# Bear Creek Large Wood and Floodplain Restoration Project

Contact: Joe Platz

**1. Project Name:** Bear Creek Large Wood and Floodplain Restoration Project

The project is located on Bear Creek on lands administered by the US Forest Service. The project is located within the Starkey Experimental Forest, which has a top priority for research.

**2. Applicant:**

US Forest Service (USFS), LaGrande Ranger District; Attn: Joe Platz; 3502 HWY 30; LaGrande, OR 97850. Email: jplatz@fs.fed.us. Phone Number: 541-962-8571. Fax Number: 541-962-8580.

**3. Participating Landowner(s) and Agencies:**

(1) USFS; Attn: Joe Platz; 3502 HWY 30, LaGrande, OR 97850; (541) 962-8571; Fax: (541) 962-8580
(2) Grande Ronde Model Watershed, Lyle Kuchenbecker; 1114 J Ave., La Grande, OR 97850; 541-663-0570; Fax: 541-962-1585
(3) Bonneville Power Administration, Timmie Mandish; P.O. Box 3621; Portland, OR 97208; PH 503-230-3983; FAX 503-230-4564

**4. Project Contact(s):**

Technical contact(s):
Joe Platz: 3502 HWY 30, LaGrande, OR 97850; jplatz@fs.fed.us; (541) 962-8571
Administrative contact(s):
Kurt Wiedenmann: 3502 HWY 30, LaGrande, OR 97850; kwiedenmann@fs.fed.us; (541) 962-8571

**5. Project Location:**

The Bear Creek Large Wood and Floodplain Restoration Project is located in Bear Creek, a tributary to Meadow Creek, within the Starkey Experimental Forest of the LaGrande Ranger District, Wallowa-Whitman National Forest. The project is located on 7.05 miles of Bear Creek (starting at approximate RM 1.5) and tributaries (T 4S, R 34E, S 3, 4, 9, 16, 17, 19, 20 & 21). The project is located within the Meadow Creek Watershed (1706010402); Middle Meadow Creek Subwatershed (170601040202); Reach 3 & 4; Union County; 45 degrees, 14', 52" N, 118 degrees, 31', 40.32" W.

**6. Project Objectives:**

The objective is to improve summer steelhead habitat and downstream chinook habitat, specifically through improving or increasing the following habitat elements.

- Improve floodplain connectivity
- Improve water capture, storage and safe release within the floodplain
- Increase quantity and quality of pools within Bear Creek
- Increase fish cover within Bear Creek
- Increase habitat complexity
- Increase forage availability
- Increase residual pool depth
- Increase number of large and medium pieces of large woody debris in the stream
- Increase spawning gravel recruitment

This project is located in one of the five highest priority Geographic Areas (Upper Grande Ronde) for steelhead restoration within the Grande Ronde Subbasin Plan Supplement (GRSBP) (page 16). The GRSBP identifies on page 16: "Key habitat quantity" and "sediment" are "Key Limiting Factors" of the "Grande Ronde Subbasin steelhead population". This project directly affects key habitat quantity by improving channel habitat conditions through large wood placement in areas where pool quantity and quality can be improved. In addition, this project will reduce sediment in the long term (will have some short term impacts) by removing a drawbottom road that is constricting the stream.

**7. Project Description**

Introduction

Bear Creek is spawning and rearing habitat for Snake River Basin summer steelhead and redband trout. It is located approximately 1.5 miles upstream of spring/summer chinook habitat within Meadow Creek. Summer steelhead and spring/summer chinook are federally listed under ESA as threatened species. This project will improve instream habitat and floodplain connectivity through log/boulder construction, drawbottom road removal, floodplain restoration, and planting.

Existing condition

Bear Creek (reach 3 & 4), is a Rosgen B4 type channel with substrate dominated by gravel and cobble. The valley bottom is forested, and riparian vegetation consists of shrub species, primarily alder and willow, with grasses and scattered sedges. Conifers consist of lodgepole pine, fir, larch, and ponderosa pine. Historic timber harvest has removed the large conifers from the valley bottom greatly reducing the future recruitment of large wood to Bear Creek. An abandoned road that runs the length of lower Bear Creek was used to harvest and transport trees out of the area. The road is barricaded and grown over and is not feasible for transport of logs. Extensive work and funds would be needed to reconstruct the road to allow large truck travel for log haul into the project site including a turn around point. This would also result in considerable ground disturbance and vegetation removal as well as the requirement of extensive funds to restore the reconstructed roadbed.

A stream survey of Bear Creek was conducted in 1997. Stream survey results indicate that there are few pieces of large wood and very low residual pool depth (see Table 1 below for stream survey results). This lack of channel structure has resulted in simplified habitat with little habitat complexity. In addition, the streambottom road has constricted the stream channel, resulting in a narrow floodplain. This has resulted in decreased water storage, increased peak flows, and reduced stream shade (in some areas). Average bankfull width within the project area is approximately 21 feet. Average stream gradient is 3%.

**Table 1. Results of stream habitat survey for Bear Creek (1.6 - 6.8 River Miles).**

| Stream/Year Surveyed | Pools Per Mile | W/D Ratio | Ave Residual Pool Depth | %Pool Habitat | %Riffle Habitat | *LWD Large (pieces/mile) | **LWD Medium (pieces/mile) |
|---|---|---|---|---|---|---|---|
| Bear Creek 1997 Reach 3 | 48 | 20 | 0.6 | 21 | 77 | 7 | 7 |
| Bear Creek 1997 Reach 4 | 51 | 18 | 0.6 | 17 | 82 | 7 | 11 |

*Large LWD: Pieces >20 inches dbh and >35 feet in length.

**Medium LWD: Pieces >12 inches dbh and >35 feet in length.

Bear Creek is in an active cattle allotment on the Starkey Experimental Forest. Starkey Experimental Forest's livestock allotments are monitored more extensively then other allotments on the district. Research on the livestock grazing use and system occurs and there are more USFS personnel assisting in the management of

allotments. To alleviate livestock pressure on Bear Creek, livestock are trailed, daily, out of Bear Creek. During hot days, 25 – 30 livestock are trailed out of Bear Creek, daily. Additional conservation measures include the following: (1) 45% and 40% utilization of grass/forbs and shrubs, respectively; (2) Periodic inspections and annual monitoring will occur to ensure grazing is meeting standards and on an improving trend (USFS will monitor); (3) Maintenance of 41 off-site water developments will occur by the permittee to help keep livestock in the uplands. (4) Salt/minerals will be place .25 mile away from riparian areas.

The season of use for the pasture that includes Bear Creek is for 6 weeks in August and September. The Biological Assessment for the Starkey Grazing Allotment has been provided for your review (refer to the project disc). The Starkey Allotment Management Plan will be changed within next two years to allow for an earlier deferral grazing system that would occur from June 16 through July 31 and alternate every other year with the August through September timeframe. The current livestock management system meets ESA requirements (refer to the attached concurrence letter from NMFS (hard copy only)).

To further alleviate livestock pressure on Bear Creek: (1) deciduous seedlings will be fenced in pods (five seedlings to a pod); (2) large amounts of wood will be placed on the newly constructed floodplain; (3) approximately .5 miles of drift fence would be constructed at both ends of the 260 road; (4) a new livestock trail would be constructed on the ridge (adjacent to the 260 road and outside of the riparian area); (5) On the lower 4.36 miles of Bear Creek, the livestock trail will be created as far away from Bear Creek as possible.

Specific Actions

Bear Creek Large Wood and Floodplain Restoration Project will add large wood to 33 selected sites over an approximate 4.36 miles of mainstem Bear Creek. A total of 2.83 miles of upper Bear Creek and associated upper tributaries will have wood placed within the streams. Floodplain Restoration will occur within 16 segments of mainstem Bear Creek, which occurs over 1.93 stream miles. Four culverts will be removed from the project area. The 260 road will be obliterated and recontoured, which includes .68 miles of upper Bear Creek. Seeding, deciduous and coniferous planting will occur throughout the project area. Approx.5 mile of drift fence would be constructed at both ends of the 260 road. A new livestock trail would be constructed on the ridge, outside of the riparian area of Bear Creek. The entire project involves 7.05 miles of Bear Creek and associated tributaries. A more specific project description is located below.

*Structure Construction*

A total of 33 structures will be constructed within the project. Each structure will average 6 pieces of large woody debris. Limited pinning with rebar will occur where logs cross. Logs will only be pinned if increased stability is needed to create improved habitat diversity. Most of the structures are a combination of cut logs, root wads and boulders. All boulders will be taken from on site. All structures will be placed on top of the land surface. A helicopter and excavator will be used for structure construction.

* Cut Logs

A total 155 cut logs needed for the project (as many limbs will be left on the logs as possible). Of these 155 logs, 102 (50’ long) logs will need to be flown in via helicopter. These logs will be obtained and hauled from lands adjacent to the open roads located within the Starkey Experimental Forest. Logs and root wads obtained from lands within the Experimental Forest will be blow down or green trees/snags within 200 feet of existing roads. All standing green trees/snags will be felled or pushed over and hauled to the road with an excavator. No standing green trees/snags over 21 inches dbh will be felled or pushed over, unless it is designated as a hazard tree. All of the logs/rootwads will be staged on an open ridge top, located on the 2120 road. The helicopter will fly the logs in from this site.

A total of 53 cut logs will be taken from within or adjacent to Bear Creek. Of these 53 logs, there will be 22 snags used, 13 down logs, and 18 green trees (this equates to 1 green tree per 1279 feet of stream channel). None of the snags are ponderosa pine or over 21 inches dbh. None of the green trees are over 21 inches dbh and will be thinned out of dense stands. All of the logs and root wads taken within or adjacent to Bear Creek will be imported into the creek with the use of an excavator and chokers, where needed.

* Root wads

A total of 55 (with 50' log attached) root wads are needed for the project. Of these 55 root wads, there are 8 root wads on site. These are trees that have blown over and are near the structure site(s) location. A total of 47 root wads will need to be flown in via helicopter. These root wads (with 50' logs attached) will be obtained in the same manner as the cut logs above.

** Floodplain Restoration*

Floodplain restoration would occur at 16 segments adjacent to mainstem Bear Creek. These segments are associated with 1.93 miles of Bear Creek. Currently, there is a closed streambottom road that constricts the floodplain of Bear Creek. The road would be recontoured in areas where stream constriction is occurring. The road recontour would allow for a floodplain that can be accessed by bankfull flows and/or a secondary floodplain that would accompany flows above 5-10 year events. Existing reference stream reaches will be used when developing the floodplain. These reaches are located in between floodplain restoration segments. Tree/shrub removal will be minimized as much as possible. However, some tree/shrub vegetation may need to be removed during floodplain restoration activities. All trees removed will be distributed on the floodplain, incorporated within the above structures, and/or used to create an additional structure. Any shrubs removed will be replanted adjacent to the stream. Additional logs from the surrounding uplands will be placed within the floodplain. A livestock trail would continue to exist within these segments.

** Culverts*

Four culverts would be removed within the project area. All four of the culverts are located on nonfish-bearing tributaries. The culvert removal will remove the road fill and create a stream channel that will be similar in channel morphology to the channel upstream of the road prism. Wood will be incorporated into the newly created channel.

** 260 Road Obliteration*

The 260 road would be obliterated (.68 miles). This would involve recontouring the road and in some areas of the obliteration, floodplain restoration would occur. The floodplain restoration would occur in the same manner as above. There will not be a livestock trail or ATV access road left after project completion.

** Wood Placement on Upper Tributaries*

A total of 2.83 miles of upper Bear Creek and associated upper tributaries will have wood placed within the streams. The wood needed for the placement would be taken from existing down logs or dense stands. Wood would be placed at angles in the channel(s) similar to the few existing natural wood structures in the stream.

*Seeding*

All recontoured road/streambank areas and any other disturbed sites (to mineral soil) will be seeded with native grass/forb seed after project completion.

*Planting*

* 2000 cuttings will be planted the spring after project completion
* 2000 deciduous seedlings will be planted the spring after project completion
* 4000 conifer seedlings will be planted the spring after project completion

All of the above plantings will be completed by hand. Cuttings will be obtained from dense stands adjacent to lower Bear Creek on USFS lands. Stands will not prune more than 25% of the existing vegetation.

Deciduous plantings will be protected by 16' x 50" ranch panels. This will involve planting 5 deciduous plants in a circle and wrapping the field fence around the plants. Four steel posts will be used to anchor the fence. A total of 400 of these fence structures will be placed on Bear Creek.

*Drift Fence and Livestock Trail*

Approximately .5 mile of drift fence would be constructed at both ends of the 260 road. This would involve constructing a four strand barb wire fence in two locations to keep livestock pressure off of the 260 road obliteration and push them towards the new trail. A new livestock trail would be constructed on the ridge, outside of the riparian area of Bear Creek. The livestock trail would not include grubbing, only saw work to clear a path for the livestock. The fence and trail would not keep livestock out 100% of the time, but would significantly reduce livestock pressure on the 260 road obliteration.

*Access*

Access for the excavator and UTV/ATV (or equivalent machine to assist with fueling) will be through Road 2120, Road 2105 and the old drawbottom road. The old drawbottom road will require some road work (i.e. tank trap removal, down log removal) in order for the excavator(s) to access the structure sites and for fueling purposes. This work will involve the minimum amount necessary to complete the project. Rehabilitation will involve placing tank traps or boulders (where needed), placement of large woody debris (down logs), seeding and planting.

Benefits - Benefits include: Improved floodplain connectivity; improved water capture, storage and safe release within the floodplain; increased quantity and quality of pools; increased fish cover within Bear Creek; increased habitat complexity; increased forage availability; increased number of large and medium pieces of large woody debris in the stream; and increased spawning gravel recruitment.

Project Maintenance - Maintenance of the small exclosure fences, vexar tubing, and structures would be completed by the USFS (Joe Platz). Maintenance would involve ensuring the small exclosures and vexar tubing are up after spring flows every year (June). Once the trees/shrubs are above browse height or exhibit sufficient growth to withstand grazing pressure, the small exclosures and vexar tubing will be removed or used in additional areas on the stream. Maintenance on the structures will involve removing rebar that is exposed from the stream. This will occur at the same time as the exclosure fences.

Permits - NEPA will be completed during the winter of 2009/2010 by the USFS (Alicia Bergschneider). ESA consultation will be completed with US Fish and Wildlife Service and National Marine Fisheries Service (NMFS) through programmatic consultation during the winter of 2009/2010 (Joe Platz). Permits will be obtained through a programmatic permit from the US Army Corps of Engineers and Department of State Lands by Joe Platz in the winter of 2010. A work window extension will be obtained by Joe Platz through ODFW and NMFS.

Monitoring Plan

Monitoring specific to project activities would be accomplished to assure that activities conform to objectives of the Forest Plan. Project level monitoring is a component of Forest Plan monitoring. The following types of monitoring would be accomplished:

*Implementation Monitoring* - Are the project design being implemented as planned?

A fisheries biologist/hydrologist would be on site during project operations to ensure that the project design and mitigation measures would be implemented as planned.

*Effectiveness Monitoring* - Did the project result in the desired outcome?

- Structure construction: Monitoring of structures would involve photo points of before and after operations occur. Follow up photo points would occur at year 1, year 3, and year 5 after project completion**.**
- Stream Survey: Region 6 Level II Stream Habitat Inventory would be conducted prior to and @ year 1 and year 5 after completion.
- Plant/seed survival: Native plantings and seeded areas would be evaluated for survival on a yearly basis for three years after project completion through photo points and determining plant survival. If plant/seed survival is poor, then subsequent planting and/or seeding would occur.
- Noxious weeds: Noxious weeds would be monitored, yearly, for five years after project operations.

*Reports*

- Reports: A preliminary final report that describes the actual implementation of this project and associated monitoring would be completed in the winter of 2011. A final report would be completed in the winter of 2012. After final report completion, monitoring reports would be completed the following winter after monitoring is completed.

Work Dates

Structure construction, floodplain restoration, culverts, 260 road obliteration would occur from July 1, 2010 through August 13, 2010. The work window for Bear Creek is July 1 – July 31. A portion of the project will be outside of the work window and will require a work window extension from ODFW and NMFS. The stream does not support bull trout or spring/summer chinook, so the extension should be attainable.

Log/root wad hauling and staging will occur in May and June of 2010.

Wood placement in the upper tributaries will occur from September 15, 2010 through November 30, 2010. The placement will occur when the stream channels are dry.

Seeding will occur in October of 2010.

Planting will occur from March – June of 2011.

Drift fence and livestock trail construction will occur from September – November of 2011.

**8. Project Budget**

The project budget is attached.

**9. Attachments**

Attachments include: (1) Project Budget, (2) Vicinity Map, (3) Project Description Map, (4) Two designs, (5) Photos, (6) NMFS Starkey Allotment Concurrence Letter (hard copy only), and (7) Biological Assessment for the Starkey Grazing Allotment (on project disc).