



## Watershed Enhancement Project Proposal

- 1. Project Name:** Lostine River/Sheep Ridge Fish Passage Improvement
- 2. Applicant:** Nez Perce Tribe Department of Fisheries Resource Management, Watershed Division (NPT)
- 3. Participating Landowner(s) and Agencies:**

Participant	Contact	Role	Address	Phone	Email
Nez Perce Tribe	Mitch Daniel	Project Manager	PO Box 909 500 N Main St Joseph, OR 97846	541-432-2506	mitchd@nezperce.org
Sheep Ridge Ditch Company	Sonny Hagenah	Ditch Company President	83702 HWY 82 Lostine, OR 97857	541-398-0165	None
GRMW	Coby Menton	GRMW Project Coordinator	1114 J Ave. La Grande, OR 97850	541-398-0151	coby@grmw.org
ODFW	Jeff Yanke	Technical	65495 Alder Slope Rd. Enterprise, OR 97828	541-426-3279	Jeff.Yanke@state.or.us

- 4. Project Contact(s):**

Contact	Role	Address	Phone	Email
Mitch Daniel	Technical	PO Box 909 500 N Main St Joseph, OR 97846	541-432-2506	mitchd@nezperce.org
Heidi McRoberts	Administrative	28764 Salmon Lane Lapwai, ID 83540	208-621-3548	heidim@nezperce.org
Arlene Henry	Fiscal	PO Box 365 Lapwai, ID 83540	808-843-7317	arleneh@nezperce.org

- 5. Project Location:**

Township, Section, Range: T1S, R43E, NE ¼ of NW ¼ of S27.

Lostine Watershed at Lostine River Mile 9.25.

Longitude, Latitude: -117.425531, 45.452617.

Hydrologic Unit Code: 1706010502.

## 6. Project Objectives:

Project Element	Specific Objectives	Measure for Evaluation
Grade Control Structures and Rock Ribs	<p>Rock grade control structures used as a method to construct roughened channels are a proven way to restore fish passage where jump height and flow velocity exceed currently applied passage criteria.</p> <p><b>Objective 1:</b> Restore fish passage at the Sheep Ridge diversion and fish ladder such that both State and Federal fish passage criteria are met as currently applied.</p>	Bullets 1, 2 and 3 in the below monitoring plan.
Large Scale Roughness Boulders	<p>Large-scale roughness provides hydraulic diversity throughout any given cross section of the river and provides resting locations for migrating fish. Hydraulic diversity creates a condition in which all life stages of fish species can navigate up- and downstream as desired.</p> <p><b>Objective 2:</b> Improve hydraulic complexity throughout the project reach.</p>	Bullets 1, 2 and 5 in the below monitoring plan.
Streambed Simulation Material	<p>Streambed simulation material installed in project area will provide sediment transport continuity throughout the project reach.</p> <p><b>Objective 3:</b> Improve sediment transport continuity and restore natural bedload transport processes in the project reach.</p>	Bullets 1 and 2 in the below monitoring plan.

The Grande Ronde Subbasin Plan Supplement identifies the importance of this project in the following sections for the Lostine River:

1. 5.2.2.1, page 37, GRSBP. Provide connectivity between functioning habitats.
2. 5.2.4.1, page 38, GRSBP. Protect high quality habitat and protect and restore connectivity of functioning habitats.
3. Table 5.4, Wallowa – Lostine River, page 40, GRSBP. Priority attribute sediment (reduction)
4. Table 5.6, page 50, GRSBP. Grande Ronde Subbasin watersheds listed in order of potential impact to steelhead and spring Chinook populations (abundance and productivity) from comprehensive habitat restoration: Wallowa – Lostine is the highest ranked watershed.

The OWEB limiting factors document for the Lostine River in the Grande Ronde Basin rates Habitat Fragmentation/Connectivity/Fish Passage as no impact with a high confidence rating. Data for this assessment was taken from the Ecosystem Diagnosis and Treatment Database (Mobrand and Lestelle, 2004). However, adult Chinook tracking data from the Nez Perce Tribe (OWEB Project #'s 208-5076 & 210-5057) from 2008 to 2012 shows the Sheep Ridge fishway causes significant delay and may cause migrating Chinook to spawn lower in the river in lower quality habitat. This data further suggests that as flow declines in the later part of summer delay time at the diversion increases, successful passage is decreased, and a lower percentage of tagged fish are detected above the diversion. This empirical data is confirmed by observation from both Nez Perce Tribe and ODFW fisheries biologists.

## **7. Project Description**

### Introduction

The Sheep Ridge ditch diversion on the Lostine River in Wallowa County, Oregon is a passage barrier to ESA Listed fish including Chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*) as well as several other aquatic species. The structure does not meet fish passage criteria as currently applied by ODFW and National Marine Fisheries Service - especially at low, late-season, summer flows. The proposed action will convert the existing 4-walled concrete and wooden structure to a roughened channel diversion and fishway restoring access to 20-miles of habitat upstream. This proposal is supported by quantitative analysis of a peer-reviewed fish passage study and technical scrutiny by fisheries managers, regulatory agencies, and local stakeholders. Engineering and design for the project is substantiated by the success of similar projects including one recently constructed directly downstream at the City of Lostine diversion. Partners include the Sheep Ridge ditch company, ODFW, GRMW and adjacent landowners Bill Norman and the Cherry family.

### Existing condition

Prior to the mid-1990's irrigation ditches in the Lostine River were served by gravel push up dams. Push-up dams are a method by which streambed material is piled in stream to check water and divert it down the irrigation canal. This method, while effective at diverting irrigation water, is disruptive to the stream and causes erosion and sedimentation. In the case of full channel-spanning structures push up dams create barriers to aquatic organism movement both up and downstream. Push-up dams are usually washed out during high spring flows and have to be re-built annually. A total of 11 ditches appropriate water from the Lostine. Several of these have been upgraded to engineered, permanent, fish-passable structures including Tulley-Hill, Clearwater, Miles, & Poley-Allen all completed in the mid to late 1990's. The most recent, the City of Lostine Diversion was completed in 2012.

The first 4 projects relied on concrete and hard non-native substrate material to both check water for diversion and accommodate passage. Over time and after several fixes it is apparent that each of these installations has a short lifespan, tend to erode from the bottom up compromising structure integrity, and do not meet current fish passage standards as applied. The City of Lostine diversion applied a different approach; rather than building an unnatural appearing and functioning structure, the existing fish ladder and diversion wall was overtopped with an engineered roughened channel. This method that tends to lengthen the project footprint results in a natural structure both in function and appearance. This design allows year round passage, restores natural sediment transport processes, meets State and federal passage criteria, and at this time appears to have better longevity due to the built in flexibility. Flexibility is realized through the use of boulders to build grade control and natural channel substrate that is designed to deposit and scour based on flow conditions.

This proposal addresses the need for similar restoration at Sheep Ridge. Located 2-miles south of the town of Lostine, upstream on the Lostine River, the Sheep Ridge diversion includes a fish ladder installed by Oregon Department of Fish and Wildlife (ODFW). This fishway was built in the early 1960's in place of a push-up dam diversion. The upstream end of the 3-walled fishway is just below Sheep Ridge Ditch Company's wooden check structure that checks water elevation sufficient for the irrigation company to divert water without a push-up dam. Restoration will incorporate methods supported by successful installations at the Wallowa River/Cross Country Canal (2010), Big Sheep/Buehler (2010), and the City of Lostine (2012) diversion structure replacement projects.

The wooden diversion structure and concrete fishway is an upstream velocity barrier to all fish at high flow, juvenile upstream movement at low flows due to jump height, and adult Chinook at low flow during the spawning time of year, again due to jump height. Below the diversion is the fishway, the walls of which span the river, each with two to three notches approximately three feet wide.

The elevation difference between each wall is approximately 15 inches, which exceeds fish passage criteria. At this time the concrete walls are aging, deteriorating, and chunks of the top wall have detached.

The Sheep Ridge diversion is used during the Wallowa Valley irrigation season, which starts on May 1st and ends on September 30th. At all times of the year this ditch delivers stock water, but at a much lower rate than during irrigation season. An ODFW operated fish screen composed of three paddle wheel operated drums is located below the diversion and in the irrigation ditch.

Fish native to the Lostine River include spring Chinook, summer steelhead, rainbow trout, and bull trout as well as other resident species. Design criteria to pass spring Chinook, bull trout, and steelhead are the most stringent and have been used for design purposes. Spring Chinook migrate through the Lostine system to their spawning areas between July and mid-September. Summer steelhead migrate to their spawning areas in late winter and spring. Bull trout are very sparse in the area and mainly forage during winter and early spring. However, bull trout use this reach as a migration corridor to access spawning areas in the upper Lostine River from June through September.

This project relies on results from a previously funded OWEB grant (#214-5039 Lostine River/Sheep Ridge Fish Passage Improvement Technical Assistance) which are presented in this proposal. In addition to prior diversion structure replacement, other activities in the Lostine Watershed have informed the development of this proposed action. Many decades of stream flow gauging directly above the project site, which have been OWEB and BPA funded for the last 15-years, has allowed for the precise calculation of maximum, average, and minimum flows necessary for design purposes. OWEB projects 208-5076 and 210-5057, Migratory Assessment of Spring Chinook Salmon in the Lostine River Using Radio-Telemetry Techniques, have been essential in the decision to improve passage in the project area. This empirical data has shown that the Sheep Ridge diversion is a low flow passage barrier, delays passage as river flow declines and contributes to spawning in undesirable habitat below the diversion for Chinook salmon. Prior to telemetry monitoring the Sheep Ridge diversion was not identified as a significant passage barrier.

### Specific Actions

<b>Project Element</b>	<b>Proposed Action</b>
<b>Restoration Activity</b>	
Mobilization	This action at the beginning of the project is when all equipment is transported to the project area. The staging area is prepared, raw material is delivered and the work site is prepared for construction.
Clearing and Grubbing Project site	For this project clearing and grubbing will be minimally required. As the majority of work will occur in the Lostine River channel riparian vegetation will not need to be removed, the irrigation ditch will be used as the work area water bypass, and an opening exists to return flow from the ditch back to the river channel below the project footprint. Equipment access to the river will need to be installed at approximately mid project. Access will be over an existing culvert in the irrigation ditch and down the riverbank to the project. In 2012 at the City of Lostine diversion we were able to preserve all riparian shrub and canopy vegetation and only minimally disturbed herbaceous vegetation at the work access point. Conditions are the same at the Sheep Ridge diversion. Where necessary clearing and grubbing will be accomplished with an excavator and spoils will be transported with a dump truck.
Grade Control Structures (7)	Seven grade control structures will be installed in the project area. They will be built with large boulders, span the channel, and have a shallow V-shape pointing upstream. They have been sized to remain stable during expected high flow events. At project completion they will be subsurface features that will maintain channel invert elevation, concentrate expected low flows to the center of the channel, and meet jump height and flow velocity standards for fish passage. Grade control structures will be installed with an excavator and boulder material will be transported for installation with a dump truck.
Rock Ribs (12)	Rock ribs will be installed between each grade control structure. These subsurface features are intended to further stabilize the grade control structures and enhance overall project integrity. Between each set of ribs a large boulder matrix will be installed to further ensure stability, see sheet 2, detail 'A'. Build material is again large boulders, sized to remain stable during high flow events. Equipment used for installation includes an excavator and dump truck.
Large Scale Roughness Boulders (30)	Large-scale roughness boulders are another feature that will be used in the proposed design. Each will range in size from approximately 36 inches to 48 inches in average diameter and will be placed on the streambed surface and buried 60 percent to prevent the rocks from being scoured out and transported downstream. Boulders are installed with an excavator.
Streambed Simulation Material	One aspect to consider when working in rivers is sediment transport. Installing large-scale roughness features will create a hydraulically diverse environment in which sediment transport is anticipated to be maintained. Streambed simulation material will be used in areas where additional fill material is required during the construction process and used to top dress the stream channel between the grade control structures. This will aid in natural sediment transport through the project reach. Installation will require a variety of equipment including a dump truck, dozer and excavator. All streambed simulation material will be "jetted" or washed in. The intent of jetting is to fill the interstitial spaces between the installed larger materials preventing flow from going sub-surface at project completion.
Site Restoration	Site restoration is expected to be minimal but where necessary will include erosion control seeding of disturbed ground, planting riparian shrubs and trees, grading access routes to natural ground contour and stabilizing the staging area.
Water Control	Water control will be accomplished by diverting the Lostine River flow around the work area in the Sheep Ridge ditch. While the bulk of flow will be passed around the work area subsurface flow will continue to wet the work area. For this reason a sediment sump and 2 silt fences will be installed at the bottom of the work area. This action will help maintain low turbidity and reduce fine sedimentation during construction.

<b>Project Management Activity</b>	
Pre-Implementation	Pre-implementation activities include project coordination by the project manager including landowner and agency coordination, directing engineering support, acquiring funding, aligning environmental compliance requirements of the project, contracting, and reporting. This process can take one to two years depending on the complexity of the project.  Specific deliverables include: Design and engineering with the deliverable of final approved design, removal/fill permits from both Oregon DSL and ACOE, ESA Section 7 Consultation, Cultural resources clearance from both Oregon SHPO and Tribes, and a public bidding and award for project construction.
Project Management	Project management is implemented by the project manager with assistance from engineering support. Activities include construction site visits, assessing change orders that may occur, and coordinating with the construction engineer. In-house personnel manage the fiscal aspects of the project including funds payable and receivable, managing grants and filing all aspects of the project.
Complete Final Design and Specification.	Winter 2015.
Apply for Additional Funding	GRMW applied for OWEB funding in October of 2014. Rated #1 by OWEB If awarded OWEB funding available April 2015.
Acquire all Permits	Army Corp of Engineers 404 permit: Letter of Exemption in progress OR DSL: Removal/Fill Joint application in progress Consultation: HIP III programmatic in progress Cultural Resources: Survey Complete, Submitted to BPA All Environmental Compliance C complete Spring 2015
Advertise for Construction Bids and Select Contractor	Spring 2015 or Fall 2015 depending on implementation year. Contract will be awarded to lowest qualified bidder. Qualifications will be based on experience, insurance, bonding and responsiveness to bid solicitation.
Implement Restoration Project	Summer 2015 or summer 2016. All construction work will be inspected by AP engineer for adherence to project design, appropriateness of materials, and quality of construction.
Final Construction and Close Out Project.	Fall 2015 or fall 2016. Complete construction, site cleanup, demobilization and final project close out and payment. Upon final inspection a 1-year warranty period begins.

Alternative designs were not pursued for this project for two reasons - experience and setting. The near identical nature of the City of Lostine diversion project to the Sheep Ridge diversion project has greatly informed the development of this Sheep Ridge proposal. Gradient, infrastructure and channel type are the same as well as management including ODFW's operation of the fish ladder and fish screen and ditch company expectations. The final design for the City of Lostine project was accomplished through the review and comment of approximately 10 federal, State, local and private entities and by the time construction bids were solicited the final design reflected the only project that could have been implemented. The 60% design presented in this proposal has been informed by experience in 2012 and represents progress towards final design in a known setting.

A map is provided in Attachment 1.

### Benefits

The Nez Perce people's relationship with the landscape and the species that inhabit our aquatic ecosystems is well documented. The Tribe's Department of Fisheries Resource Management Watershed Division mission is to protect and restore aquatic ecosystems throughout Nez Perce Country, including Wallowa County and the Lostine River. This commitment has been recently renewed with staff living and working in this project area. The Sheep Ridge diversion fish passage project is an excellent opportunity to establish a strong working relationship with the Grande Ronde Model Watershed, cooperating agencies, the ditch companies and landowners. Working in cooperation with stakeholders for positive change from *all* perspectives will promote ongoing success.

In particular, this project would eliminate a seasonal fish passage barrier by replacing an aging and substandard fish ladder on the Lostine River in Wallowa County, Oregon. The existing diversion is a fish passage barrier to migrating and spawning adult Chinook salmon during the later part of the summer when flows are at their lowest. Steelhead also inhabit the Lostine River and its tributaries and improving aquatic passage in the Lostine will improve conditions for all life stages of steelhead, specifically juvenile rearing allowing them to move upstream as stream temperatures warm in the summer months. The resulting restoration project will improve anadromous fish passage to 20 miles of the Lostine River upstream of the diversion structure and fish ladder.

### Project Maintenance

Name of Person & Agency/Organization and Addresses	Telephone Number Email Address	What will be done and for how long?
Sonny Hagenah, Sheep Ridge Ditch Company	541-398-0165 No email	Irrigation ditch, headgate, and diversion check wall maintenance. 10-years minimum.
Mitch Daniel, Nez Perce Tribe	541-432-2506 <a href="mailto:mitchd@nezperce.org">mitchd@nezperce.org</a>	Implementation and status reporting as per terms in BPA contract. Adaptive management and maintenance of project as needed and as funds are available.
Coby Menton, GRMW	541.398.0151 <a href="mailto:coby@grmw.org">coby@grmw.org</a>	Implementation and status reporting as per terms in OWEB contract. Adaptive management and maintenance of project as needed and as funds are available.

### Permits

Project Activity Requiring a Permit/License	Permit or License Name	Entity Issuing Permit or License
Modify diversion and fish ladder and install roughened channel	ACOE 404 permit (Exemption letter in progress)	Army Core of Engineers
Modify diversion and fish ladder and install roughened channel	Oregon DSL removal/fill permit	Oregon Department of State Lands
Modify diversion and fish ladder and install roughened channel	ESA Section 7 Consultation for Chinook Salmon and steelhead	National Marine Fisheries Service
Modify diversion and fish ladder and install roughened channel	ESA Section 7 Consultation for bulltrout	US Fish and Wildlife Service
All ground disturbing activities	Cultural Resources Consultation and Clearance	Oregon State Historic Preservation Office and Tribal Historic Preservation Offices (NPT and CTUIR)

### Monitoring Plan

Bonneville Power Administration is implementing an effort in the Columbia River Basin to assess restoration action effectiveness. This monitoring effort known as AEM is intended to quantify habitat restoration benefits for a multitude of habitat improvement actions. The Sheep Ridge project has been chosen as a monitoring site to help assess effectiveness of partial barrier projects. The monitoring protocol is CHaMP, developed using a combination of existing protocols, is repeatable and easily implemented by diverse field crews. For the Sheep Ridge project a modified BACI (before after control impact) program is being used, which relies on longitudinal profiles, cross sections, and juvenile fish sampling above and below the project site. A control reach has been established above the project area and the CHaMP trained Nez Perce Tribe monitoring crew is implementing the protocol. The monitoring plan is as follows:

1. Channel cross sections have been installed in the action and control reaches to assess channel development over time. Cross section measurements will occur twice pre project and twice post project including both the action and control reaches. (CHaMP protocol)
2. Habitat conditions will be measured using longitudinal profile surveys (thalweg profile from top to bottom) in both the action and control reaches. The longitudinal profile measurements will occur twice pre project and twice post project including both the action and control reaches. (CHaMP protocol).
3. Juvenile fish populations will be sampled twice pre-project and twice post project in both the action and control reaches. (CHaMP protocol)
4. Annual redd surveys will be completed for Chinook as part of the annual Chinook salmon spawning ground survey on the Lostine River.
5. Baseline photo points have been established throughout the project area. Additional photo points will be established at each cross-section where photos will be replicated annually looking both up-stream and down-stream of the cross-sections.

As the CHaMP data becomes available it will be supplied to partners and funding sources in the completion and monitoring reports. A final write up with results and conclusions will be included in the final monitoring report.

Work Dates

<b>Project Elements</b>	<b>Start Date</b>	<b>End Date</b>	<b>Description</b>
Obtain 30% design	October 1, 2015	October 10, 2015	30% design and project clarity appropriate for construction funding applications.
Obtain final design	Winter 2015	Winter 2015	Final design complete with quantities and construction specification.
Permit Applications	Fall 2014	March 2015	ACOE and Oregon DSL removal/fill permits, Cultural Resources Clearance, and ESA Section 7 consultation documents.
Bid Solicitation	Variable depending on implementation year. Spring or fall of 2015.	Variable depending on implementation year. Spring or fall of 2015.	Solicit for construction contractor through public bid process, conduct site bid tour, and award contract to lowest qualified bidder.
Contracting	Variable depending on implementation year. Spring or fall of 2015.	Variable depending on implementation year. Spring or fall of 2015.	Finalize all necessary insurance, bonding, and contractual obligations between NPT and selected contractor.
Materials Acquisition and Mobilization	May 2015 or 2016.	July 15, 2015 or 2016.	Allow mobilization to project site for materials staging, prep work, and necessary out of stream work.
Construction	July 15, 2015 or 2016.	August 15, 2015 or 2016.	For this section of the Lostine River the in-water work window is from July 15 – August 15. Extensions are possible depending upon flow conditions and Chinook migration timing. For scheduling purposes this 30-day window is considered the time in-water work will occur.
Demobilization	August 15, 2015 or 2016.	September 30, 2015 or 2016.	Final construction cleanup, grounds restoration, and demobilization.
Project Inspection/Post Project Implementation Review	September 1, 2015 or 2016.	September 30, 2015 or 2016.	Final project walk through and inspection engineer sign off. Prep final invoice, make payment, and release construction contractor.
Project Completion	October 1, 2015 or 2016.	November 30, 2015 or 2016.	Project closeout, final accounting, and completion report.
Project Maintenance	October 1, 2015 or 2016.	Indefinite	Cooperatively addressed by the Sheep Ridge Ditch Company, NPT, GRMW and ODFW as needed and funding is available.

## 8. Project Budget

### Sheep Ridge Fish Passage Project Budget

**Totals automatically round to the nearest dollar**

A	B	C	D	E	F	G
	Unit Number	Unit Cost	OWEB Funds	BPA Funds	In-Kind Match	Total Costs
	(e.g., # of hours)	(e.g., hourly rate)				(add columns D, E, F)

**SALARIES, WAGES AND BENEFITS.** List position titles, include only costs of employees charged to this grant.

NPT Project Leader (pre-implementation)	80 hours	45			3,600	3,600
NPT Projec Leader (project management)	45 hours	45			2,025	2,025
NPT Restoration Spec. (pre-implementation)	20 hours	45			900	900
NPT Restoration Spec. (project management)	20 hours	45			900	900
NPT Office Manager	20 hours	45			900	900
NPT Grants Office and Signatures	10 hours	45			450	450
GRMW Project Coordinator (pre-implementation)	80 hours	45			3,600	3,600
GRMW Project Coordinator (project management)	45 hours	45			2,025	2,025
GRMW Executive Director (pre-implementation)	20 hours	45			900	900
GRMW Executive Director (project management)	20 hours	45			900	900
<b>SUBTOTAL (1)</b>		0	0	16,200	16,200	

**CONTRACTED SERVICES.** Labor, supplies, and materials to be provided by *non-staff* for project implementation.

Mobilization (5% of estimated contruction)	1	9500		9,500		9,500
Clearing and Grubbing Project Site	10 hours	280	2,800			2,800
Remove wood diversion	10 hours	280		2800		2,800
Grade Control Structures (7)	100 hours	280	28,000			28,000
Rock	650 Cu-Yd	45	29,250			29,250
Gravel	420 Cu-Yd	35	9,000	5700		14,700
Rock Ribs (12)	30 hours	280		8,400		8,400
Rock	180 Cu-Yd	45		8,100		8,100
Large Scale Roughness Boulders (30)	20 hours	280		5,600		5,600
Rock	50 Cu-Yd	45		2,250		2,250
Streambed Simulation Material	40 hours	280		11,200		11,200
Streambed Simulation Material	200 Cu-Yd	40		8,000		8,000
Boulders Between Rock Ribs	30 hours	280		8,400		8,400
Rock	350 Cu-Yd	45		15,750		15,750
Site Restoration						
Planting (native willow)	7 hours	50		350		350
Seeding (native seed)	3 hours	50		150		150
Grade Work Site and Road Restoration	15 hours	280		4,200		4,200
Gravel	50 Cu-Yd	35		1,750		1,750

Water Control	50 hours	280		14,000		14,000
Large Sand Bags (10)	10 bags	200		2,000		2,000
Instream Silt Fence (2)	2 fences	200		400		400
Construction Engineering						
Construction Survey and Layout	20 hours	100	2,000			2,000
Construction Inspection	84 hours	100	8,400			8,400
Invoice Review	8 hours	100	800			800
Final Walk Through and Contractor Release	8 hours	100	800			800
	<b>SUBTOTAL (2)</b>	81,050	108,550	0	189,600	

**TRAVEL.** Mileage, per diem, lodging, etc. Must use current State of Oregon rates.

NPT travel to project site (10 times at 36 miles)	360 miles	0.575		207	207
GRMW travel to project site (10 times at 30 miles)	300 miles	0.575		173	173
	<b>SUBTOTAL (3)</b>	0	0	380	380

**MATERIALS/SUPPLIES.** Refers to items that are “used up” in the course of the project. Costs must be directly related to the implementation of this grant.

				0	
	<b>SUBTOTAL (4)</b>	0	0	0	0

**EQUIPMENT/SOFTWARE.** List portable equipment costing **\$300** or more per unit.

				0	
	<b>SUBTOTAL (5)</b>	0	0	0	0

**OTHER.** Costs must be necessary and reasonable for successful completion of this grant.

				0	
	<b>SUBTOTAL (6)</b>	0	0	0	0
[Add all subtotals, (1-6) above]	<b>CATEGORY TOTALS (7)</b>	81,050	108,550	16,580	206,180

#### GRANT ADMINISTRATION.

				0	
	<b>SUBTOTAL (8)</b>	0	0	0	0

#### POST-GRANT.

Completion Reports	40 Hrs	45		1,800	1,800
Monitoring Reports (2)	120 Hrs	45		5,400	5,400
	<b>SUBTOTAL (9)</b>	0	0	7,200	7,200

**RESTORATION BUDGET TOTAL** Totals automatically round to the nearest dollar

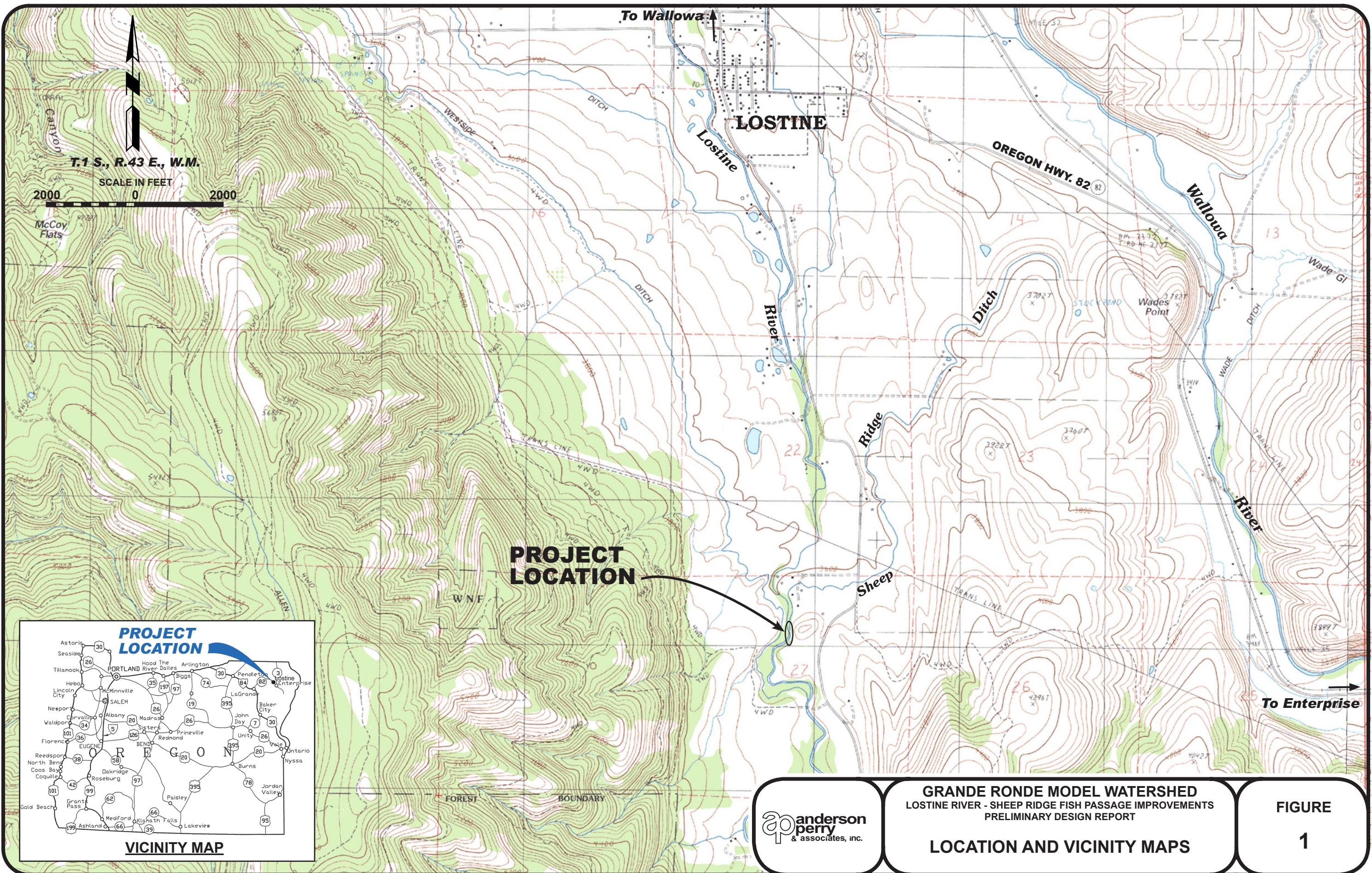
<b>RESTORATION BUDGET TOTAL (10)</b>				
[Add Category Totals (7), Subtotals (8) and (9)]	81,050	108,550	23,780	213,380

## **9. Attachments**

- 1. Maps: Location and Vicinity Maps for Sheep Ridge Diversion**
- 2. Photos: Sheep Ridge Diversion in its current status**
- 3. Design: Anderson Perry's 60% Design**

## Attachment 1: Project Maps





## Attachment 2: Project Photos



**Photo 1:** This photo is taken from below the fishway and diversion for the Sheep Ridge irrigation ditch. The bottom 3 walls are made of concrete, are deteriorating, and do not meet fish passage criteria as currently applied. The most upstream structure is the diversion, made of wood and as flow declines fish passage becomes more difficult.



**Photo 2:** Standing at the point of diversion looking downstream. Part of the top concrete wall has broken off as can be seen in the foreground.



**Photo 3:** The wooden point of diversion effectively diverts water but as flow declines aquatic organism passage declines. Flow at the time of the photos was 40 cfs and as flow drop to approximately 20 cfs or less migrating Chinook salmon cannot get past this structure.

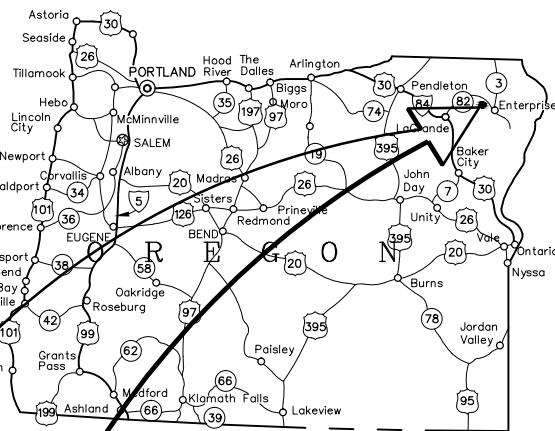
### **Attachment 3: Project Design**

# **GRANDE RONDE MODEL WATERSHED**

## **LOSTINE RIVER - SHEEP RIDGE**

## **FISH PASSAGE IMPROVEMENTS - 2015**

### **WALLOWA COUNTY, OREGON**

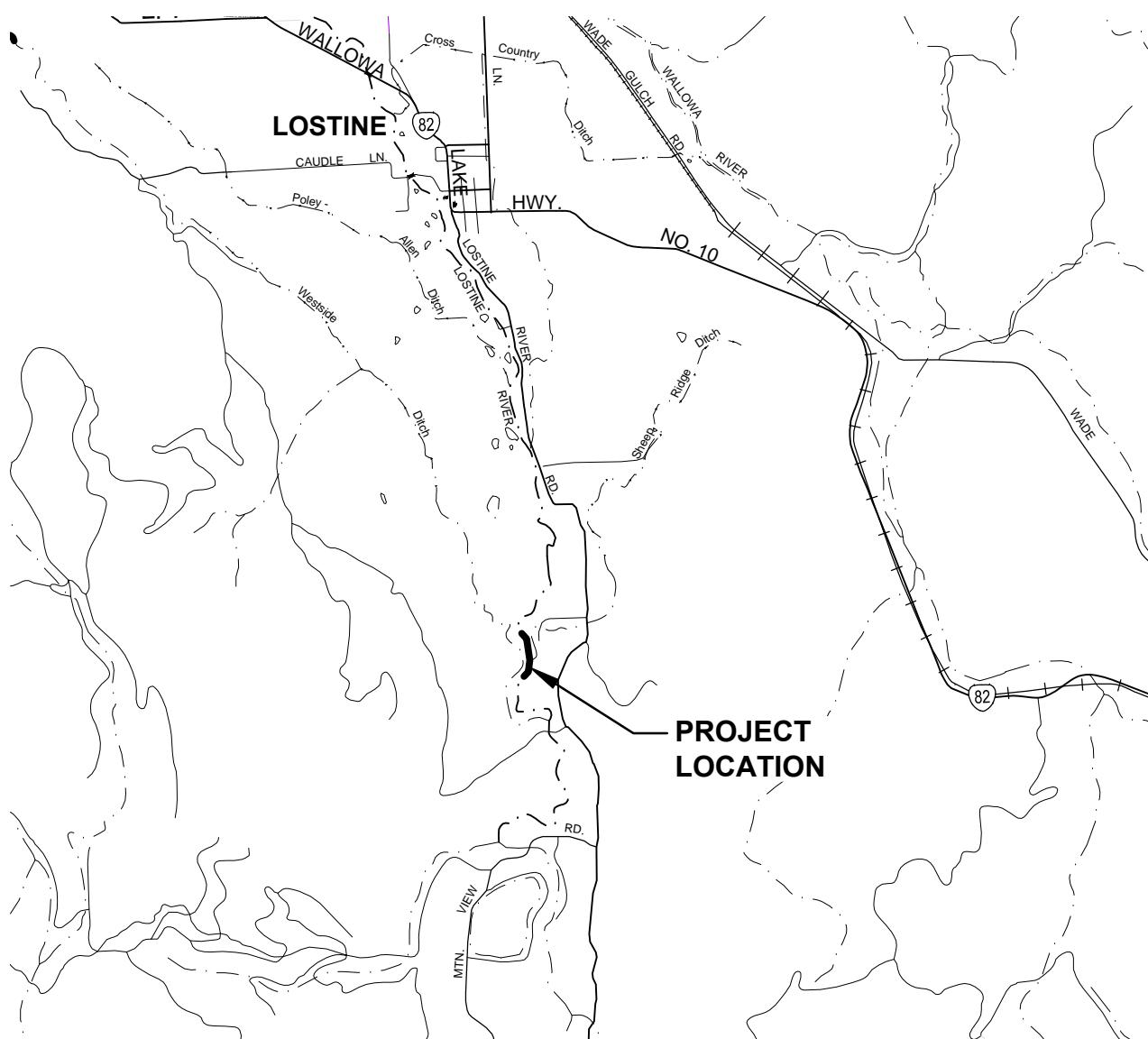


**EXECUTIVE DIRECTOR**  
JEFF OVESON

JEFF OVESON

## INDEX

- COVER
  - 1. EXISTING SITE AND DEMOLITION PLAN AND LEGEND
  - 2. RIVER PLAN AND PROFILE
  - 3. CROSS SECTIONS
  - 4. GRADE CONTROL DETAILS
  - 5. SITE ACCESS, STAGING, AND DEWATERING PLAN



**VICINITY MAP**

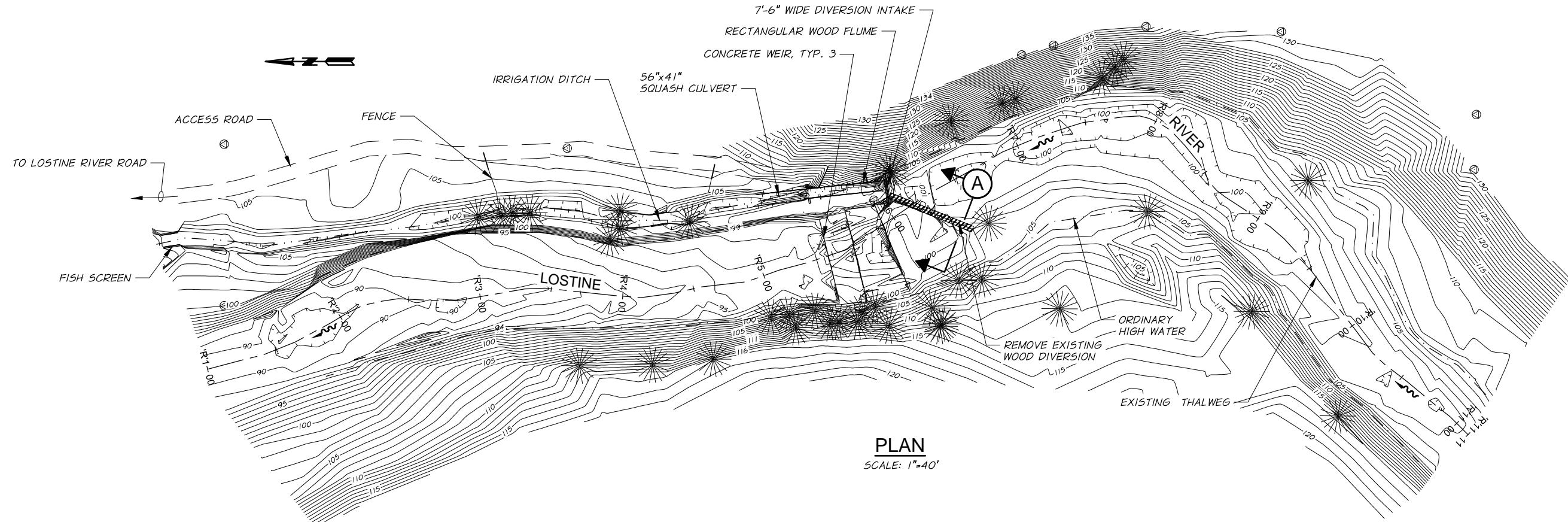
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GRAND RONDE MODEL WATERSHED has reviewed these drawings and approved them for construction to fulfill the intended project objectives.

Date \_\_\_\_\_

**FOR REVIEW ONLY**  
**NOT FOR CONSTRUCTION**  
**60% REVIEW**

**anderson  
perry  
& associates, inc.**  
engineering • surveying • natural resources  
Street - La Grande, OR 97850 Ph: (541)963-8309 Fax: (541)963-8309  
LA GRANDE, OR WALLA WALLA, WA



### LEGEND

RIVER THALWEG	— — — —	ROCK	○
ORDINARY HIGH WATER	— — —	CONIFEROUS TREE	★
IRRIGATION DITCH	— · · · —	FLOW DIRECTION	~~~~~
GRAVEL ROAD	— — — —		
INDEX CONTOUR	— — — —		750
INTERMEDIATE CONTOUR	— — — —		750
CONTROL POINT	◎		
FILL AREA	···		
REMOVE	▨		

### DESIGN CRITERIA

95% EXCEEDANCE FLOW	26 CFS
5% EXCEEDANCE FLOW	830 CFS
ORDINARY HIGH WATER FLOW	1400 CFS
2 YEAR FLOOD FLOW	1680 CFS
10 YEAR FLOOD FLOW	2250 CFS
25 YEAR FLOOD FLOW	2400 CFS
50 YEAR FLOOD FLOW	2640 CFS
100 YEAR FLOOD FLOW	3010 CFS

### PROJECT OBJECTIVE

THE PURPOSE OF THE PROJECT IS TO PROTECT HIGH QUALITY HABITAT AND IMPROVE YEAR-ROUND PASSAGE FOR ALL LIFE STAGES OF AQUATIC ORGANISMS THROUGH THIS REACH OF THE LOSTINE RIVER AND TO PROVIDE CONNECTIVITY BETWEEN FUNCTIONING FISH HABITATS UPSTREAM AND DOWNSTREAM OF THE PROJECT SITE.

### GENERAL NOTES

ALL DIMENSIONS, STATIONS, AND ELEVATIONS ARE IN FEET UNLESS OTHERWISE NOTED.

ALL IN-STREAM WORK SHALL BE PERFORMED WITHIN THE IN-STREAM WORK WINDOW AS DESIGNATED IN THE OREGON DEPARTMENT OF STATE LANDS (DSL) AND CORPS OF ENGINEERS (COE) PERMITS.

ALL WORK, INCLUDING EROSION CONTROL MEASURES, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DSL AND COE PERMITS.

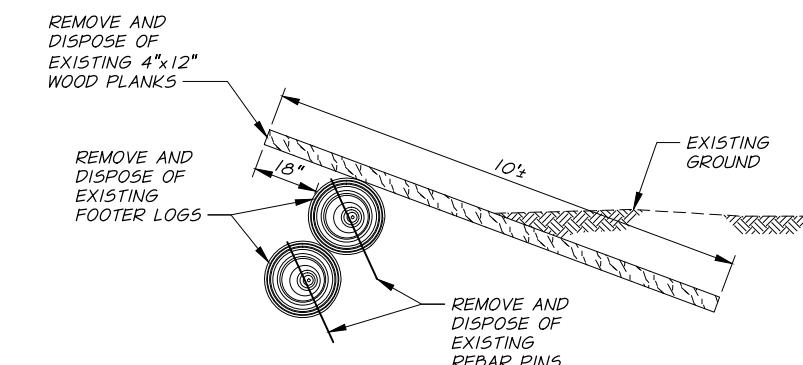
VERTICAL DATUM ASSUMED

HORIZONTAL DATUM ASSUMED

SURVEY DATA WAS GATHERED IN 2014 BY ODFW. CONTRACTOR TO VERIFY ACTUAL TOPOGRAPHY AT THE TIME OF CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

FIELD VERIFY LOCATION OF UTILITIES AND CULVERTS.

LOCATE AND PROTECT EXISTING UTILITIES. 48-HOUR NOTIFICATIONS SHOULD BE GIVEN PER ORS 757-541. "CALL BEFORE YOU DIG" NUMBER FOR OREGON IS 1-800-332-2344 (OR 811)



**SECTION A**  
**EXISTING WOOD DIVERSION**  
NTS

REVISION	BY	DATE	40	0	40	80	120
			SCALE IN FEET				
			HORZ. SCALE 1"=40'	VERT. SCALE			
DESIGNED BY J. HERRON	XREFS: TB.DWG	DRAWN BY L. WILLHITE	JOB NUMBER 81-45	DATE 2015			
REVIEWED BY C. HUTCHINS	ACAD FILE: 81-45-GRMW-DESIGN.DWG						
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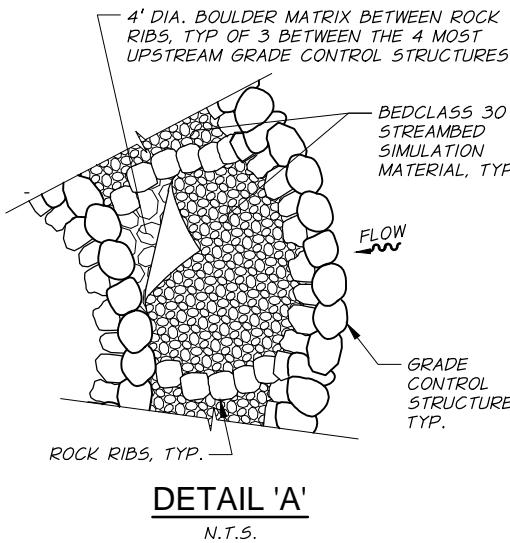
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**GRANDE RONDE MODEL WATERSHED**  
**LOSTINE RIVER**  
**SHEEP RIDGE FISH PASSAGE IMPROVEMENTS**  
**EXISTING SITE AND DEMOLITION PLAN AND LEGEND**

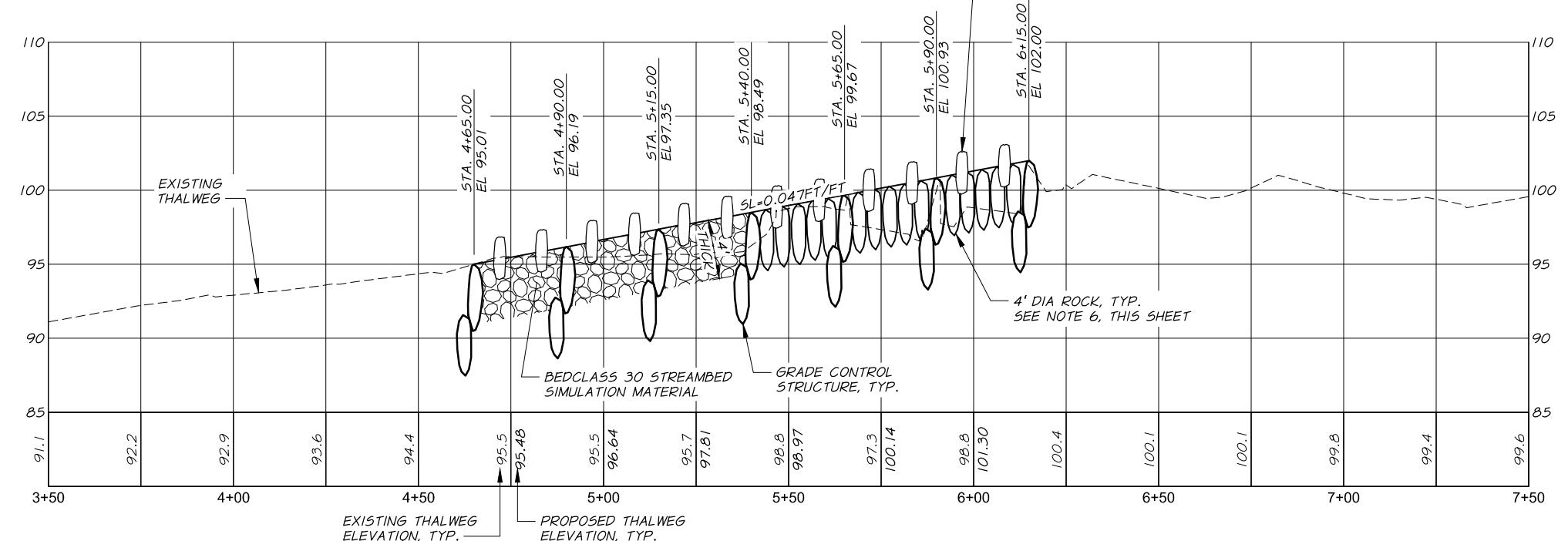
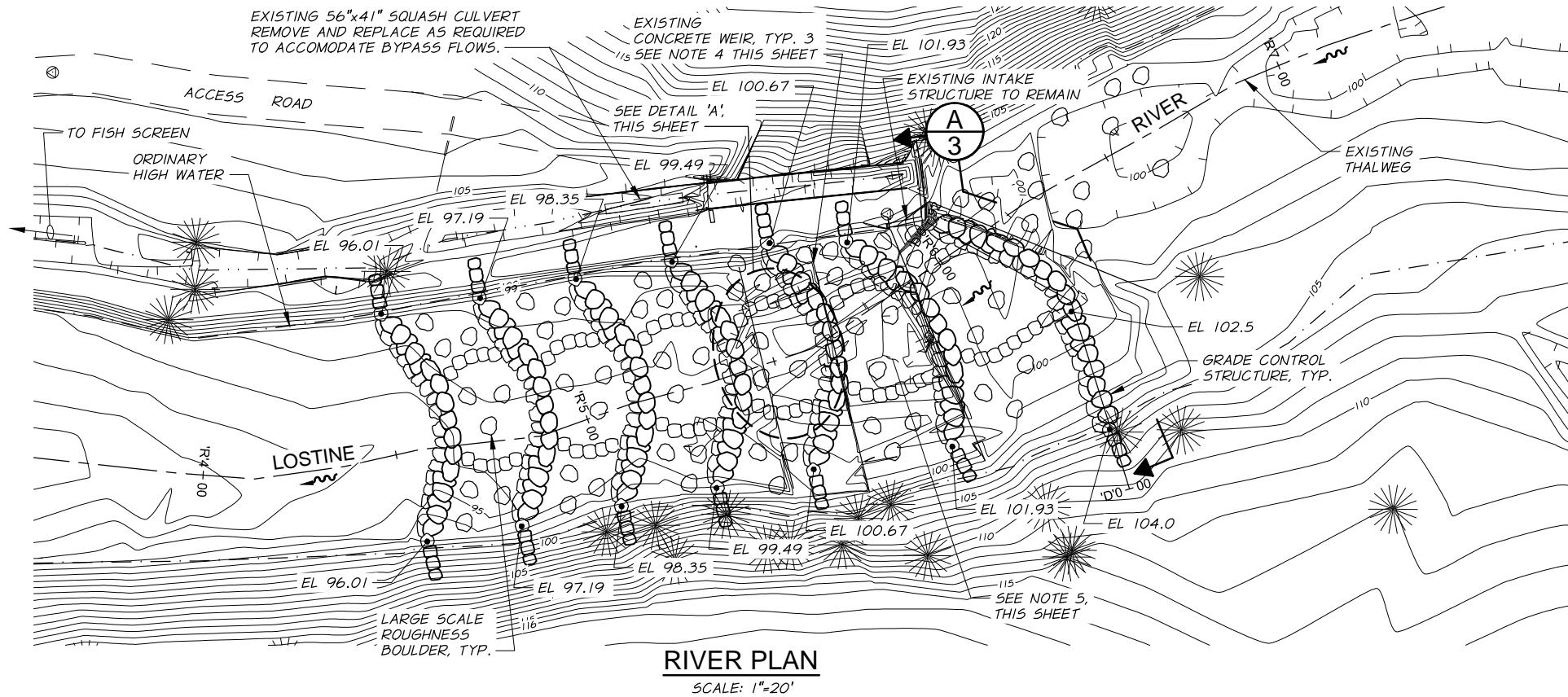
SHEET

1



#### STREAM RESTORATION NOTES

1. STREAMBED SIMULATION MATERIAL SHALL BE PLACED TO THE GRADE SHOWN ON THE DRAWINGS. MATERIAL SHALL BE PLACED BY FIRST INSTALLING THE LARGEST MATERIAL. THE SMALLER MATERIAL SHALL THEN BE USED TO FILL THE Voids BETWEEN THE LARGE MATERIAL. THIS MATERIAL SHALL BE TAMPED IN PLACE IN 12" LIFTS FOLLOWED BY JETTING OR FLOODING THE SURFACE WITH WATER TO WASH THE FINER MATERIAL INTO REMAINING Voids. FINES SHALL CONTINUE TO BE ADDED AND WASHED INTO THE STREAM SIMULATION MATERIAL UNTIL WATER POOLS ON THE STREAMBED SURFACE.
2. LARGE BOULDERS RANGING IN SIZE FROM 48" TO 54" SHALL BE PLACED NEAR THE SURFACE OF THE STREAMBED AND SHALL BE BURIED APPROXIMATELY 60% TO ACHIEVE LARGE SCALE HYDRAULIC ROUGHNESS AND RESTING LOCATIONS FOR FISH. SPACING SHALL BE ON AVERAGE APPROXIMATELY 20' O.C. THROUGHOUT THE NEWLY CONSTRUCTED REACH. ACTUAL LOCATIONS OF BOULDERS TO BE DETERMINED IN THE FIELD UNDER THE DIRECTION OF THE ENGINEER.
3. CONTRACTOR TO PLACE STREAMBED SIMULATION MATERIAL 4"-6" ABOVE FINISHED GRADE, PER ENGINEER'S DIRECTION, TO ACCOUNT FOR ANTICIPATED SETTLING.
4. MODIFY EXISTING CONCRETE WEIRS BY REMOVING CONCRETE AS REQUIRED TO ACCOMMODATE ROCK WEIRS. THE CONCRETE WEIRS SHALL REMAIN INTACT TO THE EXTENT POSSIBLE. REMOVE ALL PROTRUDING METAL FROM EXISTING CONCRETE WEIRS.
5. THE STREAMBED SIMULATION MATERIAL AND THE LARGE BOULDERS PLACED BETWEEN THE ROCK RIBS ARE NOT SHOWN ON THE PLAN VIEW FOR CLARITY.
6. CONTRACTOR SHALL PLACE 4' DIAMETER BOULDER MATRIX BETWEEN ROCK RIBS PRIOR TO PLACING STREAMBED SIMULATION MATERIAL. CONTRACTOR SHALL INCORPORATE BEDCLASS 6 STREAMBED SIMULATION MATERIAL INTO BEDCLASS 30 STREAMBED SIMULATION MATERIAL AS REQUIRED TO FILL THE Voids BETWEEN 4' DIAMETER BOULDERS UNDER THE ENGINEER'S DIRECTION.



REVISION	BY	DATE
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DRAWN BY L. WILLHITE		JOB NUMBER 81-45 DATE 2015
REVIEWED BY C. HUTCHINS		ACAD FILE: 81-45-GRMW-DESIGN.DWG

20 0 20 40 60  
SCALE IN FEET  
5 0 5 10 15  
SCALE IN FEET

HORZ. SCALE 1"=20'  
VERT. SCALE 1"=5'

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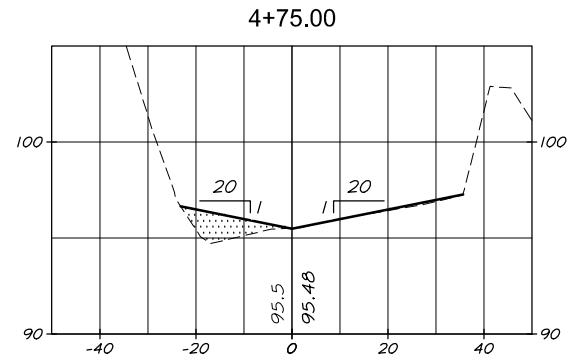
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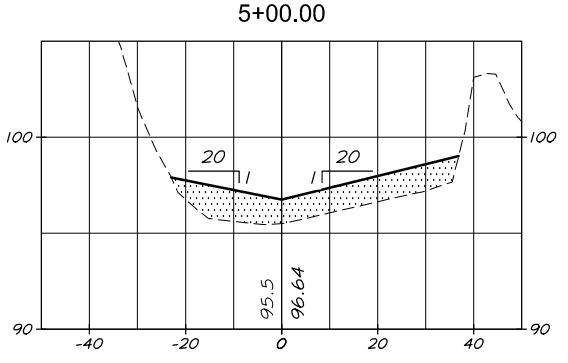
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**GRANDE RONDE MODEL WATERSHED**  
**LOSTINE RIVER**  
**SHEEP RIDGE FISH PASSAGE IMPROVEMENTS**

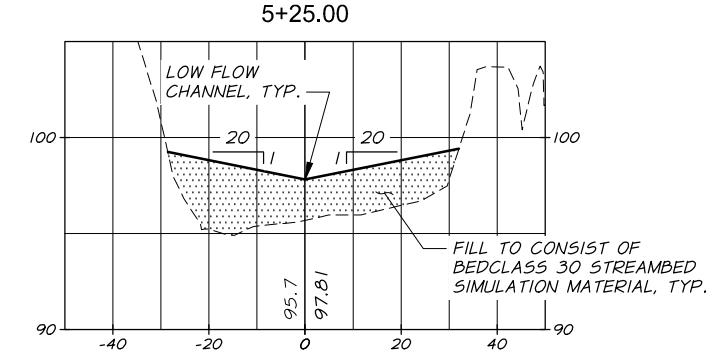
RIVER PLAN AND PROFILE



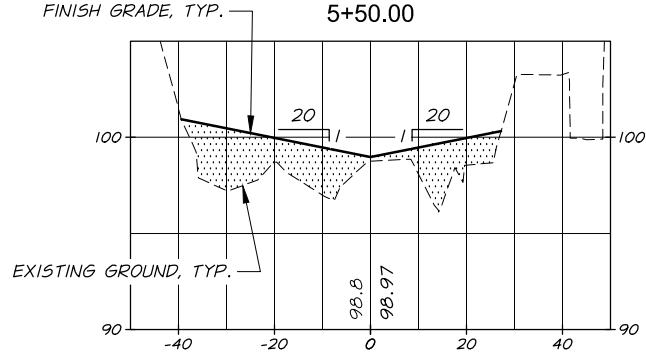
**STATION 4+75**  
NET LINE FILL AREA = 19.4 SQ. FT.



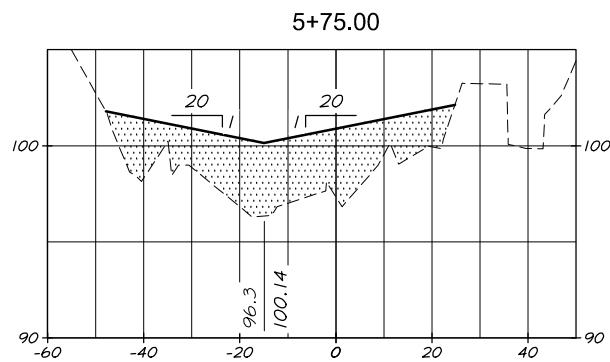
STATION 5+00  
NET LINE FILL AREA = 80.3 SQ. FT.



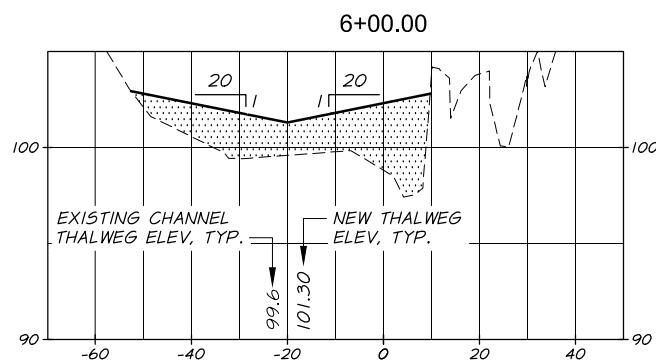
**STATION 5+25**  
NET LINE FILL AREA = 149.5 SQ. FT.



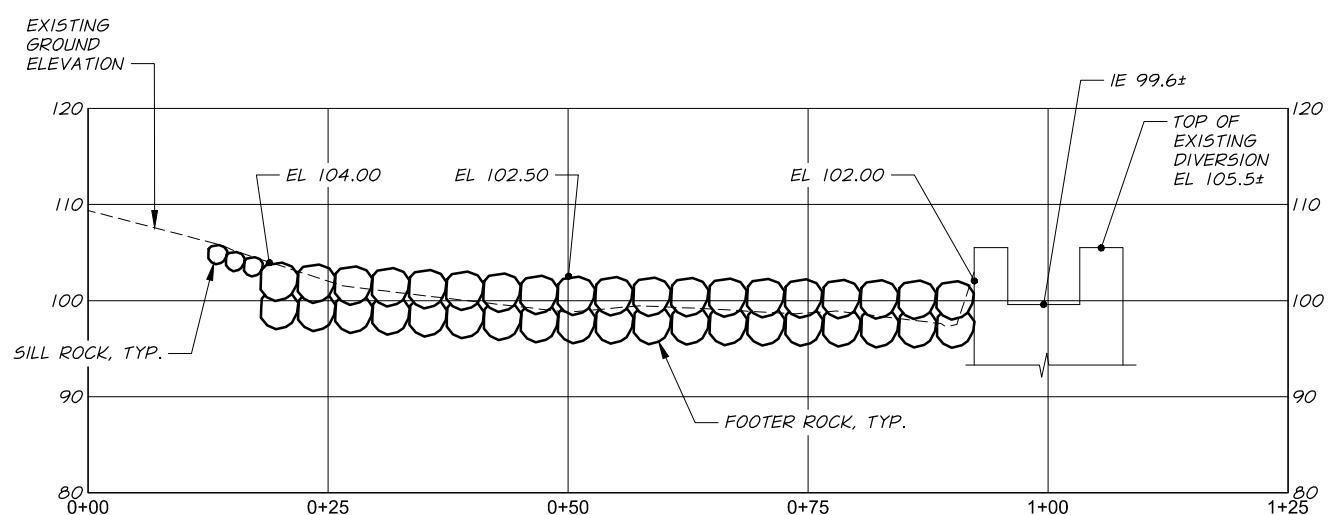
STATION 5+50  
NET LINE FILL AREA = 118.0 SQ. FT.



STATION 5+75  
NET LINE FILL AREA = 200.2 SQ. FT.



**STATION 6+00**  
NET LINE FILL AREA = 141.5 SQ. FT.



NOTE:  
SEE DETAILS, SHEET 4

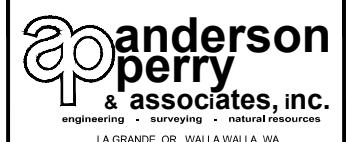
SECTION A ——————  
SCALE: 1" = 10'

REVISION	
DESIGNED BY	J. HERRON
DRAWN BY	L. WILLHITE
REVIEWED BY	C. HUTCHINS
XREFS: TB.DWG	
BY	

DATE	HORZ. SCALE	AS SHOWN	VERT. SCALE
JOB NUMBER	81-45	DATE	2015
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# **GRANDE RONDE MODEL WATERSHED**

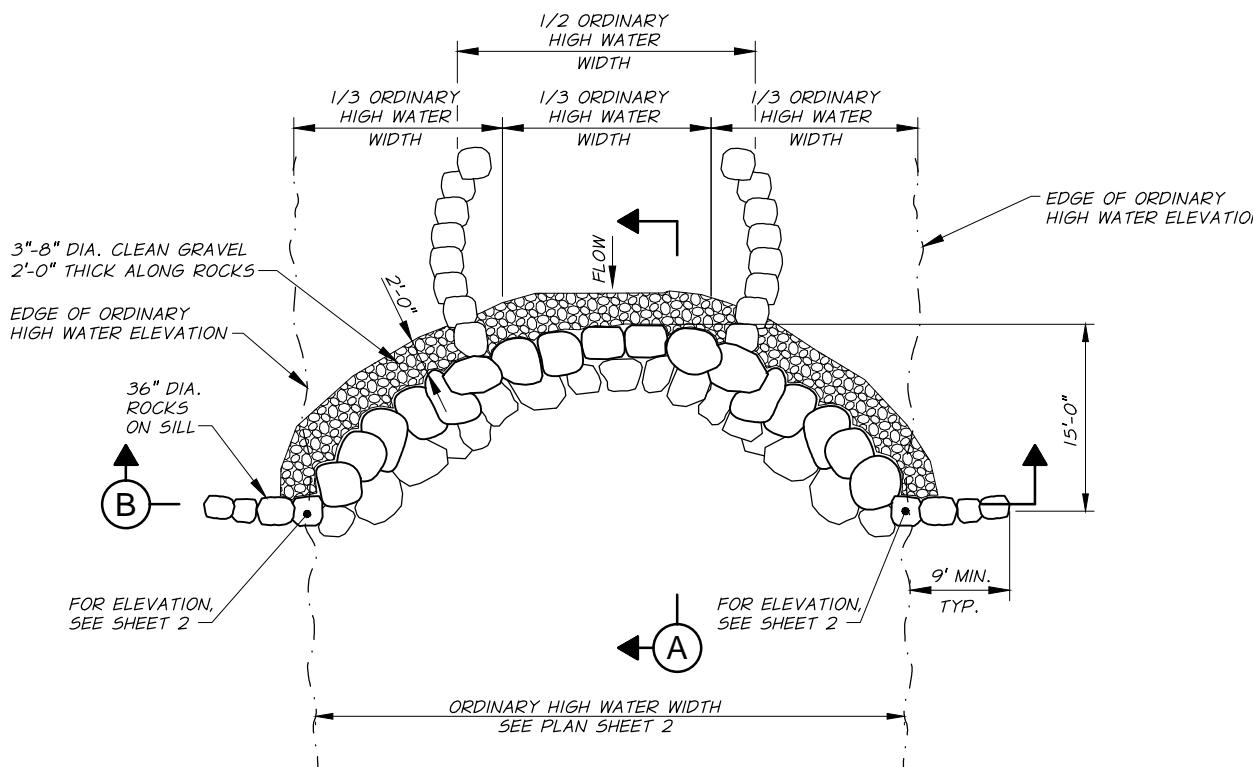
## **LOSTINE RIVER**

### **SHEEP RIDGE FISH PASSAGE IMPROVEMENTS**

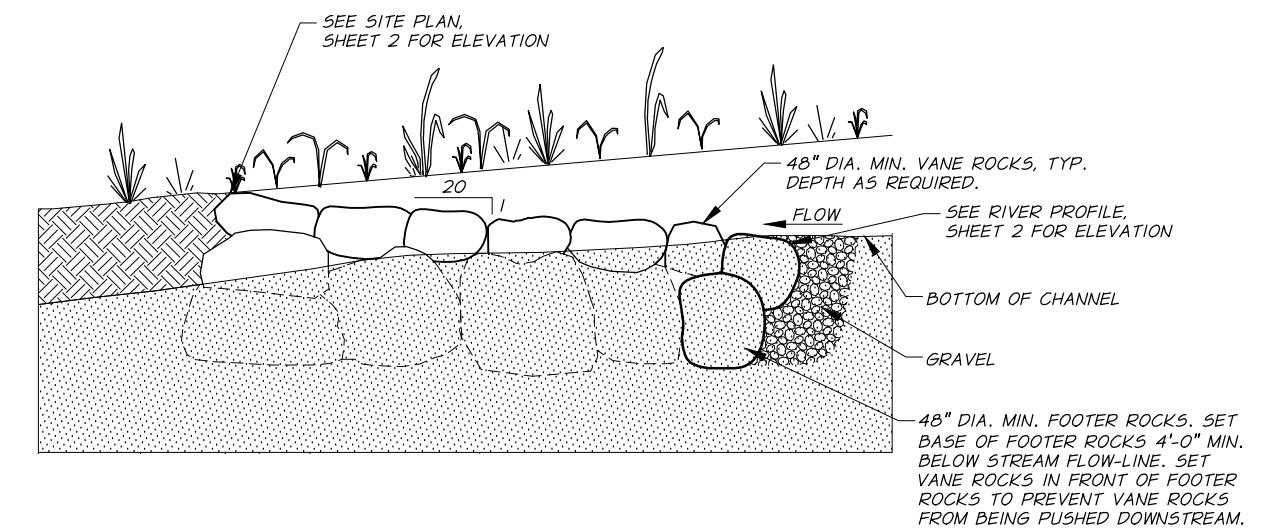
## CROSS SECTIONS

SHEET

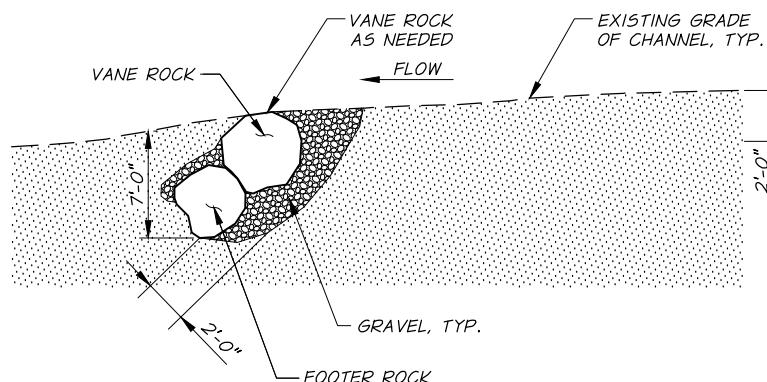
3



**PLAN**  
N.T.S.

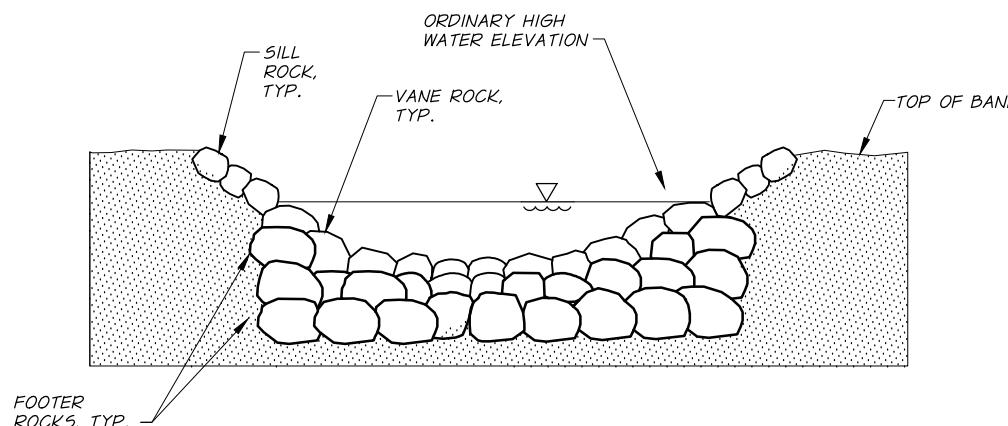


**GRADE CONTROL SECTION A**  
(ROCKS SHOWN OUT OF SECTION FOR CLARITY)  
N.T.S.



**ROCK PLACEMENT DETAIL**  
N.T.S.

- NOTES:**
1. VANE ROCKS SHALL BE PLACED UPSTREAM AND AGAINST FOOTER AND LOWER VANE ROCKS, NOT ON TOP OF THEM.
  2. GRAVEL SHALL BE COARSE GRADED AND INSTALLED SO THAT IT DOES NOT WASH THROUGH THE SPACES BETWEEN THE FOOTER AND VANE ROCKS.



**GRADE CONTROL SECTION B**  
(ROCKS SHOWN OUT OF SECTION FOR CLARITY)  
N.T.S.

**NOTE:**

1. SEE ROCK PLACEMENT DETAIL THIS SHEET FOR HOW TO INSTALL ROCK.

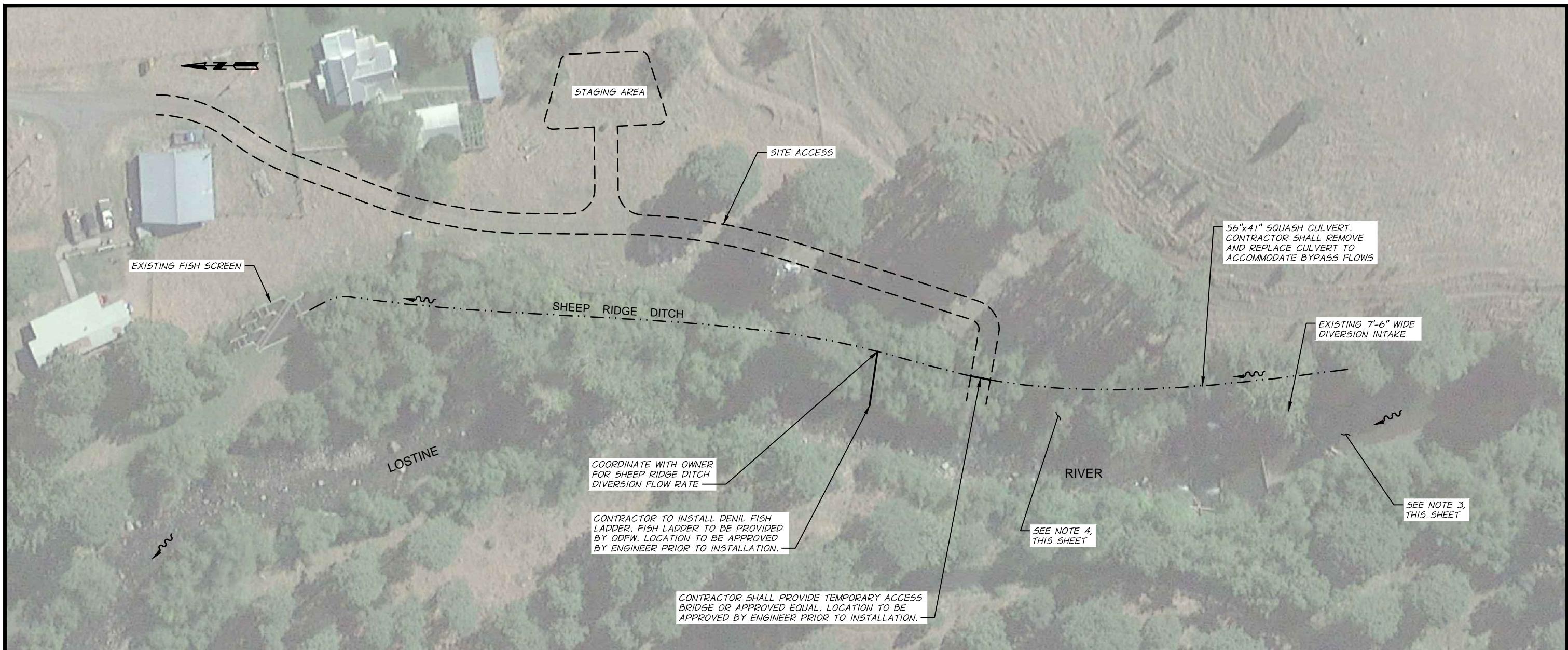
REVISION	BY	DATE	HORZ. SCALE	NONE	VERT. SCALE
DESIGNED BY J. HERRON	XREFS: TB.DWG		JOB NUMBER	81-45	DATE 2015
DRAWN BY L. WILLHITE			ACAD FILE	81-45-VaneDetails.dwg	
REVIEWED BY C. HUTCHINS			COPYRIGHT 2015 BY ANDERSON PERRY & ASSOC., INC.		

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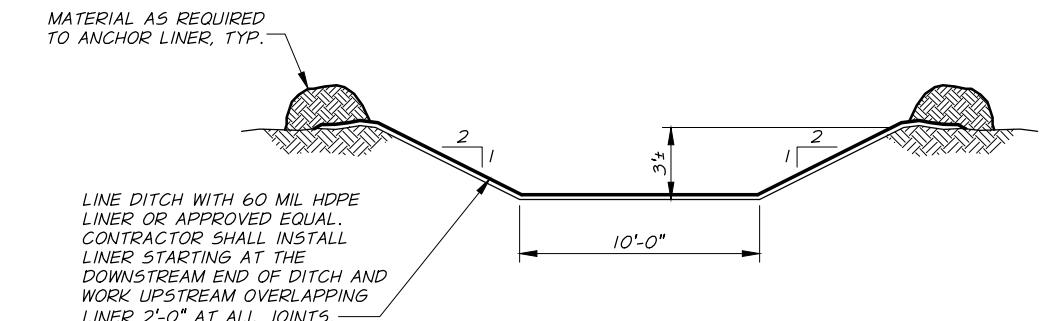
**GRANDE RONDE MODEL WATERSHED  
LOSTINE RIVER  
SHEEP RIDGE FISH PASSAGE IMPROVEMENTS**

**GRADE CONTROL DETAILS**



NOTES:

1. COORDINATE WITH OWNER FOR FISH SALVAGE (BY OTHERS).
2. THE ANTICIPATED FLOW AT THE TIME OF THE IN-STREAM WORK WINDOW (JULY 15 TO AUGUST 15) IS BETWEEN 100 AND 400 CFS. THE CONTRACTOR MAY UTILIZE SHEEP RIDGE DITCH FOR BYPASS FLOW. THE CONTRACTOR SHALL PROVIDE BYPASS FLOW IN THE EXISTING CHANNEL FOR FLOWS IN THE LOSTINE RIVER IN EXCESS OF 200 CFS. IF FLOWS IN THE LOSTINE RIVER EXCEED 400 CFS THE CONTRACTOR SHALL NOT BEGIN WORK UNTIL FLOWS IN THE RIVER ARE BELOW 400 CFS FOR 3 CONSECUTIVE DAYS.
3. THE CONTRACTOR SHALL NOT TRACK HEAVY EQUIPMENT UPSTREAM OF THE DIVERSION STRUCTURE IN ORDER TO MAINTAIN THE SEALED NATURE OF THE CHANNEL BOTTOM.
4. THE CONTRACTOR SHALL SHORE UP RIPRAP BANK BETWEEN THE LOSTINE RIVER AND THE SHEEP RIDGE DITCH AND BETWEEN THE SHEEP RIDGE DITCH CULVERT AND THE HEADGATE.
5. THE CONTRACTOR SHALL GRADE, REPLACE RIPRAP, AND RESTORE THE RIVER ACCESS ROAD AND STAGING AREA TO PRE-PROJECT CONDITIONS OR BETTER.
6. THE CONTRACTOR SHALL TOP DRESS AND BLADE THE DRIVEWAY BETWEEN THE LOSTINE RIVER ROAD AND THE PROPERTY OWNER'S HOUSE THAT IS NOT SHOWN ON THIS SHEET IN ORDER TO LEAVE THE DRIVEWAY IN EQUAL OR BETTER PRE-PROJECT CONDITION.



SHEEP RIDGE DITCH HDPE LINER DETAIL

N.T.S.

REVISION	BY	DATE	30 0 30 60 90 SCALE IN FEET
DESIGNED BY J. HERRON	XREFS: TB.DWG	HORZ. SCALE 1"=30'	VERT. SCALE
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**GRANDE RONDE MODEL WATERSHED**  
LOSTINE RIVER  
SHEEP RIDGE FISH PASSAGE IMPROVEMENTS  
  
SITE ACCESS, STAGING, AND DEWATERING PLAN

SHEET

5