagles and prairie falcons nest on cliffs and rocky outcrops throughout Idaho. Both species may breed and forage in and/or around the area. Prairie falcons prey on small mammals, especially ground squirrels, but a large portion of their diet also can be comprised of birds.

The *Accipiter* species, northern goshawk, Cooper's hawk and sharp-shinned hawk, and most owls prefer mixed open forest to more dense forest. In semiarid areas, these species often focus hunting efforts in riparian areas due to the abundance of prey found there. Accipiters primarily prey upon birds but also would take small mammals.

Several species of owls that potentially occur within the area include great horned owl and northern saw-whet owl. These species generally are associated with greater tree cover found in woodlands, forest, and riparian areas.

A number of raptor species prefer open woodland or shrub steppe to dense forest. American kestrel, northern harrier, red-tailed hawk and short-eared owl are usually found in more open areas such as sagebrush steppe, grasslands, meadows, or open riparian areas and prey on a wide

variety of small mammals, reptiles, birds, and insects. Northern harriers and short-eared owls are ground nesters and need adequate cover for suitable nest sites.

BIG GAME AND OTHER MAMMALS (INCLUDING SPECIAL STATUS SPECIES)

Several special status mammal species have been documented, or have the potential to occur within the area (Table 5).

The area has long supported populations of a wide variety of big game species. Rocky Mountain elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), Rocky Mountain bighorn sheep (*Ovis Canadensis Canadensis*), moose (*Alces alces*), and pronghorn (*Antilocapra americana*) use portions of the area yearlong. However, some areas are used specifically as seasonal ranges (i.e., spring, summer, fall, and winter). Elk and mule deer winter on the BLM-managed lands in the area and then move to higher elevations during the summer months. Mule deer and pronghorn are common year-round in the area.

Rocky Mountain bighorn sheep in the area inhabit the more rugged habitat in the main canyon. Bighorn sheep move through the area, especially during the breeding period when rams search out ewes for breeding. The project area is within the North Beaverhead Population Management Unit (IDFG, 2010). Salmon Region bighorn sheep populations experienced major young and adult mortality (apparently disease-related) beginning in 1990 and very low lamb production for several years afterward (generally ≤10 lambs:100 ewes) (IDFG, 2009).

The area is located within the IDFG game management unit (GMU) 30A. Mule deer occupy all habitat types from semi-desert shrub and grassland to high montane vegetation. They reach their greatest densities in semi-desert shrublands on rough, broken terrain and riparian areas that provide abundant browse and cover. Deer are migratory, meaning they summer at higher elevations and move down slope as fall approaches. Deer move to lower elevations and forage on more protected south-facing exposures during mid-winter. The area is within the IDFG Mountain Valley Population Management Unit for mule deer. Objectives for the unit are to maintain ≥15 bucks per 100 does in post-season surveys and great than 25 percent ≥4-point bucks in the harvest. During the last ten years the unit has met the objective four years, including the latest year reported (2009) (IDFG, 2010).

Elk can be found in most habitat types and elevations at least on a seasonal basis. Elk are considered generalist feeders that utilize shrubs, grasses, and forbs. Calving grounds are carefully selected by cows and are generally in locations where cover, forage and water are found together. Elk tend to inhabit higher elevations during spring and summer and migrate to lower elevations for winter. Elk form large mixed herds on favored winter range. The area is within the Beaverhead Zone for elk management, specifically GMU 30A. Objectives for the Beaverhead Zone are to maintain elk densities in GMU 30A at approximately 1,250 cows and 325 bulls. Herds would be managed to maintain 18-24 mature bulls and 100 cows in GMUs 30A. To maintain herd productivity, balance depredation concerns with maintaining a reasonably large elk population, and minimize potential impacts on mule deer, a five-year period of herd reduction totaling about 40% was recommended in GMUs 30A during the late 1990s. Surveys in 2004 indicated populations are at or slightly below objective levels. Accordingly, cow harvest was reduced to maintain relatively high productivity and stabilize herd size (IDFG, 2010).

Pronghorn antelope occupy semi-desert shrubland and grassland habitats and can be found in the area during the summer months. Pronghorn move into the area in the summer from the wintering area near the mouth of Birch Creek, a portion of these animals also move north and summer in Montana. The IDFG does not have population goals for the pronghorn in the area, but the numbers have been depressed since the early 1990s, due largely to a winter kill.

Moose and white-tail deer tend to be found along riparian areas, though they would cross semi-desert shrublands at times. Because of dense cover, low moose densities, and solitary habits of moose, formal population surveys are generally ineffective in occupied moose habitat in the Salmon Region (IDFG, 2010). White-tailed deer buck survival is managed to maintain a range of 10-30 percent of bucks with ≥5 antler points per side. In the past, this objective has been met easily for Data Analysis Unit 5 – Rangeland-Riparian Habitat which includes the area (IDFG, 2010).

Large predators that occur within the area include bobcat (*Lynx rufus*), coyote (*Canis latrans*), gray wolf (*Canis lobo*), and mountain lion (*Puma concolor*). These predators are quite secretive and elusive. Because of their secretive nature, predator densities are difficult to determine. However, predators are closely tied to their prey, and if prey numbers are low, predator numbers would reflect that. The gray wolf occurs in parts of Idaho characterized by a mosaic of dry and mesic conifer and subalpine forest, as well as grassland and shrubland habitats. Large areas are required by individual wolves. Den sites are often in wooded, protected sites near water (IDFG, 2005). Wolves can be found in the area. The wolves in the area continue to grow in population. The BLM has no record of rendezvous or den sites on public lands managed by the BLM in the area.

Amphibians and Reptiles including Special Status Species

Several special status amphibians and reptiles, including the western toad and common garter snake, have been documented or have the potential to occur within the area (Table 5). Both species prefer habitats in proximity to water, including springs, streams, wetlands, and meadows. Loss and degradation of riparian/wetland habitats are the most serious threats to the maintenance of viable populations of these species.

Alternative 1 – Proposed Action Direct/Indirect Impacts

With respect to wildlife, impacts from Alternative 1 would be limited. Wildlife habitat would be removed in the short-term as part of the construction activities. The removal of habitat would involve both sage-steppe habitat and riparian habitat. In the long-term, the vegetation would return to the sites where the pipe is buried. There would be a reduction of riparian habitat along the old ditch after the water is piped to the POU and up to 5.2 cfs is returned to the historic Hawley Creek channel. The ditch would also not be available for water consumption for wildlife in the future; instead water would be available in Hawley Creek and the existing stockwater developments.

Focal Special Status Animal Species

Canada lynx: The project would not affect Canada lynx. The project is not within an LAU and for the most part is outside habitat that would be used by lynx. The exception would be a lynx moving through the area which could use riparian habitat for a travel corridor.

Wolverine: The project would not affect wolverine. The project is not within wolverine habitat, and while a wolverine could move through the project area, the odds of that happening are very low.

Greater sage-grouse: The project site is on the edge of greater sage-grouse habitat and about three miles from the nearest lek. Very little vegetation would be removed when compared to the expanse of habitat in the area. The maximum surface area of ground disturbance for construction of the new diversion, temporary bypass, fish screen system, and the irrigation conveyance pipe from the fish screen to the head of the existing ditch is about 0.5 acre. The sites that would be disturbed by construction of the diversion structure and pipeline have been previously disturbed. The fish screen and sediment basin would permanently occupy 0.02 acre. The disturbed areas around the fish screen system and along the pipeline would be reseeded and treated for noxious weeds following construction. Most of the vegetation removed during construction would return to the site overtime. Displacement is possible, but unlikely given the proximity to the edge of sage-grouse habitat. Construction would not occur between May 15th and August 1st which would further limit possible impacts by assuring that construction would not occur during the sage-grouse nesting season.

Yellow-billed Cuckoo: The Proposed Actions would not affect cuckoos or their habitat due to the lack of habitat potential in the project area.

MIGRATORY BIRDS, RAPTORS, AND OTHER BIRDS INCLUDING SPECIAL STATUS SPECIES

While, very little vegetation would be removed when compared to the expanse of habitat in the area, there would be some removal of nesting habitat. Most of the vegetation removed during construction would return to the site overtime. After the diverted water is piped to the POU, the riparian habitat along the open ditch would decline and the site would return to sage-steppe habitat overtime. This would be a decrease in nesting habitat for riparian dependent species, but an increase for sage-steppe dependent species. Construction would not occur between May 15th and August 1st which would further limit possible impacts by assuring that construction would not occur during the nesting season of most migratory birds in the project area.

BIG GAME AND OTHER MAMMALS INCLUDING SPECIAL STATUS SPECIES

The project would have little impact on big game and other species. The main impact would be due to displacement during the construction phase. The displacement would be short-term and with the availability of similar habitat nearby the displacement would be only a short distance.

Alternative 2 – No Action Direct/Indirect Impacts

FOCAL SPECIAL STATUS ANIMAL SPECIES

Alternative 2 would have no effect on Canada lynx, wolverine, greater sage-grouse, yellow-billed cuckoos, or their habitats.

MIGRATORY BIRDS, RAPTORS, AND OTHER BIRDS INCLUDING SPECIAL STATUS SPECIES

Alternative 2 would not affect migratory birds, and the habitat would remain in current conditions.

BIG GAME AND OTHER MAMMALS INCLUDING SPECIAL STATUS SPECIES

There would be no displacement of big game, and no change to habitat for big game or other species.

ECONOMIC AND SOCIAL VALUES

Affected Environment

The Hawley Creek Watershed is in Lemhi County, Idaho, a rural area with an estimated population of 7,936. The community of Leadore is the only town in the proposed project area. Human population south of Leadore and within the proposed project area is sparse, with 105 people living in and around the community of Leadore (Bureau, 2011).

Historically, the Lemhi County economy was based on mining activity which caused population and job numbers to fluctuate over time. Lemhi County's basic economic sections are services and retail (tied to tourism and ranch/farm activities), government, agriculture/ranching, mining, and construction. The largest number of jobs in Lemhi County in 2011 included government, retail trade, construction, and farming. In recent years, service contracts and material sales related to aquatic and riparian restoration projects has become an increasingly important sector of the local economy.

Ranching is an important part of the history, culture and economy of Lemhi County. There are many challenges facing ranchers today. As ranches are sold in whole or part, ranchers may have fewer options to graze livestock, which may result in increased costs and decreased viability of either continuing their operations or passing them on to their heirs. Small towns such as Leadore are unique places with shared values and a relationship with nearby farm and ranchlands. Quality of life issues such as a slower pace of life, low crime rates, high levels of interpersonal trust, opportunities for community involvement, a sense of belonging and a high value placed on the quality of nearby surroundings motivate people to live in these communities.

Dispersed recreation, including hunting, fishing, and OHV use are popular activities in the Hawley Creek Watershed. Until 1997, IDFG stocked Hawley Creek with non-native, hatchery strain rainbow trout (*O. m. irideus*) to provide a readily accessible fishery for the intensive recreation which occurs on this stream. Stocking stopped in 1997, when high levels of naturally-reproducing rainbow trout appeared to support the sport fishery.

Alternative 1 – Proposed Action Direct/Indirect Impacts

Specialized technical assistance has been provided by OSC-USBWP, LSWCD, NRCS, IDFG, and BLM SFO including engineering and design of the fish screen system and a cost-effective and environmentally-friendly irrigation system. Bonneville Power Administration and Pacific Coast Salmon Recovery Funds would be used to fund the installation of the new diversion structure and fish screen system. IDFG would oversee construction of the new diversion structure and fish screen system. At least one local contractor would be hired to complete the construction which would provide an economic benefit to the local economy. The proposed LHaC-03 diversion improvements would also allow McFarland livestock to run their irrigation system in a more time and cost efficient manner than their current operation.

The Proposed Action would not impact hunting and OHV uses. The recreational fishery may improve after the current diversion structure that is a fish passage barrier is removed and the fish screen is installed to prevent fish from being entrained into the irrigation ditch.

Alternative 2 – No Action Direct/Indirect Impacts

Social and Economic values in the area would not change from current condition.

TRIBAL TREATY RIGHTS AND INTERESTS

Affected Environment

The 1868 Fort Bridger Treaty, between the United States and the Shoshone and Bannock Tribes, reserves the Tribes right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone Bannock have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall Reservation that were ceded to the federal government under the Agreement of February 5, 1898, ratified by the Act of June 6, 1900.

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 natural 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: 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 resources, land status, and the visual quality of the environment. The project area would be located on unoccupied federal lands outside of the ceded boundary. Therefore, tribal treaty rights, as defined, are applicable to the study area.

Alternative 1 – Proposed Action Direct/Indirect Impacts

Under the Proposed Action alternative, a fish screen system would be installed to prevent further entrainment of ESA listed fish (including important Treaty Rights species such as bull trout and rainbow trout), and up to 5.2 cfs of perennial flow would be added to Hawley Creek. As a part of a larger strategy to reconnect Hawley Creek with the Lemhi River, this alternative would contribute to allowing unobstructed fish passage (including anadromous fish species, which were historically common in the drainage) when all phases of the reconnection strategy are complete (see *Cumulative Effects Analysis*, Table 7). This would be very beneficial in terms of Treaty Rights fisheries interests.

In the short-term, construction disturbances would impact the balance of riparian cover and upland vegetation, which have over the decades adapted to ditch courses and to periodic ditch flooding. In time, a more natural cycle of vegetative reproductive success and vigor would be established as upland and riparian cover adjust to re-established stream channel flow availability and the reduction of riparian habitat along the Tyler-McFarland Livestock ditch.

There would be short-term impacts to big game and other Treaty Rights animal species in the areas impacted by initial construction, pipe burial, and ground disturbance, but impacts would be minimal since natural undisturbed habitat is only a short distance away along the upper reaches of the Hawley Creek Watershed.

Alternative 2 – No Action Direct/Indirect Impacts

Under Alternative 2, there would be no impact to animal species, including big game, or to existing vegetation cover. However, important Treaty Rights fisheries would continue to be harmfully impacted by entrainment and entrapment in the unscreened McFarland Livestock ditch.

Long-term goals of connection of Hawley Creek with the Lemhi River would not be realized.

CUMULATIVE EFFECTS ANALYSIS

This cumulative effects analysis discloses the incremental impact that the alternatives are anticipated to have when considered in the context other past, present, and reasonably foreseeable future BLM actions, other Federal actions, and non-Federal (including private) actions within the Cumulative Impacts Assessment Area (CIAA). The CIAA is the 40,457 acre USGS 5th field Hawley Creek Watershed, and the private land McFarland Livestock irrigates from the LHaC-03 diversion (Figure 20). About 77% of the acres in the Hawley Creek Watershed are managed by the Salmon-Challis National Forest; 19.6% are managed by the BLM SFO; and 0.8% by the State of Idaho (Table 6). The remaining 2.6% is private land.

Table 6: Surface management status in the Hawley Creek Watershed

	Total	Private	BLM	USFS	State
Watershed Acres	40,457	1,047	7,933	31,170	307
Percent Watershed Acres		2.6%	19.6%	77%	0.8%
Mainstem Hawley Creek Stream Miles	10	2.3	5.4	1	1.3
Percent Mainstem Hawley Creek		23%	54%	10%	13%
Total Watershed Stream Miles	44	2.7	5.9	34.2	1.3
Percent Total Watershed Streams		6%	13%	78%	3%

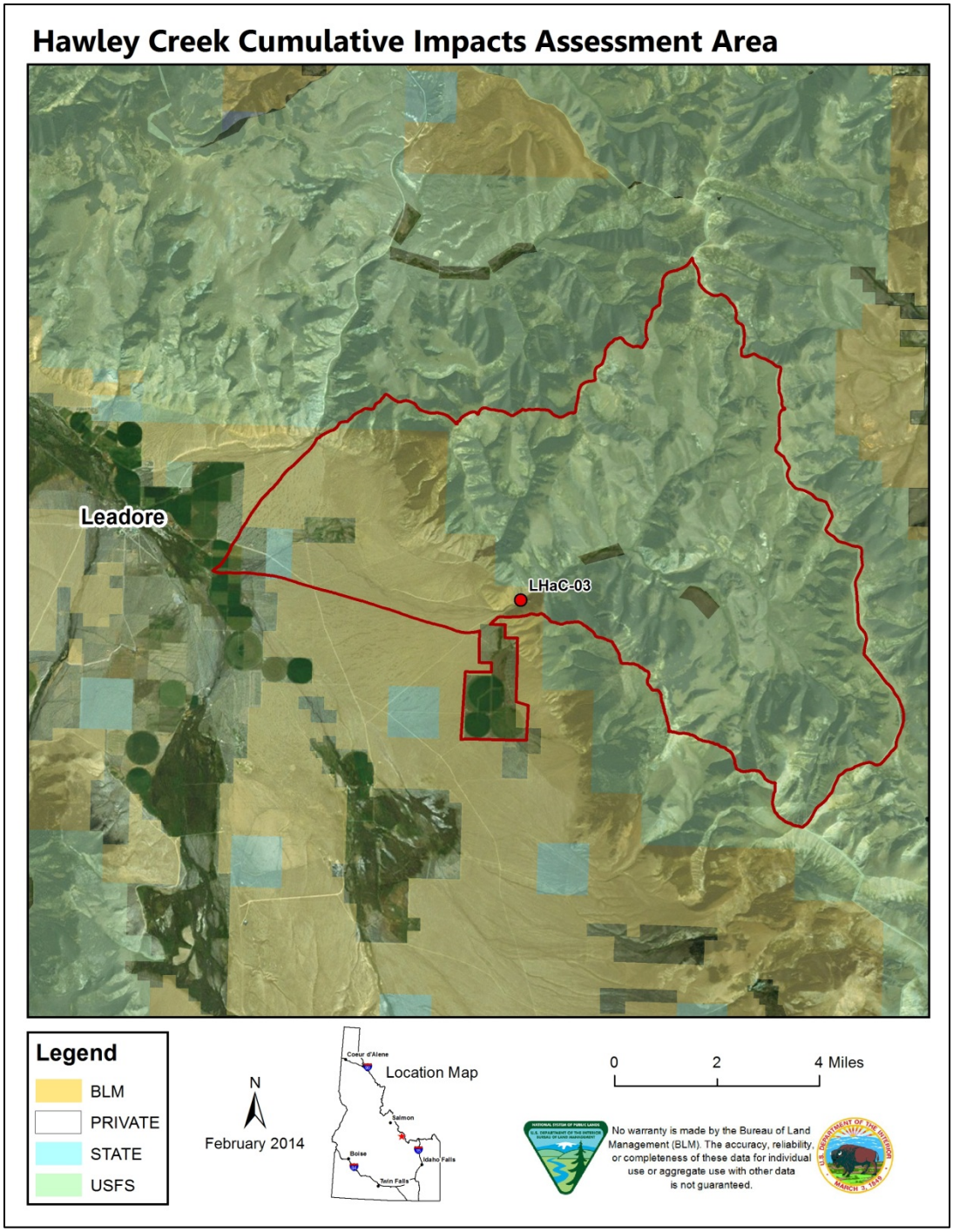

Figure 20: LHaC-03 Diversion Improvement Project Cumulative Impacts Assessment Area

The timeframe of this analysis includes both short-term and long-term potential cumulative effects. The temporal boundary for this analysis is 10 years.

Although these actions probably do not account for all of the actions that have, or are likely to occur, GIS analysis, agency records, and professional judgment suggest that they have contributed to the vast majority of cumulative impacts that have occurred in the CIAA.

Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable future actions that have impacted the LHaC-03 Diversion Improvement Project CIAA to varying degrees include livestock grazing, private land agriculture/ranching, weed treatments, water diversion for irrigation, infrastructure (other than roads), road network including low water fords, dispersed and developed recreation, and rangeland seeding (Table 7).

Table 7: Past, present, and reasonably foreseeable actions in the LHaC-03 Diversion Improvement Project CIAA

Type of Activity	Past and Present	Reasonably Foreseeable
Livestock Grazing	Within the CIAA there are portions of 3 BLM managed grazing allotments, 2 USFS managed grazing allotments and 2 IDL managed grazing allotments. Three blocks of private land are also used for grazing.	Permitted grazing activity on BLM lands is expected to decrease by approximately 160 AUMs. Grazing activity on the other lands is expected to remain at current levels in the foreseeable future.
Private Land Agriculture/Ranching	Private lands in the CIAA are irrigated for hay and are grazed by livestock.	In 2013 McFarland Livestock completed a POU transfer agreement with Idaho Department of Water Resources (IDWR transaction #78495). This agreement will reduce the acres currently irrigated by McFarland Livestock from the LHaC-03 diversion (754.4 acres) by 232.7 acres in 2014.
Weed Treatments	Weed species on BLM lands in the Hawley Creek Watershed, including the proposed staging sites have been vigorously treated by LCWMA and BLM staff under assistance agreements in the last two years.	These weed reduction treatments are expected to continue on an annual basis for the foreseeable future.
Water Diversion for Irrigation	There are 3 unscreened diversions on Hawley Creek (Figure 18. These diversions and their water rights are: LHaC-01 on private land 3 cfs, LHaC-02 on BLM 4 cfs, and LHaC-03 on BLM 15.7 cfs. The Big Bear Creek LHaC-04 diversion is on private land upstream of the Forest boundary. This diversion has a 2 cfs water right. In 2005, a permanent earthen dam at LHaC-02, ¾-mile downstream of	Government agencies, landowners, and non-government organizations would continue to work toward implementing projects in the Hawley Creek Watershed that screen diversions, improve water delivery, and conserve instream flow in the foreseeable future.

Type of Activity	Past and Present	Reasonably Foreseeable
	LHaC-03 at the LHaC-03 diversion was removed.	
Infrastructure Other Than Roads	In 2013 IDFG installed a pit tag array on private land in lower Hawley Creek above the Eighteenmile Creek confluence. In 2013, the BLM SFO issued a ROW for a second pit tag array in Hawley Creek. This array will be installed just upstream of the proposed LHaC-03 diversion site. There is one powerline in the CIAA, it runs from private land west of the CIAA to private land in the CIAA. The length of the powerline in the CIAA is less than 1 mile. There are approximately 29 miles of fenceline on USFS managed land, 11 miles on private land, and 6 miles on BLM managed land. There are approximately 26 water developments on USFS managed lands and 3 on BLM managed lands.	In 2014, IDFG will install the pit tag array in the BLM ROW just upstream of the proposed LHaC-03 diversion structure. There are no new powerlines planned for construction in the CIAA in the foreseeable future. The BLM plans to build 0.75 miles of fence in the CIAA, and would remove 0.5 miles of fence. The BLM is removing one water development on BLM lands.
Road Network including Fords	Roads in the Hawley Creek Watershed are currently managed according to the 2001 Lemhi Resource Management Plan Amendment on BLM lands and USFS lands are managed based on their current travel plan. OSC-USBWP replaced two Hawley Creek Road culverts with bridges in 2013 – one on private land, one on the BLM SFO downstream of LHaC-03 (Figure 18).	BLM SFO will complete a travel management plan in 2015. The Proposed Action includes hardening of 4 BLM Hawley Creek fords. Theses fords have eroded streambanks and are delivering sediment to Hawley Creek (Figure 18). Government agencies, landowners, and non-government organizations would continue to partner on projects in Hawley Creek Watershed to replace the other diversions and road culverts that are fish passage barriers.
Dispersed and Developed Recreation	There are 3 developed campgrounds on USFS managed lands within the CIAA. There is a variety of dispersed recreation occurring on BLM, USFS, and IDL managed lands in the CIAA. Most of this	There are no new recreation developments planned for the foreseeable future. Dispersed recreation is expected to remain at similar levels for the foreseeable future.

Type of Activity	Past and Present	Reasonably Foreseeable
	activity centers around hunting seasons, and includes dispersed camping sites and OHV use on existing roads and trails.	
Rangeland Seeding	There have been two seedings in the CIAA. The Hawley Creek non-native seeding in 1965 and the Leadville native seeding in 2012. Both have been on BLM managed lands.	There are no known plans for rangeland seeding in the CIAA in the foreseeable future.

Cumulative Impacts Associated with Past, Present, Reasonably Foreseeable Actions

Each of the past, present, and reasonably foreseeable future actions described in Table 7 contribute a specific incremental environmental effect that can be described or accounted for with the same indicators as used in the alternative analysis presented earlier in the document. The accumulated effect of past, present, and reasonably foreseeable future actions on a given resource provides a baseline from which to evaluate the contribution of the alternatives to the collective impact on that resource.

SOILS

The past, present, and reasonably foreseeable activities, primarily private land agriculture, private and public land livestock grazing, roads, and dispersed recreation can increase erosion and compaction of soils. Eroded and compacted soils are less capable of supporting healthy native plant populations. There is some evidence of erosion and compaction occurring within the CIAA, however these impacts are: (1) not wide-spread, (2) confined to disturbance footprints, and (3) most evident on roads and OHV trails. These impacts are expected to continue at current or similar levels.

VEGETATION

The past, present, and reasonably foreseeable activities, primarily private land agriculture, private and public land livestock grazing, roads, and dispersed recreation can impact vegetative communities. Where these activities occur, native plant communities can be replaced, as in the case with private land cultivation, or may be only slightly affected by trampling and/or grazing. In these cases, most native plant communities persist similar to how they did prior to settlement. The more evident impacts to vegetation occurring within the CIAA are: (1) not wide-spread, (2) confined to disturbance footprints, and (3) most evident near roads and private lands. These impacts are expected to continue at current or similar levels.

WETLANDS AND RIPARIAN ZONES

During most of the last 100 years, Hawley Creek has been dry in late August from LHaC-03 to the Eighteenmile Creek-Hawley Creek intercept (about 6.9 miles) because of irrigation withdrawals. As a result, the riparian vegetation is greatly reduced or lacking along 6.1 miles of

Hawley Creek between the LaC-02 diversion and the Eighteenmile Creek-Hawley Creek intercept (Figure 18). Instead, the riparian corridor follows the Tyler-McFarland Livestock ditch that carries perennial flow.

Since the earthen dam was removed in 2005, Hawley Creek flows in the natural channel below LHaC-02 when water isn't being diverted for irrigation. Sagebrush that had encroached into the historic channel has begun to die-off. Lower Hawley Creek will be investigated for possible listing by IDEQ as water temperature impaired in the next listing cycle due to loss of riparian canopy cover (IDEQ, 2012).

Government agencies, landowners, and non-government organizations would continue to implement projects in the Hawley Creek Watershed that improve water delivery and conserve instream flow in the foreseeable future. The instream flow savings from these future diversion modifications are expected to increase the riparian vegetation along 3.9 miles of Hawley Creek managed by the BLM. There is likely to be little, if any, change in the riparian habitat on the 2.2 miles of lower Hawley Creek channel that flows through private and State lands.

Modification of the LHaC-02 diversion would also reduce or eliminate about 2.75 miles of riparian vegetation (primarily coyote willow) that has become established along the McFarland Livestock-Tyler irrigation ditch.

INVASIVE AND NON-NATIVE SPECIES

The LCWMA treats 463 acres on State, BLM, Forest Service, and private lands in the Hawley Creek Watershed annually. These treatments are expected to continue on an annual basis for the foreseeable future.

In 2013 McFarland Livestock completed a POU transfer agreement with Idaho Department of Water Resources (IDWR transaction #78495). This agreement will reduce the acres currently irrigated by McFarland Livestock from the LHaC-03 diversion (754.4 acres) by 232.7 acres in 2014.

Plants not adapted to natural precipitation regimes would die-out when the 232.7 acres of irrigated pasture/hay field are converted to dry land pasture in 2014. These acres have the potential to become infested with noxious and invasive weeds when the existing seed bank is no longer suppressed by irrigation.

WATER QUALITY

The primary influence on Hawley Creek water quality is decreased streamflow due to irrigation withdrawals, and lower Hawley Creek, from the LHaC-03 diversion to the confluence with Eighteenmile Creek is recommended for listing as Category 4c: impaired for low flow alteration (IDEQ, 2012).

The Big Bear Creek diversion upstream of the Forest boundary has a 2 cfs water right. The mean baseflow in Hawley Creek measured at the Forest boundary is 12-20 cfs. The three Hawley Creek diversions have combined water rights of 22.7 cfs[3], and the historic channel is frequently dry during the irrigation season. When water is present, it sinks rapidly into the

[3] Additional water is diverted during periods of high flow.

alluvium. Government agencies, landowners, and non-government organizations would continue to implement partnership projects in Hawley Creek Watershed to improve water delivery and conserve instream flow. These diversion modification projects are expected to provide perennial flow in the historic Hawley Creek channel in the foreseeable future.

Hardening the BLM fords would reduce any water quality impacts associated with sediment delivery and the loss of riparian vegetation at these sites.

ESA-Listed Fishes, Designated Critical Habitat, and Essential Fish Habitat

Private and public land management practices including water withdrawals for irrigation, diversion structures, culverts, low water fords, and entrainment into irrigation ditches impact riparian and aquatic habitat in the Hawley Creek Watershed, prevent anadromous fish from accessing Hawley Creek, and limit the resident bull trout population (Figure 18). Government agencies, landowners, and non-government organizations have implemented and would continue to implement partnership projects in Hawley Creek Watershed that would increase instream flows, eliminate entrainment into diversions, armor the low water crossings, and provide unobstructed fish passage (Figure 18). The goal of these projects is to improve riparian and aquatic habitats, and reconnect the migratory corridor between Hawley Creek and the Lemhi River and provide Chinook salmon, steelhead, and fluvial bull trout access to the Hawley Creek Watershed. The IDFG pit tag arrays would be used to monitor the anadromous fish utilization that is expected to occur in response to these Hawley Creek projects.

Wildlife Resources including Threatened, Endangered, and Sensitive Animals and Migratory Birds

The past, present and foreseeable actions in the CIAA have and would continue to effect wildlife and their habitat primarily through displacement and habitat conversion. Activities on the landscape, including recreation and commodity use can displace wildlife in the short term. Currently, habitat within the CIAA is increasing in respect to both diversity and density of cover. The 2012 Leadville seeding and changes in grazing management have led to habitat making progress towards meeting Idaho Standards and Guidelines. Wildlife displacement has occurred at the individual level, but species have not been displaced at the CIAA scale.

Contribution of the Alternatives to the Cumulative Impacts

Soils

Proposed Action

About 0.5 acre of upland habitat would be disturbed for construction of the fish screen system, and the fish screen and sediment basin would permanently occupy 0.02 acre. Much of this area has been previously disturbed by construction and maintenance of the existing diversion and Hawley Creek Road (Figure 10). The WEPP model (Elliot & Hall, 2010) does not predict any sediment delivery from the fish screen construction because of the high rock content in the soil.

Stockpiling and equipment staging would occur at two different locations. The first would be about 0.1 acre in size and would be located near the Hawley Creek bridge (Figure 9). This site was used as a staging area in 2013 during the bridge construction. The second area would be

about 0.7 acre and is an existing vehicle pull-out and dispersed camping area that is located along Hawley Creek Road, downstream of the new Hawley Creek bridge, near the BLM cattleguard (Figure 8).

The Proposed Action would not contribute significantly to the overall soil impacts that are have occurred, are occurring, or will occur in the foreseeable future at these sites or within the CIAA.

NO ACTION

The No Action alternative would maintain the existing soil impacts within the CIAA.

VEGETATION

PROPOSED ACTION

About 0.5 acre of upland habitat would be disturbed for construction of the new diversion and fish screen system; the fish screen and sediment basin would permanently occupy 0.02 acre. The area around the fish screen system would be reseeded with the BLM approved seed mix. LSWCD would hydro-seed the rest of the disturbed BLM land along the pipeline with the seed mix and seeding rates specified in Appendix C. These measures are expected to prevent invasive plant components or weed-dominated communities from becoming established following construction.

Stockpiling and equipment staging would occur at two different locations adjacent to Hawley Creek Road and the existing vegetation in these sites would be mechanically crushed as vehicles are parked or soil is stockpiled and moved throughout the duration of construction. The vegetative cover in both of these areas has been reduced by previous and on-going vehicle disturbance.

The Proposed Action would not contribute significantly to the overall vegetative impacts that are have occurred, are occurring, or will occur in the foreseeable future at these sites or within the CIAA.

NO ACTION

The No Action alternative would maintain the existing vegetation impacts within the CIAA.

WETLANDS AND RIPARIAN ZONES

PROPOSED ACTION

The instream flow savings in the Proposed Action in conjunction with the reasonably foreseeable actions is expected to increase the riparian cover on the sections of Hawley Creek managed by the BLM that have been adversely impacted by past and current actions.

There is likely to be little, if any, change in the riparian habitat on the sections of Hawley Creek that flow through private and State lands as a result of the Proposed Action. The private land has been historically, and is currently, managed for hay and livestock production. This management is expected to continue in for the reasonably foreseeable future (Table 6).

NO ACTION

The No Action alternative would maintain existing conditions, and would not contribute to restoration of the riparian vegetation on the BLM sections of Hawley Creek.

Invasive and Non-native Species

Proposed Action

The BLM land that would be disturbed during construction of the new fish screen system, pipeline, and future maintenance of the fish screen have been previously disturbed by construction of the Hawley Creek Road and the existing LHaC-03 diversion. These areas continue to be disturbed by vehicles. The annual LCWMA and BLM noxious and invasive weed treatments are expected to continue for the reasonably foreseeable future at these sites. The proposed seeding and weed treatments following construction are expected to establish desirable species, decrease the existing weed populations, and suppress new noxious weed infestations, so the Proposed Action would not contribute significantly to the overall vegetative impacts that are occurring at these sites or within the CIAA.

No Action

Under the No Action, the annual weed treatments CIAA, including the project area would continue as they do now.

Water Quality

Proposed Action

The primary influence on Hawley Creek water quality is decreased streamflow due to irrigation withdrawals, and lower Hawley Creek, from the LHaC-03 diversion to the confluence with Eighteenmile Creek is recommended for listing as Category 4c: impaired for low flow alteration (IDEQ, 2012). The Proposed Action would provide up to 5.2 cfs of perennial instream flow between the LHaC-03 diversion and the LHaC-02 diversion ¾-mile downstream to benefit aquatic habitat in a reach where flows have been severely diminished due to water withdrawals for the past 100 years. The IDWR seepage runs indicate the water conserved at LHaC-03 would allow the natural, historic channel to recharge (Figure 16). However, until the modifications to LHaC-02 diversion are implemented, the instream flow savings from modification of LHaC-03 may be captured by the LHaC-02 diversion (Figure 18).

No Action

The No Action Alternative would maintain the existing water quality, and would not reduce the current cumulative impacts to water quality in the CIAA.

Fisheries, ESA-Listed Fishes, and Designated Critical Habitat

Proposed Action

Historic irrigation practices and man-made barriers have disconnected Hawley Creek from the Lemhi River and continue to adversely impact anadromous and resident fish populations and habitats, and designated Chinook salmon critical habitat and Essential Fish Habitat in the Hawley Creek Watershed. This project is part of a comprehensive plan that is expected to reconnect Hawley Creek with the Lemhi River in the reasonably foreseeable future. This is the highest diversion on Hawley Creek and would be the first diversion modified to reconnect Hawley Creek with the Lemhi River. The Proposed Action would eliminate entrainment and provide unobstructed fish passage at the LHaC-03 diversion, and improve flow to reduce the cumulative

effects of past and present actions that continue to adversely impact anadromous and resident fish populations and habitats, and designated Chinook salmon critical habitat and Essential Fish Habitat in the CIAA.

NO ACTION

The No Action Alternative would maintain existing habitat conditions, would not reduce the past and current cumulative impacts or move toward restoration of anadromous and resident fish populations and habitats, and designated Chinook salmon critical habitat and Essential Fish Habitat in the CIAA.

WILDLIFE RESOURCES INCLUDING THREATENED, ENDANGERED, AND SENSITIVE ANIMALS AND MIGRATORY BIRDS

PROPOSED ACTION

At the CIAA scale, the project would make little difference to the effects that past, present, and reasonably foreseeable actions would have on wildlife. The very small footprint of the project, when compared to the CIAA area, would have an immeasurable effect on wildlife habitat. There would be a small increase in potential displacement of wildlife species in the CIAA, but the displacement would be short-term in duration. For sage-grouse, in particular, there is currently over 18,000 acres of PPH in the CIAA. Of that, less than 1 percent would be affected by the project. Even less would be affected by long-term loss of sage-steppe habitat.

NO ACTION

The No Action Alternative would maintain existing habitat conditions; there would be no change in effects at the cumulative scale.

CONSULTATION AND COORDINATION

Persons and Agencies Consulted

This project proposal was reviewed and ranked by the USBWP Technical Team during the planning process. The Technical Team consists of representatives from the OSC-USBWP, IDFG, Shoshone-Bannock Tribes, NRCS, LSWCD, BLM, Salmon-Challis National Forest, NMFS, USFWS, TNC, Trout Unlimited, Idaho Department of Water Resources, Idaho Department of Environmental Quality, Custer SWCD, and Bureau of Reclamation. The priority ranking was “high” based on habitat limiting factors, impact area, and fish species/life stage.

ESA Section 7 consultation was completed and letters of concurrence were received from NMFS and USFWS.

List of Preparers

Section of EA	Specialist
Existing and Potential Land Uses/Access/Prime and Unique Farmlands/Environmental Justice	Joni Cain, Realty Specialist
Soil Resources/Wastes, Hazardous or Solid	Brandy Janzen, Natural Resource Specialist
Paleontological Resources/Cultural Resources/Tribal Treaty Rights and Interests/Native American Religious Concerns	Steven Wright, Archaeologist
Vegetation/Range Resources	Kyra Povirk, Rangeland Management Specialist
Invasive, Non-native Species	Chris Tambe, Weeds/Range Technician
Floodplains/Wetland and Riparian Zones/Water Quality/Fisheries/TES Fishes	Lucy Littlejohn, Fish Biologist
Wildlife Resources/Focal Special Status Animal Species/Migratory Birds	Vince Guyer, Natural Resource Specialist
Economic and Social Values	Lucy Littlejohn, Project Lead
Recreational Use/Visual Resources/Wilderness/WSA/Wildand Scenic Rivers	Elizabeth Townley, Recreation Planner

Preparer /s/ Lucy Littlejohn

Date 06/11/2014

Reviewer /s/ Kyra Povirk

Date 06/11/2014

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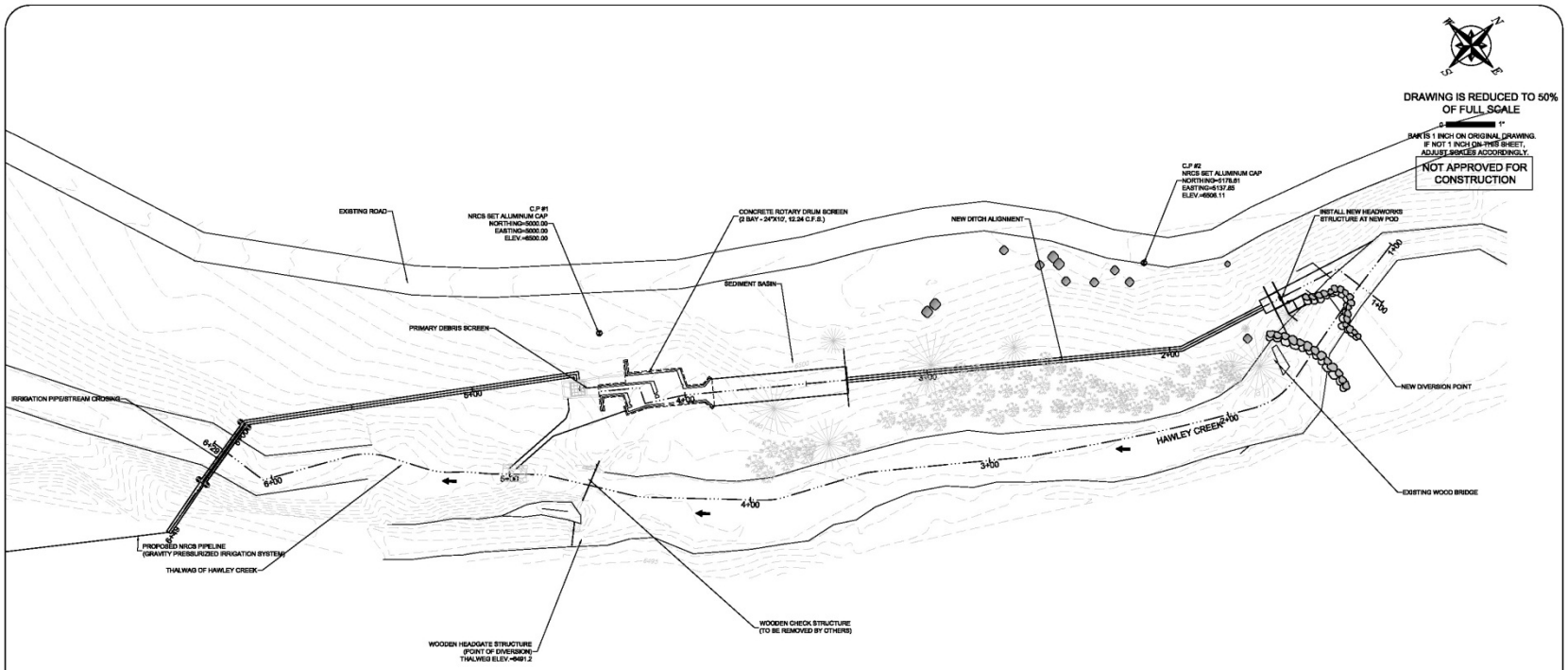
APPENDIX A: LEMHI-HAWLEY CREEK-03 DESIGN DRAWINGS AND SITE PLANS



LEGEND

	EXISTING	PROPOSED
FLOW LINE OF DITCH		
DITCH TOE OF BANK		
DITCH TOP OF BANK		
THALWEG OF STREAM		
STREAM TOE OF BANK		
STREAM TOP OF BANK		
CONTOUR LINE		
CONTROL POINT		
FLOW DIRECTION		

PROJECT DESIGN INFORMATION - STREAMSTATS

PROJECT AREA DRAINAGE AREA	43.1 MILES^2
MEAN ANNUAL PRECIPITATION	18.5 INCHES
1.5 YEAR RECURRENCE INTERVAL DISCHARGE	55.6 C.F.S
2.0 YEAR RECURRENCE INTERVAL DISCHARGE	73.5 C.F.S
10 YEAR RECURRENCE INTERVAL DISCHARGE	178 C.F.S.
50 YEAR RECURRENCE INTERVAL DISCHARGE	289 C.F.S.
100 YEAR RECURRENCE INTERVAL DISCHARGE	342 C.F.S.
20% EXCEEDANCE (JUNE)	117 C.F.S.
MEDIAN EXCEEDANCE (JUNE)	62.2 C.F.S.
80% EXCEEDANCE (JUNE)	26.5 C.F.S.

GENERAL NOTES

INSTALL NEW DOUBLE BAY CONCRETE SCREEN STRUCTURE. STRUCTURE TO BE A DOUBLE DRUM PADDLE WHEEL DESIGN WITH A 24" DIA. SCREEN 10' LONG. DESIGN FLOW=12.24 CFS AT 85% SUBMERGENCE, FLOW AGREEMENT = 10.46 CFS

INSTALLATION OF SCREEN, PADDLE WHEEL, TRASH RACK, AND MECHANICAL APPURTENANCES TO BE COMPLETED BE IDFG

EXCAVATED MATERIAL SHALL BE USED TO REGRADE DITCH, PROVIDE FILL AROUND NEW STRUCTURE AND BUILD UP DITCH BANKS UPSTREAM OF NEW STRUCTURE.

CONSTRUCT A TEMPORARY BYPASS CHANNEL IF NEEDED AND FILL IN AFTER PROJECT IS COMPLETE. ALL BYPASSED WATER MUST BE SCREENED IN A MANNER ACCEPTABLE TO THE IDFG ENGINEER. CONSTRUCTION OF THE SCREEN SHOULD BE COORDINATED WITH LANDOWNER/WATER USERS FOR OPTIMAL USE.

STRIP TOPSOIL AND STOCKPILE. REPLACE UPON COMPLETION OF WORK AND RESEED WITH GRASSES SPECIFIED IN CONTRACT DOCUMENTS. DISTURBANCE OF EXISTING VEGETATION ON DITCH BANK AND RIVER BANK SHALL BE KEPT TO A MINIMUM.

MAINTAIN MINIMUM 18" OF COVER OVER TOP OF BYPASS PIPE, PROVIDE FILL MATERIAL AND MOUND AS NECESSARY.

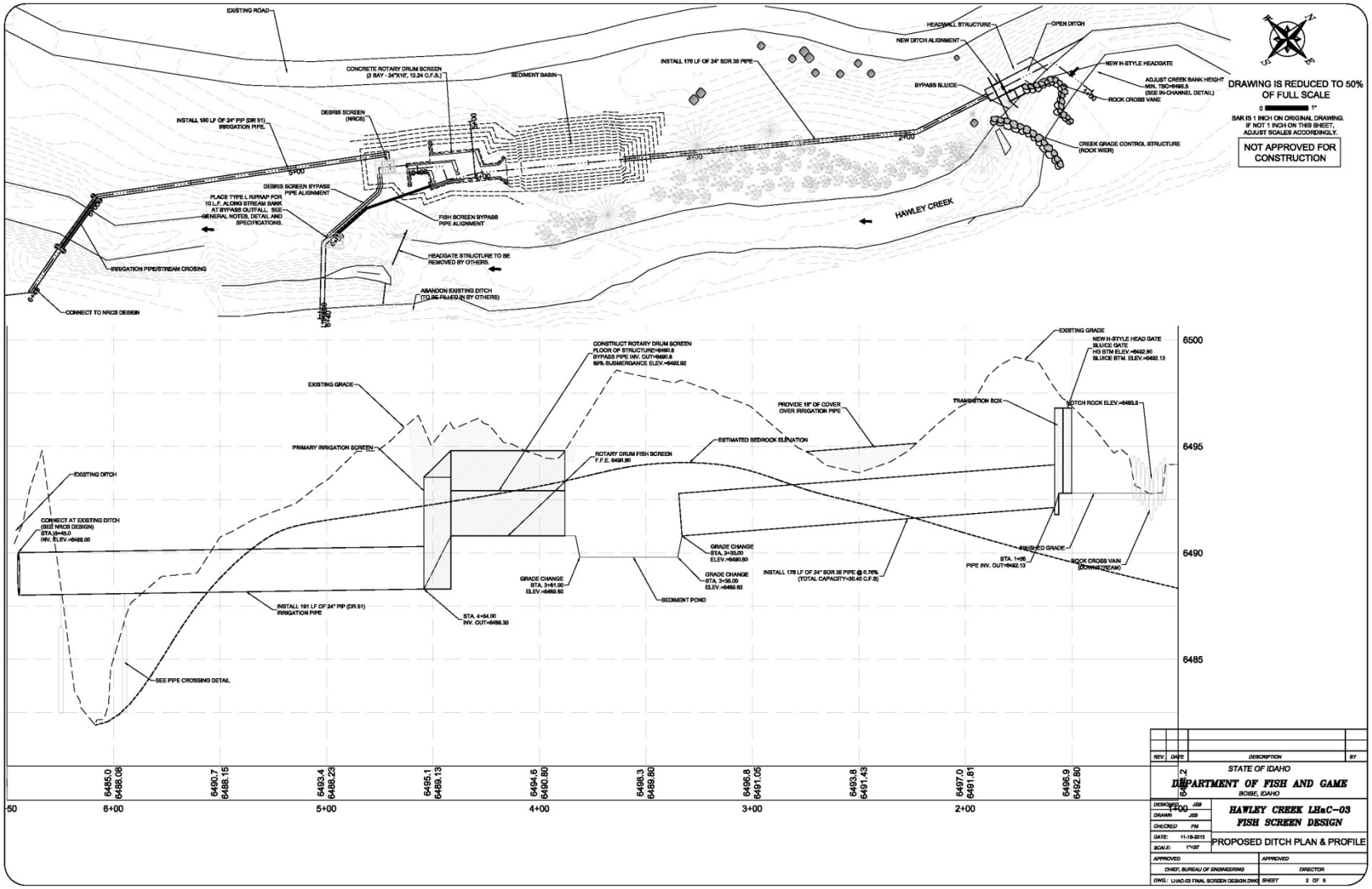
RIPRAP WORK REQUIRED, SEE PLAN VIEW FOR LOCATIONS AND SIZE, ROCK TO BE PLACED OVER GEOTEXTILE FILTER FABRIC (CONTECH C-60NW OR EQUIVALENT) INSTALLED PER MANUFACTURES RECOMMENDATIONS. CARE SHOULD BE TAKEN WHEN PLACING ROCK TO AVOID DAMAGING GEOTEXTILE.

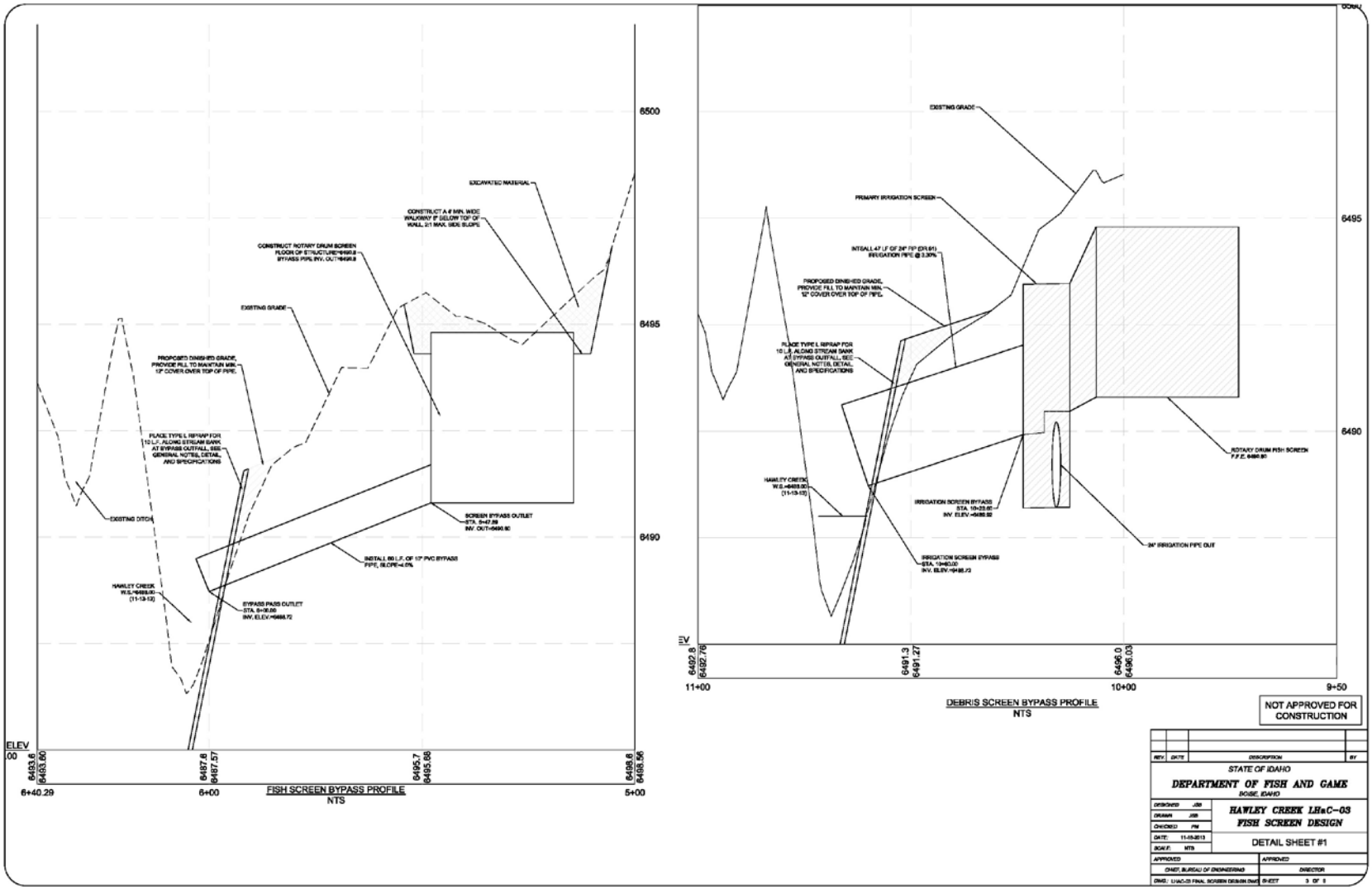
INSTALL NON-STANDARD 4 1/4" DIAMETER ORIFICE AT BYPASS OUTLET FROM STRUCTURE.

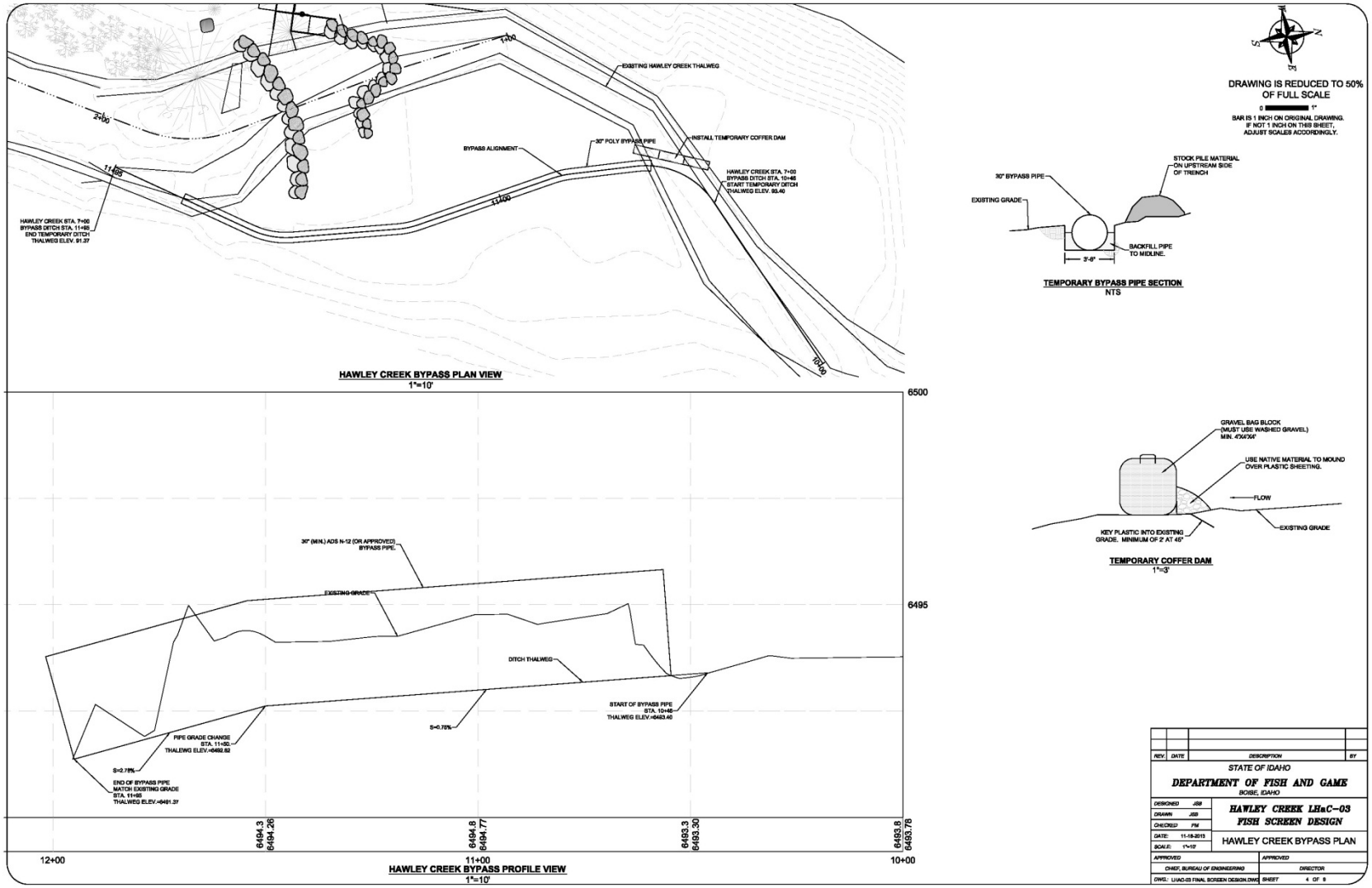
REV.	DATE	DESCRIPTION	BY

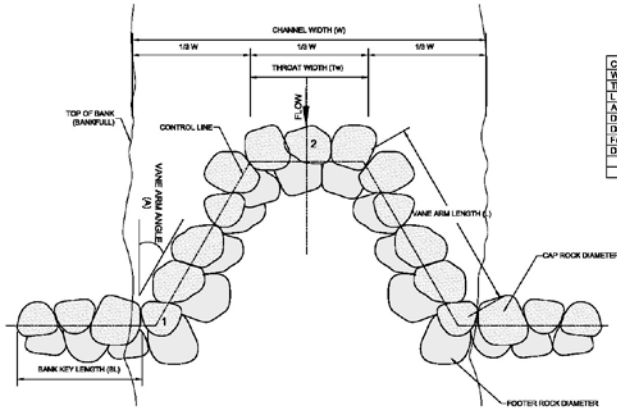
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO

DESIGNED JSB	**HAWLEY CREEK LHsC-03 FISH SCREEN DESIGN**
DRAWN JSB	
CHECKED PM	
DATE: 11-18-2013	OVERALL SITE PLAN
SCALE: 1"=20'	
APPROVED	APPROVED
CHIEF, BUREAU OF ENGINEERING	DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG	SHEET 1 OF 8


EXISTING ROAD
CONCRETE ROTARY DRUM SCREEN (2 BAY - 24"X10', 12.24 C.F.S.)
SEDIMENT BASIN
INSTALL 176 LF OF 24" SDR 35 PIPE
HEADWALL STRUCTURE
NEW DITCH ALIGNMENT
OPEN DITCH
NEW H-STYLE HEADGATE
ADJUST CREEK BANK HEIGHT MIN. TSC=6495.5 (SEE IN-CHANNEL DETAIL)
BYPASS SLUICE
ROCK CROSS VANE
CREEK GRADE CONTROL STRUCTURE (ROCK WEIR)
DRAWING IS REDUCED TO 50% OF FULL SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING. IF NOT 1 INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
NOT APPROVED FOR CONSTRUCTION
INSTALL 180 LF OF 24" PIP (DR 51) IRRIGATION PIPE.
DEBRIS SCREEN (NRCS)
DEBRIS SCREEN BYPASS PIPE ALIGNMENT
PLACE TYPE L RIPRAP FOR 10 L.F. ALONG STREAM BANK AT BYPASS OUTFALL. SEE GENERAL NOTES, DETAIL AND SPECIFICATIONS.
FISH SCREEN BYPASS PIPE ALIGNMENT
HAWLEY CREEK
HEADGATE STRUCTURE TO BE REMOVED BY OTHERS.
ABANDON EXISTING DITCH (TO BE FILLED IN BY OTHERS)
IRRIGATION PIPE/STREAM CROSING
CONNECT TO NRCS DESIGN
EXISTING GRADE
CONSTRUCT ROTARY DRUM SCREEN FLOOR OF STRUCTURE=6490.5 BYPASS PIPE INV. OUT=6490.5 50% SUBMERGANCE ELEV.=6492.92
PRIMARY IRRIGATION SCREEN
ROTARY DRUM FISH SCREEN F.F.E. 6490.90
ESTIMATED BEDROCK ELEVATION
PROVIDE 18" OF COVER OVER IRRIGATION PIPE
TRANSITION BOX
NOTCH ROCK ELEV.=6493.5
EXISTING DITCH
CONNECT AT EXISTING DITCH (SEE NRCS DESIGN) STA.3+45.0 INV. ELEV.=6488.00
GRADE CHANGE STA. 3+30.00 ELEV.=6490.50
GRADE CHANGE STA. 3+56.00 ELEV.=6492.50
GRADE CHANGE STA. 3+61.00 ELEV.=6492.50
SEDIMENT POND
INSTALL 178 LF OF 24" SDR 35 PIPE @ 0.76% (TOTAL CAPACITY=90.45 C.F.S)
FINISHED GRADE
STA. 1+05 PIPE INV. OUT=6492.13
ROCK CROSS VAIN (DOWNSTREAM)
INSTALL 191 LF OF 24" PIP (DR 51) IRRIGATION PIPE
STA. 4+54.00 INV. OUT=6496.30
SEE PIPE CROSSING DETAIL
6500
6495
6490
6485
6485.0 6488.06
6490.7 6488.15
6493.4 6488.23
6495.1 6489.13
6494.6 6490.80
6498.3 6489.80
6496.8 6491.05
6493.8 6491.43
6497.0 6491.81
6496.9 6492.80
-50
6+00
5+00
4+00
3+00
2+00
1+00
REV. DATE DESCRIPTION BY
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO
DESIGNED JSB
DRAWN JSB
CHECKED PM
DATE: 11-18-2013
SCALE: 1"=30'
HAWLEY CREEK LHsC-03
FISH SCREEN DESIGN
PROPOSED DITCH PLAN & PROFILE
APPROVED
CHIEF, BUREAU OF ENGINEERING
APPROVED
DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG
SHEET 2 OF 8

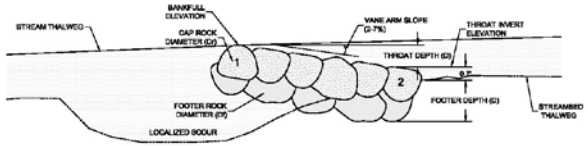

EXCAVATED MATERIAL
CONSTRUCT A 8' MIN. WIDE WALKWAY 8" BELOW TOP OF WALL, 2:1 MAX. SIDE SLOPE
CONSTRUCT ROTARY DRUM SCREEN FLOOR OF STRUCTURE=6495.8 BYPASS PIPE INV. OUT=6490.8
EXISTING GRADE
PROPOSED DINISHED GRADE, PROVIDE FILL TO MAINTAIN MIN. 12" COVER OVER TOP OF PIPE.
PLACE TYPE L RIPRAP FOR 10 L.F. ALONG STREAM BANK AT BYPASS OUTFALL, SEE GENERAL NOTES, DETAIL, AND SPECIFICATIONS
EXISTING DITCH
HAWLEY CREEK W.S.=6488.50 (11-13-12)
SCREEN BYPASS OUTLET STA. 6+47.89 INV. OUT=6490.90
INSTALL 89 L.F. OF 12" PVC BYPASS PIPE, SLOPE=4.0%
BYPASS PASS OUTLET STA. 6+36.85 INV. ELEV.=6488.72
6500
6495
6490
ELEV
.00
6493.6
6493.60
6487.8
6487.57
6495.7
6495.66
6488.6
6488.56
6+40.29
6+00
5+00
FISH SCREEN BYPASS PROFILE
NTS
EXISTING GRADE
PRIMARY IRRIGATION SCREEN
INSTALL 47 LF OF 24" FP (DR/61) IRRIGATION PIPE @ 3.30%
PROPOSED DINISHED GRADE, PROVIDE FILL TO MAINTAIN MIN. 12" COVER OVER TOP OF PIPE.
PLACE TYPE L RIPRAP FOR 10 L.F. ALONG STREAM BANK AT BYPASS OUTFALL, SEE GENERAL NOTES, DETAIL, AND SPECIFICATIONS
HAWLEY CREEK W.S.=6488.50 (11-13-12)
IRRIGATION SCREEN BYPASS STA. 10+33.87 INV. ELEV.=6492.92
IRRIGATION SCREEN BYPASS STA. 10+60.00 INV. ELEV.=6491.73
ROTARY DRUM FISH SCREEN F.F.E. 6495.91
24" IRRIGATION PIPE OUT
6495
6490
6492.8
6492.76
6491.3
6491.27
6496.0
6496.03
11+00
10+00
9+50
DEBRIS SCREEN BYPASS PROFILE
NTS
NOT APPROVED FOR CONSTRUCTION
REV. DATE DESCRIPTION BY
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO
DESIGNED JSB
DRAWN JSB
CHECKED PM
DATE: 11-15-2013
SCALE: NTS
HAWLEY CREEK LHsC-03
FISH SCREEN DESIGN
DETAIL SHEET #1
APPROVED
CHIEF, BUREAU OF ENGINEERING
APPROVED
DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG
SHEET 3 OF 3


EXISTING HAWLEY CREEK THALWEG
BYPASS ALIGNMENT
30" POLY BYPASS PIPE
INSTALL TEMPORARY COFFER DAM
HAWLEY CREEK STA. 7+00
BYPASS DITCH STA. 10+46
START TEMPORARY DITCH
THALWEG ELEV. 93.40
HAWLEY CREEK STA. 7+00
BYPASS DITCH STA. 11+60
END TEMPORARY DITCH
THALWEG ELEV. 91.37
HAWLEY CREEK BYPASS PLAN VIEW
1"=10'
30" (MIN.) ADS N-12 (OR APPROVED)
BYPASS PIPE.
EXISTING GRADE
DITCH THALWEG
START OF BYPASS PIPE
STA. 10+46
THALWEG ELEV.=6493.40
S=5.75%
PIPE GRADE CHANGE
STA. 11+50.
THALEWG ELEV.=6492.82
S=2.78%
END OF BYPASS PIPE
MATCH EXISTING GRADE
STA. 11+60
THALWEG ELEV.=6491.37
6500
6495
6494.3
6494.26
6494.8
6494.77
6493.3
6493.30
6493.8
6493.76
12+00
11+00
10+00
HAWLEY CREEK BYPASS PROFILE VIEW
1"=10'
DRAWING IS REDUCED TO 50%
OF FULL SCALE
0
1"
BAR IS 1 INCH ON ORIGINAL DRAWING.
IF NOT 1 INCH ON THIS SHEET,
ADJUST SCALES ACCORDINGLY.
30" BYPASS PIPE
EXISTING GRADE
STOCK PILE MATERIAL
ON UPSTREAM SIDE
OF TRENCH
BACKFILL PIPE
TO MIDLINE.
3'-6"
TEMPORARY BYPASS PIPE SECTION
NTS
GRAVEL BAG BLOCK
(MUST USE WASHED GRAVEL)
MIN. 4'X4'X4'
USE NATIVE MATERIAL TO MOUND
OVER PLASTIC SHEETING.
FLOW
EXISTING GRADE
KEY PLASTIC INTO EXISTING
GRADE. MINIMUM OF 2' AT 45°
TEMPORARY COFFER DAM
1"=3'
REV. DATE DESCRIPTION BY
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO
DESIGNED JSB
DRAWN JSB
CHECKED PM
DATE: 11-18-2013
SCALE: 1"=10'
HAWLEY CREEK LHsC-03
FISH SCREEN DESIGN
HAWLEY CREEK BYPASS PLAN
APPROVED
CHIEF, BUREAU OF ENGINEERING
APPROVED
DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG
SHEET 4 OF 8

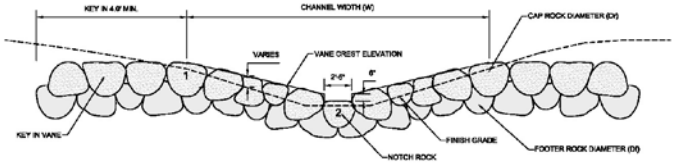


ROCK CROSS VANE - PLAN VIEW
NTS

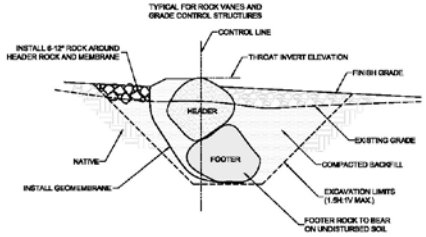
CODE	DESCRIPTION	INPUT
W	CHANNEL WIDTH (ft.)	18
Th	THROAT WIDTH (tl.)	6
L	VANE ARM LENGTH (ft.)	10.5
A	VANE ARM ANGLE (deg.)	25
Df	CAP ROCK DIAMETER (ft.)	2.5-3
Dr	FOOTER ROCK DIAMETER (ft.)	2.5-3
Fd	FOOTER DEPTH (ft.)	4
D	THROAT DEPTH (ft.)	2



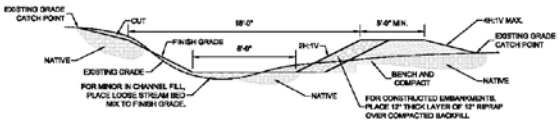
ROCK CROSS VANE - PROFILE VIEW
NTS



SECTION A-A
NTS



SECTION B-B
NTS



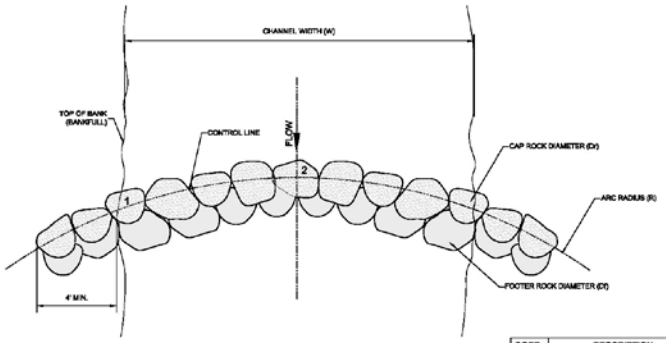
IN-CHANNEL EARTHWORK
NTS

NOT APPROVED FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY

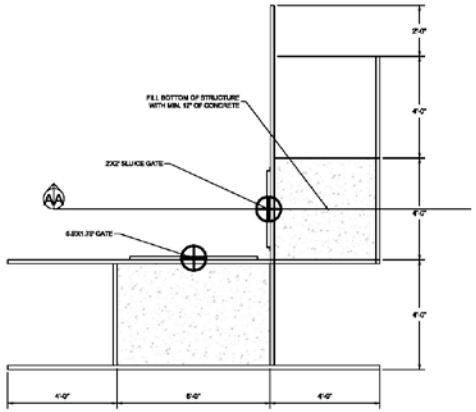
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO

DESIGNED JSB	**HAWLEY CREEK LHsC-03 FISH SCREEN DESIGN**
DRAWN JSB	
CHECKED PM	
DATE: 11-15-2013	DETAIL SHEET #2
SCALE: NTS	
APPROVED	APPROVED
CHIEF, BUREAU OF ENGINEERING	DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG	SHEET 5 OF 5

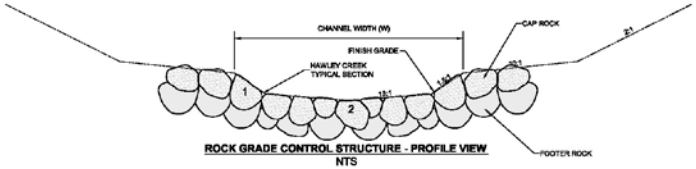


ROCK GRADE CONTROL STRUCTURE - PLAN VIEW
NTS

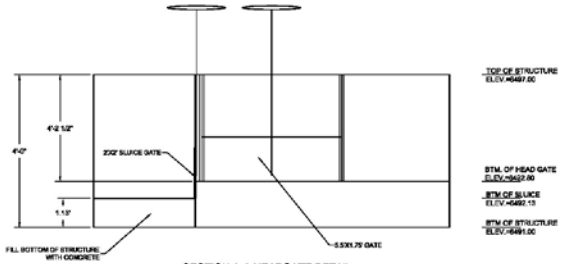
CODE	DESCRIPTION	INPUT
W	CHANNEL WIDTH (ft.)	18
Df	CAP ROCK DIAMETER (ft.)	2.5-3
Dr	FOOTER ROCK DIAMETER (ft.)	2.5-3
Fd	FOOTER DEPTH (ft.)	4
R	ARC RADIUS (ft.)	40



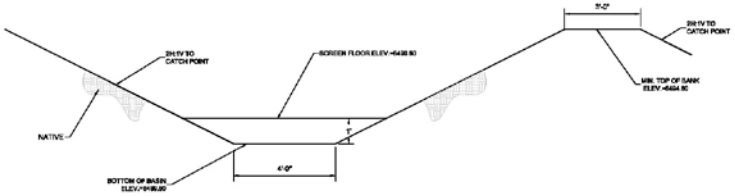
HEADGATE STRUCTURE DIMENSION DETAIL
1"=2'



ROCK GRADE CONTROL STRUCTURE - PROFILE VIEW
NTS



SECTION A-A HEADGATE DETAIL
1"=2'



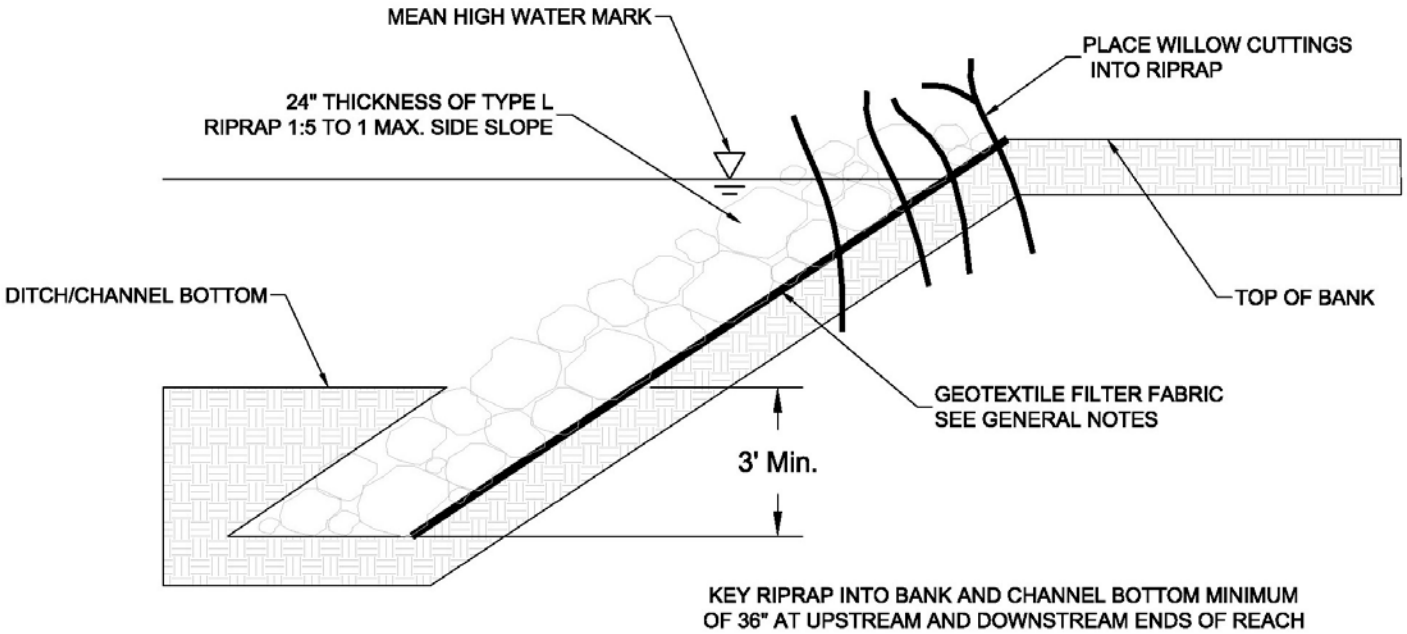
SEDIMENT BASIN CROSS SECTION DETAIL
NTS

NOT APPROVED FOR CONSTRUCTION

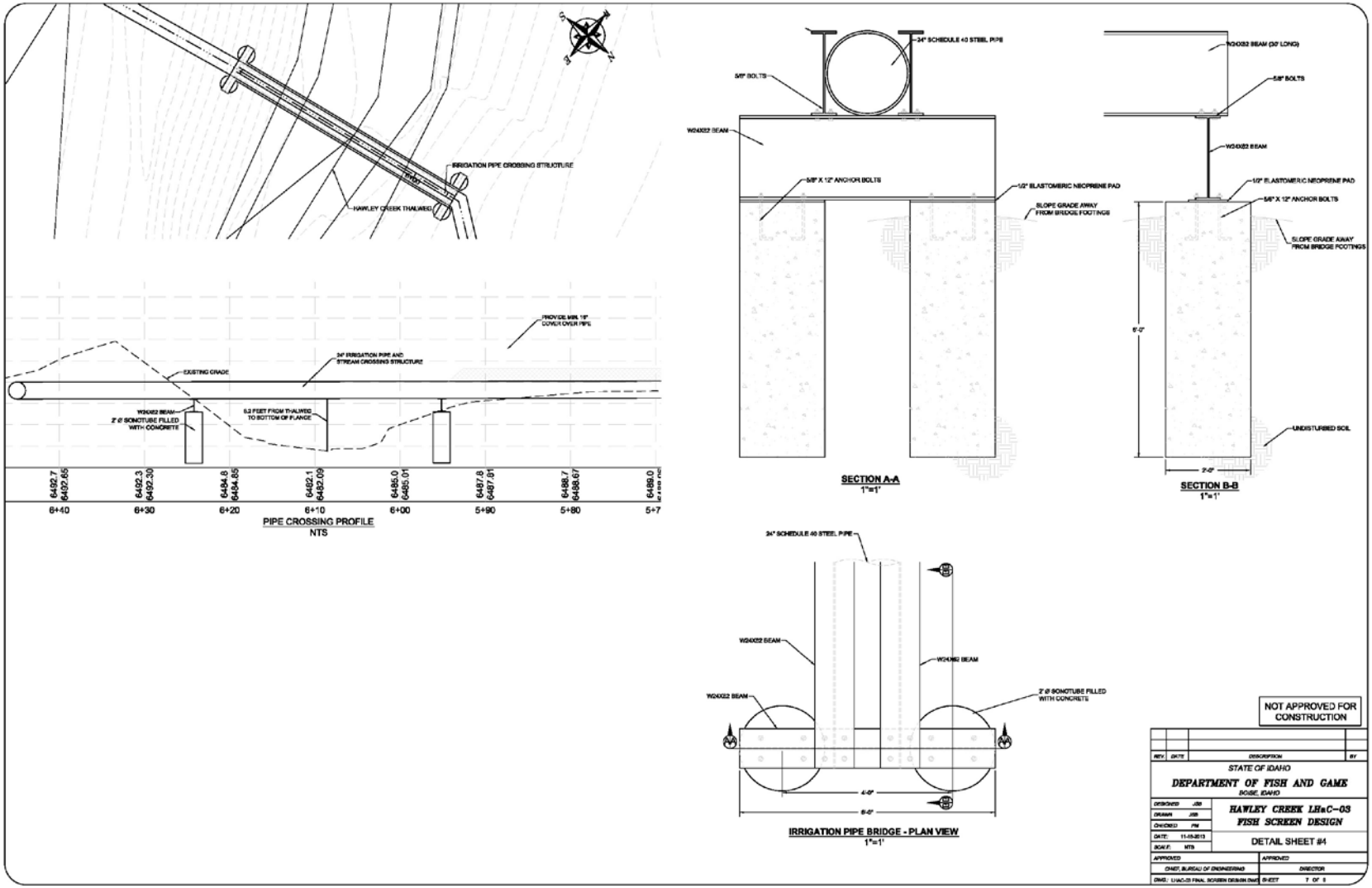
REV.	DATE	DESCRIPTION	BY

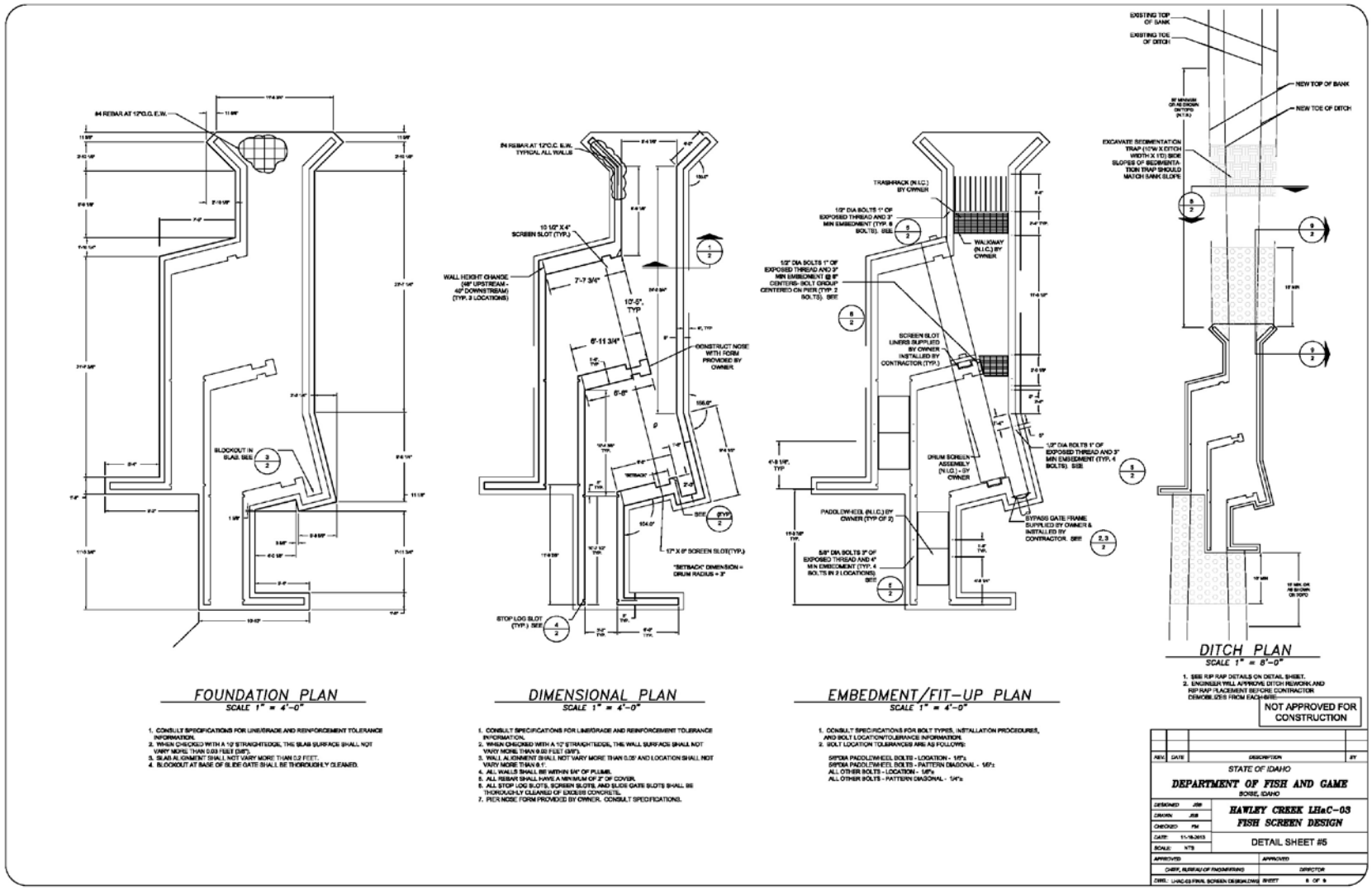
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO

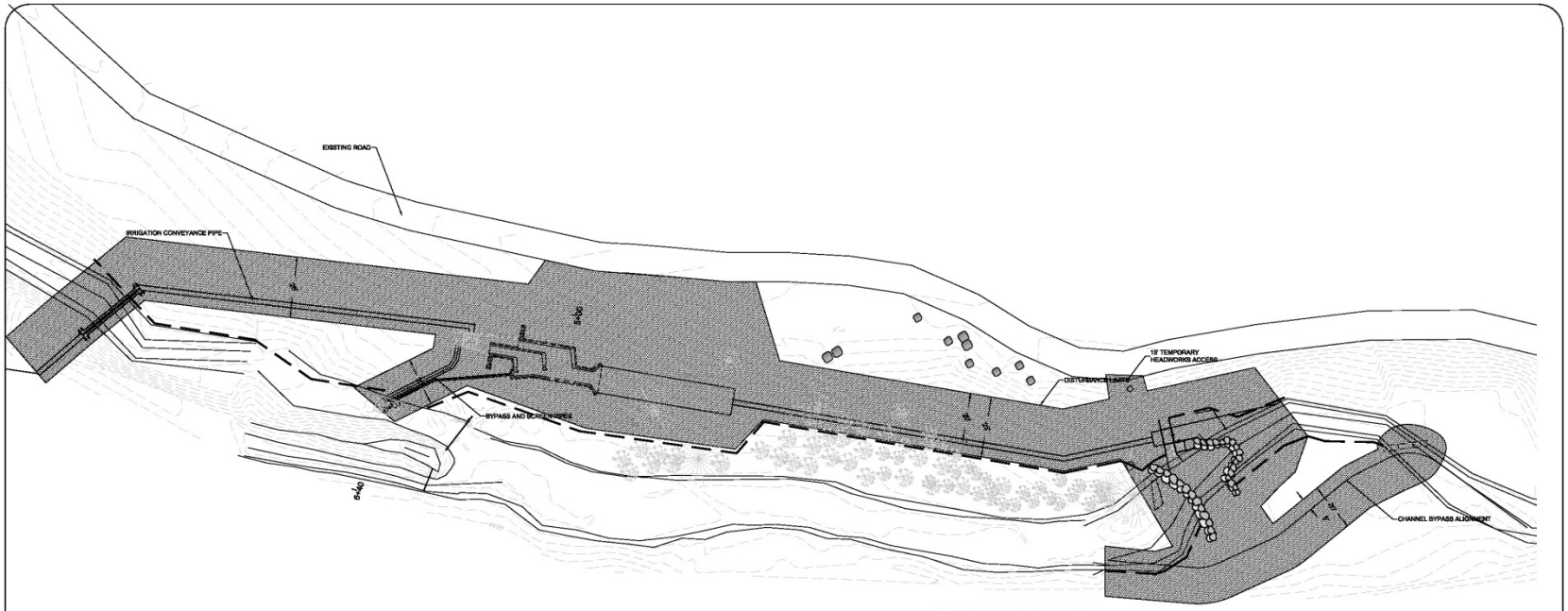
DESIGNED JBB	HAWLEY CREEK LHnC-03 FISH SCREEN DESIGN
DRAWN JBB	
CHECKED PM	
DATE 11-18-2013	DETAIL SHEET #3
SCALE NTS	
APPROVED	APPROVED
CHIEF, BUREAU OF ENGINEERING	DIRECTOR
DWG. LCHC-03 FINAL SCREEN DESIGN.DWG	SHEET 5 OF 5



TYPICAL RIPRAP CROSS SECTION DETAIL 4/2
NTS


IRRIGATION PIPE CROSSING STRUCTURE
HAWLEY CREEK THALWEG
PROVIDE MIN. 18" COVER OVER PIPE
24" IRRIGATION PIPE AND STREAM CROSSING STRUCTURE
EXISTING GRADE
W24X22 BEAM
2' Ø SONOTUBE FILLED WITH CONCRETE
5.2 FEET FROM THALWEG TO BOTTOM OF FLANGE
6492.7
6492.65
6492.3
6492.30
6484.8
6484.85
6492.1
6492.09
6485.0
6485.01
6487.8
6487.91
6488.7
6488.67
6489.0
6+40
6+30
6+20
6+10
6+00
5+90
5+80
5+7
PIPE CROSSING PROFILE
NTS
24" SCHEDULE 40 STEEL PIPE
5/8" BOLTS
W24X22 BEAM
5/8" X 12" ANCHOR BOLTS
1/2" ELASTOMERIC NEOPRENE PAD
SLOPE GRADE AWAY FROM BRIDGE FOOTINGS
SECTION A-A
1"=1'
W24X22 BEAM (30' LONG)
5/8" BOLTS
W24X22 BEAM
1/2" ELASTOMERIC NEOPRENE PAD
5/8" X 12" ANCHOR BOLTS
SLOPE GRADE AWAY FROM BRIDGE FOOTINGS
6'-0"
UNDISTURBED SOIL
2'-0"
SECTION B-B
1"=1'
24" SCHEDULE 40 STEEL PIPE
W24X22 BEAM
W24X62 BEAM
W24X22 BEAM
2' Ø SONOTUBE FILLED WITH CONCRETE
4'-0"
8'-0"
IRRIGATION PIPE BRIDGE - PLAN VIEW
1"=1'
NOT APPROVED FOR CONSTRUCTION
REV
DATE
DESCRIPTION
BY
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO
DESIGNED JBB
DRAWN JBB
CHECKED PM
DATE 11-15-2013
SCALE NTS
HAWLEY CREEK LHsC-03
FISH SCREEN DESIGN
DETAIL SHEET #4
APPROVED
CHIEF, BUREAU OF ENGINEERING
APPROVED
DIRECTOR
DWG: LHsC-03 FINAL SCREEN DESIGN.DWG
SHEET 7 OF 8


#4 REBAR AT 12"O.C. E.W.
BLOCKOUT IN SLAB. SEE
FOUNDATION PLAN
SCALE 1" = 4'-0"
1. CONSULT SPECIFICATIONS FOR LINE/GRADE AND REINFORCEMENT TOLERANCE INFORMATION.
2. WHEN CHECKED WITH A 12' STRAIGHTEDGE, THE SLAB SURFACE SHALL NOT VARY MORE THAN 0.03 FEET (3/8").
3. SLAB ALIGNMENT SHALL NOT VARY MORE THAN 0.2 FEET.
4. BLOCKOUT AT BASE OF SLIDE GATE SHALL BE THOROUGHLY CLEANED.
#4 REBAR AT 12"O.C. E.W. TYPICAL ALL WALLS
10 1/2" X 4" SCREEN SLOT (TYP.)
WALL HEIGHT CHANGE (48" UPSTREAM - 42" DOWNSTREAM) (TYP. 2 LOCATIONS)
7'-7 3/4"
12'-5" TYP
6'-11 3/4"
CONSTRUCT NOSE WITH FORM PROVIDED BY OWNER
17" X 9" SCREEN SLOT(TYP.)
"SETBACK" DIMENSION = DRUM RADIUS + 3"
STOP LOG SLOT (TYP.) SEE
DIMENSIONAL PLAN
SCALE 1" = 4'-0"
1. CONSULT SPECIFICATIONS FOR LINE/GRADE AND REINFORCEMENT TOLERANCE INFORMATION.
2. WHEN CHECKED WITH A 12' STRAIGHTEDGE, THE WALL SURFACE SHALL NOT VARY MORE THAN 0.02 FEET (3/8").
3. WALL ALIGNMENT SHALL NOT VARY MORE THAN 0.05' AND LOCATION SHALL NOT VARY MORE THAN 0.1'.
4. ALL WALLS SHALL BE WITHIN 3/4" OF PLUMB.
5. ALL REBAR SHALL HAVE A MINIMUM OF 2" OF COVER.
6. ALL STOP LOG SLOTS, SCREEN SLOTS, AND SLIDE GATE SLOTS SHALL BE THOROUGHLY CLEANED OF EXCESS CONCRETE.
7. PIER NOSE FORM PROVIDED BY OWNER. CONSULT SPECIFICATIONS.
TRASHRACK (N.I.C.) BY OWNER
1/2" DIA BOLTS 1" OF EXPOSED THREAD AND 3" MIN EMBEDMENT (TYP. 6 BOLTS). SEE
WALKWAY (N.I.C.) BY OWNER
1/2" DIA BOLTS 1" OF EXPOSED THREAD AND 3" MIN EMBEDMENT @ 8" CENTERS- BOLT GROUP CENTERED ON PIER (TYP. 2 BOLTS). SEE
SCREEN SLOT LINERS SUPPLIED BY OWNER - INSTALLED BY CONTRACTOR (TYP.)
DRUM SCREEN ASSEMBLY (N.I.C.) - BY OWNER
1/2" DIA BOLTS 1" OF EXPOSED THREAD AND 3" MIN EMBEDMENT (TYP. 4 BOLTS). SEE
PADDLEWHEEL (N.I.C.) BY OWNER (TYP OF 2)
5/8" DIA BOLTS 3" OF EXPOSED THREAD AND 4" MIN EMBEDMENT (TYP. 4 BOLTS IN 2 LOCATIONS) SEE
BYPASS GATE FRAME SUPPLIED BY OWNER & INSTALLED BY CONTRACTOR. SEE
EMBEDMENT/FIT-UP PLAN
SCALE 1" = 4'-0"
1. CONSULT SPECIFICATIONS FOR BOLT TYPES, INSTALLATION PROCEDURES, AND BOLT LOCATION/TOLERANCE INFORMATION.
2. BOLT LOCATION TOLERANCES ARE AS FOLLOWS:
SIPON PADDLEWHEEL BOLTS - LOCATION - 1/8"±
SIPON PADDLEWHEEL BOLTS - PATTERN DIAGONAL - 1/8"±
ALL OTHER BOLTS - LOCATION - 1/8"±
ALL OTHER BOLTS - PATTERN DIAGONAL - 1/4"±
EXISTING TOP OF BANK
EXISTING TOE OF DITCH
NEW TOP OF BANK
NEW TOE OF DITCH
EXCAVATE SEDIMENTATION TRAP (10'W X DITCH WIDTH X 1'D) SIDE SLOPES OF SEDIMENTATION TRAP SHOULD MATCH BANK SLOPE
DITCH PLAN
SCALE 1" = 8'-0"
1. SEE RIP RAP DETAILS ON DETAIL SHEET.
2. ENGINEER WILL APPROVE DITCH REWORK AND RIP RAP PLACEMENT BEFORE CONTRACTOR DEMOBILIZES FROM EACH SITE.
NOT APPROVED FOR CONSTRUCTION
REV. DATE DESCRIPTION BY
STATE OF IDAHO
DEPARTMENT OF FISH AND GAME
BOISE, IDAHO
DESIGNED JSB
DRAWN JSB
CHECKED PM
DATE 11-18-2013
SCALE NTS
HAWLEY CREEK LHaC-03
FISH SCREEN DESIGN
DETAIL SHEET #5
APPROVED
CHIEF, BUREAU OF ENGINEERING
APPROVED
DIRECTOR
DWG. LHAC-03 FINAL SCREEN DESIGN.DWG
SHEET 5 OF 5



LEGEND

- FLOW ARROW
- FLOW LINE
- TOP BANK OF RIVER
- TOE OF RIVER
- TOP BANK OF DITCH
- TOE OF DITCH
- 4744 CONTOUR LINE
- STRAW WADDLE
- SILT FENCE
- TEMP. CONSTRUCTION FENCE

BEST MANAGEMENT PRACTICES NOTES

1. This plan should be revised and updated to address changes in site conditions, new or revised government regulations, and additional on-site storm water pollution. Additional erosion control measures may be required.
2. Fugitive dust blowing from the site shall be controlled by spraying water and dust control polymers as needed on dry areas of the site.
3. The contractor will be responsible for supervision and inspection of all erosion and sedimentation controls and for ensuring implementation.
4. Prior to beginning earth-moving activities, including clearing and grubbing, all clearing limits, easements, setbacks, sensitive areas and their buffers will be clearly marked to prevent environmental damage both on and off the site.
5. All off-site construction shall be stabilized at the end of the working day.
6. All waste material will be collected and stored in a securely lidded dumpster. The dumpster will meet all local and state solid waster management regulations.
7. Portable sanitary units will be provided for use by all workers for the entire project. Sanitary waste will be collected regularly for the portable units by an approved sanitary waste management contractor.
8. All exposed soils will be stabilized with vegetation or covered no more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
9. Existing and new vegetation will be maintained to the maximum extent practicable to prevent the contamination of storm water with sediment.
10. The contractor shall be responsible for adjusting the erosion control measure; due to grade changes during the development of the project.
11. Maintain on the site or have readily available sufficient oil and grease absorbing materials to contain and clean up fuel or chemical spills and leaks.
12. Adequate energy dissipation, erosion control, and soil stabilization measures will be provided for all point source discharges of storm water, including run-on discharges and outlets for onsite discharges.
13. Temporary and permanent swals and small detention ponds will be used as necessary to reduce the velocity of runoff and enhance particle settling.
14. Consistent with the general permit requirements, all potential pollutants other than sediment will be handled and disposed of in a manner that does not affect contamination of water.
15. Materials used during construction with the potential to impact storm water or stream , will be stored, managed, used, and disposed of in a manner that minimizes the potential for release to the environment and especially in the storm water.
16. All temporary and permanent erosion and sediment control BMPs will be maintained and repaired as needed to assure continued performance of their intended use.
17. Regardless of recommended maintenance schedule, all control measures and inspections shall be performed within 24 hours following any storm of 0.5 inches or greater. An inspection report shall be kept at all times and should be retained for at least three (3) years from the date the site is stabilized.
18. If any disturbance is required outside of the shown disturbance limits, this activity must be approved by the engineer prior to disturbance.
19. All large woody vegetation removal must be approved by the IDFG engineer.

TOTAL SITE GROUND DISTURBANCE=25,500 FT^2 (0.59 ACRES)

REV.	DATE	DESCRIPTION	BY

STATE OF IDAHO

DEPARTMENT OF FISH AND GAME

BOISE, IDAHO

DESIGNED	JSB	**HAWLEY CREEK LHsC-03 FISH SCREEN DESIGN**
DRAWN	JSB	
CHECKED	PM	
DATE:	11-18-2013	
SCALE:	NTS	

APPROVED	APPROVED
CHIEF, BUREAU OF ENGINEERING	DIRECTOR
DWG.: LHsC-03 FINAL SCREEN DESIGN.DWG	SHEET 9 OF 9

APPENDIX B: NMFS WATER DRAFTING CRITERIA

NMFS Pump Intake Screen Criteria for Water Drafting

Screen Approach Velocity (How to calculate): The approach velocity must not exceed 0.40 feet per second (ft/s) for active screens, or 0.20 ft/s for passive screens. Using these approach velocities would minimize screen contact and/or impingement of juvenile fish. For pump intake screen designs for water drafting, approach velocity is calculated by dividing the maximum screened flow amount as cubic feet per second (cfs) by the entire effective screen area. Approach velocity should be measured as close as physically possible to the boundary layer turbulence generated by the screen face.

Effective Screen Area: The minimum effective screen area must be calculated by dividing the maximum screened flow by the allowable approach velocity - 0.40 ft/s for active screens or 0.20 ft/s for passive screens.

Specific Criteria and Guidelines for Pump Intake Screen Mesh Material

Circular Screens: Circular screen face openings must not exceed 3/32 inch in diameter. Perforated plate must be smooth to the touch with openings punched through in the direction of approaching flow.

Slotted Screens: Slotted screen face openings must not exceed 1.75 mm (approximately 1/16 inch) in the narrow direction.

Square Screens: Square screen face openings must not exceed 3/32 inch on a diagonal.

Material: The screen material must be corrosion resistant and sufficiently durable to maintain a smooth uniform surface with long term use.

Other Components: Other components of the screen facility, such as seals, must not include gaps greater than the maximum screen opening defined above.

Open Area: The percent open area for any screen material must be at least 27 percent.

Technical References

National Marine Fisheries Service (NMFS). 2008. Anadromous salmonid passage facility design. Northwest Region. February 8, 2008

NMFS. 1996. NMFS juvenile fish screen criteria for pump intakes addendum. Environmental and Technical Services Division. Portland, Oregon. May 9, 1996.

APPENDIX C: BLM APPROVED SEED MIX AND SEEDING RATES

Figure 21: BLM SFO approved reclamation seed mix and seeding rates

Preferred Species	Scientific Name	Variety or Source Identified	USDA Plant Symbols	Seeds per pound	Bulk Rate (lbs/acre)	PLS Conversion Factor[a]	PLS Rate (lbs/acre)
Sandberg bluegrass	Poa secunda ssp. secunda	Mountain Home	POSE	926k	3	0.8635	2.59
Squirreltail	Elymus elymoides ssp. californicus	Toe Jam Creek	ELELC2	190k	6	0.8157	4.89
Indian Ricegrass	Acnatherum hymenoides	Nezpar	ACHY	205k	6	0.9195	5.52
Blue Flax	Linum perenne	Appar	LIPE2	295k	3	0.8801	2.64
Rubber Rabbitbrush	Ericameria nauseosa	Juab County UT	ERNA10	695k	3	0.2000	0.60

[a]PLS = pure live seed, essentially the percentage of the seed that is viable. This figure should be on the tag that comes with the seed; modify this column as per seed tag.

Once the total disturbance footprint is calculated, multiply the bulk rate by the acreage to get the total pounds of seed needed by species. For example, if the total disturbance footprint is 3 acres, you would need 9 pounds of POSE (3 acres x 3 lbs/acre bulk rate).

No matter the number of acres, the rate should be 21 lbs/acre bulk rate, and approximately 16 lbs/acre PLS rate. This would vary depending on the PLS figure.