



R & E Grant Application 17-19 Biennium

Project #: 17-047

Grassy Lake Creek Tributary Culvert Replacements

Project Information

Requested Cycle: 17-5
R&E Project Request: \$28,420
Other Funding: \$87,928
Total Project: \$116,348
Spending Start Date: 8/1/2018
Spending End Date: 10/30/2018
Project Start Date: 7/1/2018
Project End Date: 10/30/2018
Organization: Lower Nehalem Watershed Council (Tax ID #: 911826263)

Fiscal Officer

Name: Claudine Rehn
Address: P.O. Box 249
Nehalem, OR 97131
Telephone: 503-322-2222
Email: claudine@tbnep.org

Applicant Information

Name: Alix Lee
Address: PO Box 249
Nehalem, OR 97131
Telephone: 503-368-7424
Telephone 2: 541-231-8041
Email: lnwc@nehalemtnet.net

Past Recommended or Completed Projects

This applicant has no previous projects that match criteria.

Authorized Agent

Name: Troy Laws
Email: troy.s.laws@state.or.us

Location Information

Where is it?

The project will occur on private land owned or managed by another party

Landowner Information

Name: Weyerhaeuser Western Timberlands
Address: 741 Avenue A
Seaside, OR, 97138
Phone: 503-717-8288
Cell: 503-338-9371
Email: erik.neilson@weyerhaeuser.com

Site Description

Street Address, nearest intersection, or other descriptive location.

Grassy Lake Creek is located in the North Fork Nehalem watershed, 7.2 miles north of Nehalem in Clatsop County and is accessed via Soapstone Mainline (forest road) off of Highway 53. The watershed encompasses 5.53 square miles with 39 stream miles, just over 7.5 miles of which provide fish habitat.

Directions to the site from the nearest highway junction.

Following project completion, public anglers will be allowed the following level of access to the project site:

Limited access

Please describe what leases, easements, agreements are in place to ensure angler access to the project site, and what is the length of each agreement.

Access to the site is through permit only. Weyerhaeuser recreational permits and leases include access for hunting, camping, fishing, hiking, mountain biking, horseback riding, berry and mushroom picking, and more. They offer variety of permits and exclusive leases across our Northwest landscape.

Dominant Land Use Type:

Forest

Project Location

General Project Location.

County: CLATSOP
ODFW Dist: North Coast
Stream/Lake/Estuary Name: Grassy Lake Creek
Sub-basin: 17100202
Tributary of: North Fork Nehalem River

Specific Project Location.

Latitude

Longitude

Project Summary

Project Summary

Please provide a couple sentence summary of the proposal.

This project will replace two undersized culverts on unnamed tributaries to Grassy Lake Creek that impair access to a combined 1 mile of rearing and spawning habitat for an isolated cutthroat population and will improve instream habitat and floodplain connectivity by placing LWD structures over 1 mile of stream.

Overall Project Goals

Describe the primary goals or outcomes of the entire project, including elements not requesting funding from R&E.

1. Restore unimpeded aquatic organism passage to just over 1 mile of habitat on two Grassy Lake Creek tributary streams.
2. Improve instream habitat by placing large wood in key locations to support channel forming processes and enhance fish habitat.

Primary objectives of R&E funding

Please describe the measurable objectives for the R&E portion of the funding request.

Replace one of the undersized culverts on private forest road network with culvert that meets ODF road/stream crossings standards (ability to pass the 100-year flow event and sized to match active channel width).

Improve access to 0.69 miles of cutthroat spawning and rearing habitat.

Current Situation/Justification

Please describe the current situation and explain why this funding is needed.

The Grassy Lake Creek watershed contains just over 7.5 miles of habitat for an isolated cutthroat population, anadromous access is blocked by a 40 foot waterfall near the confluence with the North Fork Nehalem River. The crossings in this proposal are on two unnamed tributaries to Grassy Lake Creek, impairing access to 1 mile of that habitat. The crossings are undersized, degraded culverts.

Additionally, the unnamed tributary and mainstem Grassy Lake Creek will benefit from the installation of large wood. The tributary's low gradient and narrow active channel width make large wood installation a straight-forward restoration project. The mainstem Grassy Lake Creek channel is devoid of any instream structure. Adding wood to the system will improve boundary roughness, increase hydraulic roughness, improve sediment storage and sorting, increase nutrient sources and food web support, improve aquatic habitat complexity and increase floodplain connectivity.

The Grassy Lake Creek watershed is important to coastal cutthroat trout populations in the Nehalem Watershed. These fish are genetically isolated and represent a distinct stock. Nature provides very few coastal streams with waterfalls high enough to block migration of anadromous

fish. These streams are the sanctuary of resident cutthroat trout, contributing unique genetics to the larger population.

Recreation and Commercial Benefit

This project will provide benefits to:

Recreational fisheries

Explain how this project will contribute to current (and/or potential) fishing opportunities, access, or fisheries management.

Dave Hughes described the impacts of logging to Grassy Lake Creek in his book "An Angler's Astoria". He provides vivid detail on the removal of trees from the entire basin up to the channel edge during the 1970s and 80s and how the cutthroat population was diminished, both in size of the fish and in numbers. His observations made over several decades paint a picturesque scene disrupted by land use practices and then a gradual return of the size classes of trees and trout that had been present prior to logging. The Oregon Native Fish Status Report, Volume II indicates that Coastal cutthroat populations quickly respond to changes in habitat quality and quantity and populate those habitats to capacity. It also notes how populations of coastal cutthroat have persisted where they are isolated. While not specifically described in the report, this is the condition of the cutthroat population in Grassy Lake Creek. Improving access to and enhancing habitat in Grassy Lake Creek will continue the trend of increasing the size and population of cutthroat, providing improved recreational opportunity in an area cherished by local fisherman and contributing unique genetics to the larger cutthroat population of the North Fork Nehalem watershed.

Percent benefit split between Commercial and Recreational anglers:

0 % Commercial

100 % Recreational

Please explain, or justify, how the percentage split was determined:

This project will only affect cutthroat fisheries, therefore there will be no benefit to Commercial anglers.

This project has been identified as an ODFW priority for:

Local/watershed

Basin/regional

Does this project directly support implementation of the ODFW Strategic Plan and/or current Fish Division priorities?

Please briefly explain when this was identified as a priority and what process or workgroup was used to identify this as an ODFW priority.

Identify any plan or other document that identifies this priority.

Culvert Assessment and Fish Passage Prioritization Report for the Lower Nehalem Watershed. Clearway Environmental, LLC. July 2016. http://lnwc.nehalem.org/wp-content/uploads/2017/01/LNW_Culvert_Assessment_Prioritization_Report_FINAL.pdf

Voluntary Conservation Action Plan for Nehalem River Watershed. 2012.

Lower Nehalem Watershed Action Plan, LNWC, 2002.

Nehalem Watershed Assessment, PSU, 1999. <http://web.pdx.edu/~maserj/project/project1/>

Is this project part of an approved Salmon-Trout Enhancement Program (STEP) activity?

No

This project is intended to benefit the following species:
Cutthroat Trout

This project will benefit anglers or fishery by providing:
Habitat Enhancements
Fish Passage

Habitat Enhancements

The primary purpose of this project is to improve/increase:
In water structure, complexity, and habitat
Flow and/or connectivity
Fish passage

Fish Passage

This fish passage project will:
Replace an existing fishway/passage structure
Purchase/installation of culvert or bridge

We have contacted or have been working with:
Local ODFW staff
The project has received approval

Project Description

Schedule

Activity	Date	RE Funding
Develop MOU Between LNWC and Weyerhaeuser	04, 18	No
Prepare and submit permit applications	05, 18	No
Develop bid documents	05, 18	No
Solicit bids, select preferred contractor	06, 18	No
Project Construction	08, 18	Yes
Project Completion	09, 18	Yes
Post-project Reporting	10, 18	No

Permits

Permit	Secured?	Date Expected
ODF Forest Practices Notification	No	May 2018

Project Design and Description

Please describe in detail the methods or approach that will be used to achieve the project objectives.
The proposed project will (1) Restore unimpeded aquatic organism passage to just over 1 mile of habitat on two Grassy Lake Creek tributary streams that intersect Soapstone mainline road on Weyerhaeuser managed forest property and (2) Improve instream habitat by placing large wood in key locations to support channel forming processes and enhance in-stream habitat.

The goals of this project will be achieved by implementing the following objectives:

OBJECTIVE 1

Replace two undersized culverts on private forest road network with culverts that meet ODF road/stream crossings standards (ability to pass the 100-year flow event and sized to match

active channel width).

SITE 1: Culvert #476 - Proposed for replacement with ODFW Restoration and Enhancement funds

Located on an unnamed tributary to Grassy Lake Creek with an active channel width of 9.8 feet. The culvert is a 40' long, 5' diameter corrugated metal pipe, in overall good condition. There is a slight 0.1 ft outlet perch and the culvert is set at a 1% slope. The culvert impairs access to 0.69 miles of upstream habitat.

The replacement pipe will be a 50' arch pipe with an opening measuring 128" (10.7') across and 83" (6.9') at the height of the arch. The replacement pipe is longer than the existing pipe to account for the new placement's orientation to the road. The new pipe's skew will be adjusted to better align with the channel's natural pathway. The new pipe will be countersunk with a rock weir and natural channel streambed rock installed. Design for the culvert is included with this proposal as an attachment.

SITE 2: Culvert #475 - Proposed for replacement by Weyerhaeuser as project match

The second culvert is located on an adjacent unnamed tributary to Grassy Lake Creek which combines with the first just downstream of the two crossings. The second tributary has an active channel width of 9.2 feet. The existing culvert is a circular metal corrugated pipe 40.5-ft long and 4-ft diameter. The culvert is rotting out and a high priority for replacement based on condition. The culvert is set at a -1.1% slope and there is no outlet each. The culvert impairs access to 0.25 miles of upstream habitat.

The replacement pipe will be a 50' arch pipe with an opening measuring 112" (9.33') across and 75" (6.25') at the height of the arch. The new pipe's skew will be adjusted to better align with the channel's natural pathway. The new pipe will be countersunk with a rock weir and natural channel streambed rock installed.

The proposed project will install replacement culverts that meet Oregon Department of Forestry standards (pass the 100-year flow event and match active channel width). The project evaluated installing larger culverts that meet the AOP and SLOPES V standard of 1.5xACW. This alternative was not selected because:

1. Cost - sizing the new pipes to 1.5xACW would more than double the project cost. These pipes have shallow roadfill topping them. Due to the size and weight of equipment utilizing this mainline road, a minimum of 4' of fill material must be installed over top of the pipe. If the pipe were sized up, the 4' of required fill would locally raise the roadbed elevation at the pipe's location (creating a hump at this spot) and would therefore need to be tapered in both directions. This would necessitate a large amount of road fill work.
2. Cost benefit to aquatic species - Grassy Lake Creek basin does not support anadromous fish due to the presence of a naturally occurring waterfall. The existing cutthroat fishery is genetically unique due to its isolated condition and worth the investment to improve stream conditions, but not to ESA fish species standards.

The project team also discussed bridge installations for these locations. No engineered analysis was performed, but in general, bridges are difficult to install at these locations on a bend in the

road and at a low elevation. The curve in the road makes it difficult for a long, fully loaded logging truck to make the turn at a bridge without impacting the guardrails. In addition, managing ditch water is complicated when the bridge is installed at the bottom of a "U" shaped approach on either side. Ditch flows route along the road and dump directly in to the channel. This can be mitigated for by creating cross drains and sediment traps in the ditches, but takes maintenance.

For all of these reasons, the proposed arch pipe designs were selected for implementation.

OBJECTIVE 2 - Proposed for implementation with OWEB Small Grant Funds and in-kind match from Weyerhaeuser

Increase quantity of large wood in the system until natural recruitment from the riparian area can supply wood to the stream. Install 12 large wood structures on the tributary below proposed culvert replacements and 5 large wood structures on the mainstem of Grassy Lake Creek at key locations as identified by project design team (ODFW fisheries biologist, Weyerhaeuser Forest Engineering Specialist, LNWC Coordinator).

The wood for this project will be donated by Weyerhaeuser. The logs will be spruce generated from nearby harvest actions planned for 2018 and trees cut/pushed over to create equipment access to install the wood in the stream. Potential log placement locations were determined by examining the landscape with the following criteria:

- Anchor capability: presence of existing trees or permanent features that provide long-term anchor points for the imported wood.
- Channel width and connectivity: priority was given to locations where the floodplain is engaged on a regular basis yielding lower energy environments and wider channels that can maintain large wood.
- Channel substrate: priority was given to sites with gravels and lack of exposed bedrock.
- Channel forming processes: priority was given to sites with suitable geomorphic attributes that could sustain channel forming features such as large wood apex jams and side channels.
- Habitat: lower priority was given to locations where log placement would provide habitat, but not create or support sustainable formative processes.

After a channel location was determined to satisfy these criteria for a potential log placement, the number of logs for placement was estimated. Two different size classes of structure will be installed as described below.

TYPE 1: GRASSY LAKE CREEK TRIBUTARY

This site's narrow ACW, (less than 10') allows for wood to be channel spanning. Trees 45' in length and 18" diameter will be cut to 15' lengths. Some trees will produce 3 pieces and others 2 pieces. Each structure will consist of a minimum of one key piece (log with root wad attached) and will have 5 pieces of wood total. Additional wood, generated by heavy equipment creating site access, will be added to the structures (beyond the 5 key pieces). Twelve structures will be installed along a 0.7 mile stream length and 25 trees will be donated and 35 trees are anticipated to be generated creating equipment access trails for a total wood donation of 60 trees.

TYPE 2: GRASSY LAKE CREEK MAINSTEM

This site's wider ACW (38') will necessitate a different wood placement strategy. To minimize wood migration out of the system, wood will be placed along the channel margins, and trees will be left whole. The largest trees harvested and available will be preferentially used for these mainstem locations. Trees 45' in length with 20" diameter are preferred. A total of 5 jams will be installed with 5 trees per structure, a total of 25 trees. These sites will be accessed through a recent clearcut, so minimal trees will be generated while gaining access to the stream.

Current standards for the design of large wood projects vary depending on project goals. When large wood is primarily installed for habitat, stability of the logs is usually evaluated at a 25-year to 50-year peak flow event. The goal for the watershed council is to install stable large wood with the appropriate dimensions (length and diameter) that will not move out of the watershed, but some movement within the watershed is acceptable. Potential for movement is due to flotation or buoyant forces. With this project, no ballast or cabling will be provided, so the only resistance to flotation is the mass of wood not submerged.

The project design will comply with all local, state and federal natural resource permit requirements. The project will be implemented during the ODFW in-water work window (July 15 - Sept 15) to minimize potential impacts to aquatic species and minimize channel impacts by working during the driest time of year. All heavy equipment used at the site will be power-washed and free of debris and weed seeds prior to entering the work site. Bank disturbance will occur, but work will be confined to the specific dimensions of each structure (culvert and large wood installation) and all excavated material will be re-used in implementation of the project to the extent practicable. Standard permitting construction practices will be used to ensure soils exposed during construction experience minimal erosion (including use of silt fences, straw wattles and other erosion control measures) during the culvert replacement work.

Engineering

Does the project involve capital improvement, engineering, site grading or other construction?

Yes

Not associated with ODFW

Project Management and Maintenance

What is the life expectancy of R&E funded construction, structures, equipment, supplies, data or fishery?

The life expectancy of the replacement culvert proposed for R&E funding in this project is approximately 50 years.

Who is responsible for long term management, maintenance, and oversight of the project beyond what is funded by R&E.

The property is owned and managed by Weyerhaeuser Western Timberlands. The culverts replaced and LWD placed during this project will be managed, maintained and overseen as needed by the property owner. Weyerhaeuser will be responsible for regular monitoring and maintenance of the project area to ensure success and address any issues if they arise. Any expense associated with maintenance and repair will be the responsibility of the landowner.

Will the project require ongoing maintenance?

No

Is there a plan to collect baseline data and to conduct monitoring efforts to measure the effectiveness

of the project?

Yes

Lower Nehalem Watershed Council will be responsible for post-project monitoring to determine the success of the project. This will consist of a site visit 1, 3 and 5 years post-project to conduct photo monitoring and document any observable changes.

Project Funding

Funding

Have you applied for OWEB funding for this project?

Yes

OWEB application number: 218-1019-15973

Did not receive an award.

Lower Nehalem Watershed C

Has this proposal, or similar proposal for this project location, previously been denied by OWEB or other funding source?

[{"source":"Weyerhaeuser Western Timberlands","type":"In-Kind","secured":"Secured","dollarValue":72928,"comments":"In-kind donation of materials and labor: culvert pipe, rock, riprap and road rock for culvert replacements; large wood for habitat; Professional engineer for design/site survey; and project\nmanagement.\n"}, {"source":"Small Grant, Oregon Watershed Enhancement Board","type":"Cash","secured":"Pending","dollarValue":15000,"comments":"Cash funding for labor and equipment for LWD placement, LNWC staff time"}]

Other Funding Source	Type	Secured	Dollar Value	Comments
Weyerhaeuser Western Timberlands	In-Kind	Secured	72928	In-kind donation of materials and labor: culvert pipe, rock, riprap and road rock for culvert replacements; large wood for habitat; Professional engineer for design/site survey; and project management.
Small Grant, Oregon Watershed Enhancement Board	Cash	Pending	15000	Cash funding for labor and equipment for LWD placement, LNWC staff time
		Total	87928	

Budget

Item	Unit Number	Unit Cost	In-kind or non-cash contributions	Funding from other sources	R&E Funds	Total Costs
PROJECT MANAGEMENT						
Erik Neilson, Forest Engineering Specialist, Weyerhaeuser NWOR Operations	54	65.00	3510	0	0	3510
		SUBTOTAL	3510	0	0	3510
IN-HOUSE PERSONNEL						
Alix Lee, Council Coordinator, LNWC	100	35.00	0	1000	2500	3500
		SUBTOTAL	0	1000	2500	3500
CONTRACTED SERVICES						
Site survey, engineering design services	0	125.00	2688	0	0	2688
Equipment mobilization	2	1730.00	1730	0	1730	3460
Site prep, remove existing culvert, excavation for installation	2	2400.00	2400	0	2400	4800
Pipe installation and backfill	2	5875.00	5875	0	5875	11750
Rebuild road	2	1795.00	1795	0	1795	3590
Install streambed simulation rock	2	4270.00	4270	0	4270	8540
Mainstem wood hauling: articulating truck to haul whole trees	12	160.00	0	1920	0	1920
Mainstem wood hauling: excavator to tip trees and load	12	165.00	0	1980	0	1980
Mainstem large wood placement: excavator	16	165.00	0	2640	0	2640
Tributary wood processing/hauling: self loading logging truck	16	115.00	0	1840	0	1840
Tributary wood processing/hauling: excavator	16	165.00	0	2640	0	2640
Tributary large wood placement: excavator	16	165.00	0	2640	0	2640
		SUBTOTAL	18758	13660	16070	48488
TRAVEL						
			0	0	0	0
		SUBTOTAL	0	0	0	0
SUPPLIES/MATERIALS						
Rock to backfill culverts (both pipes)	300	8.50	2550	0	0	2550
Corrugated metal culvert 128"x83"x50" (includes cost for delivery)	2	9310.00	9310	0	9310	18620
Boulders for rock ribs (to be built inside each culvert)	3	15.00	450	0	0	450
Rock for road surface	100	8.50	850	0	0	850
Rock for road base	100	7.50	750	0	0	750
Riprap armor for sloped bank	200	15.00	3000	0	0	3000
Trees for large wood installation on mainstem Grassy Lake Creek	25	750.00	18750	0	0	18750
Trees for large wood installation on Grassy Lake Creek tributary	60	250.00	15000	0	0	15000
		SUBTOTAL	50660	0	9310	59970
EDUCATION/OUTREACH						
			0	0	0	0
		SUBTOTAL	0	0	0	0
EQUIPMENT						
			0	0	0	0
		SUBTOTAL	0	0	0	0
FISCAL ADMINISTRATION						
Fiscal Administration	20	44.00	0	340	540	880
		SUBTOTAL	0	340	540	880
		BUDGET TOTAL	72928	15000	28420	116348

Internal Review Results

Review Score: 0.3 out of 3

(0 = Do Not Fund, 1 = Strengthen Proposal, 2 = Recommend, 3 = Strongly Recommend)

Summary of Review Team Comments

While the team did see the potential value of this to the isolated fish population, the team believes it will provide virtually no benefits to the angler or fishable populations as this is an isolated location on private property with minimal fishing pressure. The team did not support use of RE funds at this time. Review scores included five 0s and two 1s.

Specific Review Team Comments

The benefit to the isolated population is good, but there is not much habitat above the barrier.

This project has virtually no benefit to the angler as it targets only cutthroat Trout in a area of private property that is miles from a main road/public access and requires an expensive permit to access. No substantive discussion in the application on angler use or how this population might contribute to anglers. Likely that existing fishing use will continue whether or not this project occurs.

Photos do not clearly show that these culverts are in need of replacement.

This is not on the statewide priority list and is a lower priority project. The same project was not recently funded by the ODFW passage program.

Possible that this project is important to this population, but there isn't any information provided to make that connection? For example, how is the population doing given the current lack of passage? Is this project needed to maintain the population or reduce vulnerability?

Significant contribution from Weyerhaeuser. Project is complementary to other habitat improvement actions planned for the area (OWEB funded).

Project Map



Additional Files

Budget Information

Maps

[Project Map](#)

Map image of project location

[Project Maps](#)

Grassy Lake Creek Project Location Maps and detail

Photos

[Project Photos](#)

Photos of existing culverts and habitat

Design Information

[Culvert Design](#)

Grassy Lake Creek Culvert Design

Management Plans and Supporting Documents

[Culvert Details](#)

Details and condition of existing culverts

Permits and Reviews

Partnerships

[Weyerhaeuser Letter](#)

Letter of support and match documentation

Public Comment

Administrative Documents

Completion Report

A completion report has not been submitted for this project.