



R & E Grant Application 21-23 Biennium

Project #: 21-016
Amendment #: 1

The Narrows Screen Upgrade

Project Information

Requested Cycle: 21-2
R&E Project Request: \$38,852
Other Funding: \$28,375
Total Project: \$67,227
Spending Start Date: 7/1/2021
Spending End Date: 6/30/2023
Project Start Date: 7/1/2021
Project End Date: 6/30/2023
Organization: ODFW Fish Screening Program

Applicant Information

Name: Katherine Nordholm
Address: 4034 Fairview Industrial Drive SE
Salem , OR 97302
Telephone: 503-947-6274
Email: katherine.e.nordholm@odfw.oregon.gov

Past Recommended or Completed Projects

This applicant has no previous projects that match criteria.

Authorized Agent

Name: Rich Kilbane
Address: 1495 East Gregory Rd
Central Point, OR 97502
Telephone: 541-826-8774 x243
Telephone 2: 541-601-0810
Fax: 541-830-0365
Email: rich.m.kilbane@odfw.oregon.gov

Authorized Agent

Name: Jason Wunschel
Address: 1495 E Gregory Road
Central Point, OR 97502
Telephone: 541-857-2422

Email:

Jason.M.Wunschel@odfw.oregon.gov

Location Information

Where is it?

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

Landowner Information

Name: Mark Williams
Affiliation: ZX Ranch
Address: PO Box 7
Paisley , OR, 97636
Phone: 541-943-3105
Fax: 541-943-3107

Site Description

Street Address, nearest intersection, or other descriptive location.

The Narrows Diversion at the ZX Ranch is located along HWY 31, approximately 7 miles southeast of Paisley, Oregon, and approximately 6 miles northwest of Valley Falls, Oregon. There is no physical address near the project site, but the diversion is located immediately downstream (south) of the Hwy 31 bridge crossing of the Chewaucan River.

Directions to the site from the nearest highway junction.

The Narrows Diversion is located adjacent to HWY 31, approximately 6 miles northwest of Valley Falls, OR. From the intersection of HWY 395 and HWY 31 in Valley Falls, travel north and northwest on HWY 31 towards Paisley. Just northwest of the second HWY 31 bridge over the Chewaucan River, turn southeast on an unnamed dirt road. The project site is located approximately .25 miles down this unnamed dirt road. The diversion dam, headgate, and diversion ditch are located immediately downstream of the second HWY 31 crossing over the Chewaucan River.

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

No 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.

This site is a privately owned irrigation diversion.

Dominant Land Use Type:

Range/pasture

Project Location

General Project Location.

County: Lake
Town/City: Paisley
ODFW Dist: Klamath
Stream/Lake/Estuary Name: Chewaucan River
Sub-basin: 17120006

Specific Project Location.

Project Summary

Project Summary

Please provide a couple sentence summary of the proposal.

This project will upgrade screen cleaners and components for improved debris management and operation at a site on the Chewaucan River. These upgrades are needed for adequate screen function and protection of redband trout. We are hopeful that these improvements will lead to future screening projects at an adjacent diversion.

Overall Project Goals

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

Upgrade the screen cleaning system at the Narrows Diversion to allow the screen to operate correctly. Heavy debris loads have led to problems with the fish screening system. A new system, which utilizes "non-reversing" technology, will better handle debris loads and be less prone to fouling and hang-ups.

Add a trash rack at the head end of the Narrows Diversion, which will help intercept debris prior to entering the diversion. Large floating debris continually fouls the fish screen. Adding a trash rack to the diversion will help intercept debris prior to entering the diversion and impacting the screen.

Install 300 feet of fencing along the western side of the Narrows Diversion between the fish screen and the headgate. Tumbleweeds blowing into the diversion have constantly fouled the screen cleaner and clogged the fish screen. Fencing will act as a tumbleweed block, helping to remove tumbleweeds from the diversion.

Add ecology blocks, totaling 40 feet in length to the Narrows Diversion forebay upstream of the fish screen. Sedimentation and debris have been issues at this site due to low velocities within the screen bay. By adding ecology blocks, water velocities and sweeping flows will increase for better debris management.

Help convince the water users to screen at the "Redhouse" Diversion. Users have been hesitant to screen this diversion due to maintenance issues at Paisley and The Narrows Diversion. The 2020 upgrades to Paisley and these upgrades at the Narrows will rectify maintenance issues and hopefully ease water user concerns.

Prevent redband trout mortality in the Chewaucan River. The Chewaucan River is the most important recreational fishing opportunity for redband trout in the area. Improving the function of the screen at this location will prevent fish mortality. Reducing maintenance costs will hopefully encourage screening on a nearby unscreened diversion.

Primary objectives of R&E funding

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

Improve fish screen performance through the purchasing and installation of screen cleaner components at the Narrows Diversion. Screen cleaner upgrades will allow for adequate fish protection and screen operation at the site.

Improve fish screen performance through the purchasing and installation of a trash rack at the

Narrows Diversion. This upgrade will allow for improved debris management at the Narrows Fish Screen.

Improve fish screen performance through the purchasing and installation of ecology blocks within the Narrows Diversion upstream of the fish screen. This addition will increase sweeping velocity and improve sediment transport and debris management.

Improve fish screen performance by purchasing and installing chain link fencing materials to be installed by the water users. A new fence will intercept blowing tumbleweeds and keep this debris from entering the diversion.

Current Situation/Justification

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

The Narrows Diversion (66 cfs) is a large screened diversion on the Chewaucan River, the screen components need upgraded to improve screen operation and fish protection. Debris at the site causes maintenance issues that often lead to water users removing screen panels to allow water to get past plugged screens. Under this condition, fish are not protected. The upgrades will include a new chain-driven continuous drive cleaning system and components to improve sweeping flow and reduce debris entry into the canal. These upgrades will increase screen cleaning effectiveness and efficiency and allow the screen to be operated correctly for fish. ODFW does not have any maintenance responsibility for the screen because the Narrows diversion is over 30 cfs. R&E funding is needed because the Screening Program has limited cost-share funds to spend outside of anadromy.

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.

The Chewaucan River is a popular sport fishing destination for large redband trout. These trout are highly migratory and have been tracked moving upwards of 90 miles through the Chewaucan basin. In rural Lake County, agriculture is a common way of life and diversion of water is necessary for agricultural practices. Without screens in place, these highly migratory fish, as adults or juveniles, are likely to encounter and enter water diversions and be removed from the system. In 2000-2001, 34 redband trout ranging in length from 19-28 inches were radio-tagged in order to track their movements. Of those 34 fish, 17 were observed in irrigation ditches never to return back to the Chewaucan River. This documented loss of 50% of large adult fish would severely reduce the amount of adult fish available for angling. Furthermore, smolt traps placed in the Chewaucan near Paisley, indicate that 8,000-10,000 juveniles migrate downstream passed the Paisley Town Weir. Without screens in place, juveniles and adults would be removed from the system by water diversion.

Screening these sites has provided great fish protection and benefits to the angler, but upgrades are needed in order to ensure their continued operation and protection of this great resource.

Percent benefit split between Commercial and Recreational anglers:

0 % Commercial

100 % Recreational

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

There are no commercial fisheries in the basin. All benefits of this project would be for the recreational angler seeking quality redband fishing in the Chewaucan River.

This project has been identified as an ODFW priority for:

Local/watershed

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

Unknown

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

This project was identified as a priority through recent conversations with the ODFW district fish biologist. ODFW has a priority list of unscreened diversions, but no ranking for screened diversions. This screen was ranked as a high priority unscreened diversion in 2008, before construction of the current screen.

Identify any plan or other document that identifies this priority.

<https://www.oregonconservationstrategy.org/conservation-opportunity-area/chewaucan-river/>

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

No

This project is intended to benefit the following species:

Rainbow Trout

This project will benefit anglers or fishery by providing:

Fish Screening

Fish Screening

This fish screening project will:

Modify or repair an existing screening structure

We have contacted or have been working with:

ODFW fish screening staff

ODFW has been contacted

The project has received approval

Project Description

Schedule

Activity	Date	RE Funding
Purchase and fabricate components for continuous drive screen cleaning system at Narrows Diversion	January - April 2022	Yes
Purchase and fabricate trash rack for Narrows Diversion	January - April 2022	Yes
Purchase fencing materials and ecology blocks for Narrows Diversion	January - April 2022	Yes
Install new cleaning system, ecology blocks, and trash rack at Narrows Diversion.	August 2022	No
Install fencing (by water user) at Narrows Diversion	September-November 2022	No

Permits

Permit	Secured?	Date Expected
--------	----------	---------------

Project Design and Description

Please describe in detail the methods or approach that will be used to achieve the project objectives.

The Statewide Fish Screening Coordinator (applicant), Central Point Screen Shop, the Assistant District Fish Biologist in Lakeview, and fish screening and passage engineer have all been involved with project review. The Fish Screening and Passage Program through the Statewide Fish Screening Coordinator (applicant), Central Point Screen Shop, and Fish Screening and Passage Engineer have taken the lead in identifying the issues with the screen and identifying solutions that work for both fish and the water user. The Narrows Diversion has large vertical panel screens with brushes that move across the screens in order to keep them free of debris. Heavy debris issues at the site has led to maintenance issues, screen cleaning system failure, and periodic removal of screen panels due to plugged or fouled screens. The Fish Screening and Passage Program and Central Point Screen Shop have utilized their experience and technical expertise to develop solutions to these issues. The objectives of this project, to improve screening and fish protection at the Narrows Diversion, to improve maintenance conditions at the site, and to help encourage voluntary fish screen installation at adjacent diversions will be completed by the following actions:

- Installation of a new continuous drive screen cleaning system on the Narrows Diversion Screen, that will move debris off the screen more efficiently and effectively, be more robust and hold up to the elements, and allow for the screen to operate effectively for the water users and to protect fish.
- Installation of a new trash rack to remove debris prior to it entering the canal.
- Installation of ecology blocks in the screen forebay to increase velocities and increase sweeping flows across the screen face. This increase in velocities and sweeping flow will allow for improved sediment transport to facilitate the movement of debris past the screen face.
- Installation of fencing on the windward side of the Narrows Diversion Canal. Fencing on the windward side of the canal, between the screen and the diversion headgate, will help to intercept blowing tumbleweeds, which are a major issue at this site.
- Installation of all of these components will reduce maintenance issues. With better operations and reduced maintenance, the Fish Screening Program can show that screens can be installed and operated adequately on large diversions in the Chewaucan, which will hopefully lead to future screening projects on remaining unscreened diversions in the basin.

National Marine Fisheries Service (NMFS) Anadromous Fish Screening and Passage Criteria will be met after the installation of these new components.

Engineering

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

No

Project Management and Maintenance

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

The expected lifetime of fish screens is generally 25 years. The existing screen has been installed for 11 years. Therefore our intention is that the new components last at least 14 years to match the lifespan of the screens. Components may be reused by screen shop.

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

The Narrows Diversion is a very large screen, with a diversion of 66 cfs. Water users are responsible for all daily and major maintenance at fish screens over 30 cfs. The water users will ultimately be responsible for the success and maintenance of the new components at this diversion site. ODFW does have a vested interest in ensuring that fish protection is maintained at these sites. As needed, ODFW offers up technical assistance, guidance, and recommendations when requested by the water users.

Will the project require ongoing maintenance?

Yes

Daily maintenance is required to keep the fish screens and new components free of debris and functioning properly. In addition, more in-depth weekly, monthly, and annual maintenance may be needed to keep components functioning properly. ODFW staff will work with the water users to ensure they understand how and how often to maintain screen components properly.

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

No

Project Funding

Funding

Have you applied for OWEB funding for this project?

No

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

Yes

Upgrades to The Narrows screen was one of two screen upgrades submitted as a project in one application for R&E funding in 2019. R&E funded upgrades to the nearby Paisley Town Weir fish screen (Project Number 19-018) but did not have the funds for both upgrades at that time.

Other Funding Source	Type	Secured	Dollar Value	Comments
ODFW Fish Screening Program	In-Kind	Secured	21409	
ZX Ranch	In-Kind	Secured	5318	
		Total	26727	

Budget

Item	Unit Number	Unit Cost	In-kind or non-cash contributions	Funding from other sources	R&E Funds	Total Costs
PROJECT MANAGEMENT						
			0	0	0	0
		SUBTOTAL	0	0	0	0
IN-HOUSE PERSONNEL						
Component Fabrication	140	41.00	5740	0	0	5740
Intake trashrack fabrication	60	41.00	2460	0	0	2460
Remove old, install new components & trashrack	240	46.00	11040	0	0	11040
		SUBTOTAL	19240	0	0	19240
CONTRACTED SERVICES						
Fabrication/Machining	1	750.00	0	0	1847	1847
Powder Coating	1	3500.00	0	0	8950	8950
Electrician	1	2500.00	0	0	2621	2621
ZX Ranch personnel to install fencing	160	20.00	3200	0	0	3200
		SUBTOTAL	3200	0	13418	16618
TRAVEL						
Vehicle Mileage	2460	0.58	1415	0	0	1415
Per Diem for employee travel	24	55.00	1320	0	0	1320
Lodging for installation	24	105.00	0	0	1785	1785
		SUBTOTAL	2735	0	1785	4520
SUPPLIES/MATERIALS						
Steel	0	4500.00	0	0	6628	6628
Cleaner Component Materials	0	11500.00	0	0	10293	10293
Miscellaneous fabrication material - fasteners, supplies, etc.	0	1500.00	0	0	252	252
Ecology Blocks	0	750.00	0	0	0	0
Fencing Material	0	5000.00	0	0	0	0
Fencing Material	0	6750.00	0	0	6476	6476
		SUBTOTAL	0	0	23649	23649
EDUCATION/OUTREACH						
			0	0	0	0
		SUBTOTAL	0	0	0	0
EQUIPMENT						
Tractor w/operator	20	80.00	1600	0	0	1600
Excavator w/operator	20	80.00	1600	0	0	1600
		SUBTOTAL	3200	0	0	3200
FISCAL ADMINISTRATION						
			0	0	0	0
		SUBTOTAL	0	0	0	0
		BUDGET TOTAL	28375	0	38852	67227

Internal Review Results

Review Score: 2.4 out of 3

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

Summary of Review Team Comments

The review team once again supports this project as it is a priority in the basin and will ensure protection of adfluvial Redband Trout that are sought after by anglers in this popular fishery. The application should be strengthened to clearly demonstrate the need and priority of this work. Scores included five 2s, and three 3s.

Specific Review Team Comments

Strengthen the local and regional need and prioritization of this screen. Explain more thoroughly why and how this project is important locally and why this project is important for other screens in the area.

- The application states that this project will only benefit resident fish, however it will benefit adfluvial Redband Trout the most. Staff are trying hard to restore that population.
- The Chewaucan River is the area's best fishery and it has been hit hard from recent fires, that is going to increase sediment at the diversion structure and these improvements will help address that.
- The landowners are doing a lot of this work voluntarily, ODFW needs to ensure that we keep things moving in the basin.
- The application states this project will convince the water users at the upstream Redhouse Diversion to install a screen, that could be a stretch but having a good screen at the Narrows will help to show them that it can be low maintenance.

This complements the Paisley Town Weir screening project that R&E funded last biennium. The Narrows was part of that previous request to R&E. Records indicate it was supported by the board but only one of the two screens in the request was able to be funded at that time. At the time the review team was more supportive of the Narrows project.

Specific Review Team Questions

If fence materials are purchased in the winter/spring, why would the fence construction not occur until the fall? Seems like the sooner the better. Is this an access issue for installing the screen components?

The fencing is part of the project, and the whole project needs to be approved before any work can be done or it wouldn't be included in the final cost for the ODFW cost-share.

Please better describe the non-reversing technology. It appears the proposed chain drive system moves the cleaning brush back and forth, which reverses the direction. The current system is a cable driven system, which has the same locomotion movement as the chain drive system. Is this correct, or is there different action involved?

Yes, the brush changes direction, but the "non-reversing" term refers to the mechanism that makes the brush move (see attached design sketch.) The existing system has a cable that's wrapped around two pulleys, one at each end of the screen. The ends of the cable are attached to the brush carriage, which is pulled back and forth by the cable. The carriage has to be stopped before it gets to the pulley at the end of the screen, or it doesn't function correctly, so the motor has to be reversed to pull the brushes back the other direction. The new system is different in that the cable is replaced with a chain, and the brush carriage is attached to a single link of that chain. When the brush carriage gets to the sprocket at the end of the screen, it just has to "wait" for it's attachment link to go around the sprocket and start moving the other

direction.

Additional Files

Budget Information

[Budget Information](#)

Maps

[Project Location](#)

Map of Oregon showing project location

Photos

[Project overview](#)

Narrows Aerial with new components sketched on to photo

[Redhouse Diversion](#)

Nearby unscreened diversion. We hope to encourage screening here by improving maintenance at The Narrows and Paisley Town Weir Screens

[The Narrows Screen Site](#)

[The Narrows Screen Site](#)

Site showing existing cable driven cleaning brush

[The Narrows Screen Site](#)

Site showing screen panel pulled because of debris

Design Information

[Design Sketch](#)

Design Sketch

Management Plans and Supporting Documents

[District Letter of Support](#)

ODFW District Support 2021

[District Statement on Chewaucan River](#)

Email from Justin Miles (DB) supporting screening along the Chewaucan River

Permits and Reviews

Partnerships

Public Comment

Administrative Documents

[Signature Page](#)

Signature Page

Completion Report

Objectives and Accomplishments

Improve fish screen performance through the purchasing and installation of screen cleaner components at the Narrows Diversion. Screen cleaner upgrades will allow for adequate fish protection and screen operation at the site.

Did you meet the objective? Yes

System was upgraded and simplified to operate at a higher efficiency rate. This system suits the site conditions better than the previous setup and will protect fish at a higher rate.

Improve fish screen performance through the purchasing and installation of a trash rack at the Narrows Diversion. This upgrade will allow for improved debris management at the Narrows Fish Screen.

Did you meet the objective? Yes

The new trash rack is complete and has already seen high flows. Previously, these high flows would bring large amounts of woody debris into the ditch. The ditch currently has no large woody debris and minimal at best through the first high water event of the year.

Improve fish screen performance through the purchasing and installation of ecology blocks within the Narrows Diversion upstream of the fish screen. This addition will increase sweeping velocity and improve sediment transport and debris management.

Did you meet the objective? No

Due to higher than expected costs we altered our installation procedure at the diversion and also installed a steel silt curb in front of the screen to help with sediment settling in front of the cleaning system.

Improve fish screen performance by purchasing and installing chain link fencing materials to be installed by the water users. A new fence will intercept blowing tumbleweeds and keep this debris from entering the diversion.

Did you meet the objective? Yes

The new fence installed by the water user has already proven to minimize debris blown in from immediate lands. Tumbleweed does not enter the ditch upstream of the screen anymore and smaller debris is now at minimal capacity.

Comments

Attached are some pictures for documentation of project completion. If you have any questions or concerns please feel free to reach out.

Grantee agreed to forfeit all remaining funds.