Lower Columbia Estuary Partnership

STEIGERWALD RECONNECTION PROJECT

Steigerwald Lake is a US Fish & Wildlife Service National Wildlife Refuge situated along the banks of the Columbia near Washougal, Washington, at the Gateway to the Columbia River Gorge National Scenic Area. Through a collaborative partnership, the lands and waters of the Refuge and the Columbia River were recently reconnected. The collaborative Steigerwald Reconnection Project reconnected 965 acres of Columbia River floodplain after generations separated by a levee, reduced flood risk from Gibbons Creek, improved habitat for fish and wildlife, and created new trails for recreation at the Refuge.

See the Steigerwald storymap.

Steigerwald Lake National Wildlife Refuge was first protected in 1987 and by 2019 comprised approximately 1,200 acres of wetlands, fields, woodlands, and a channelized Gibbons Creek. But since the 1960s until 2021, the Columbia River was cut off from the area by a 5.5 mile levee.

Aerial view of Steigerwald in 2016

The US Army Corps of Engineers constructed the levee to reduce flood risk, however it separated the Columbia from its vast historic floodplain. And although the levee protected the Refuge and adjacent properties from Columbia River floods, it exacerbates internal flooding from Gibbons Creek. The creek was constrained to an artificially elevated channel as it flowed through the Refuge. Even moderate rainfall events often caused flooding that spilled over into the Port of Camas-Washougal and other nearby municipal, commercial and residential properties. This internal flooding required the Port to maintain a costly pumping system.

Gibbons Creek at Steigerwald, January 2020

Partners including the Port, the US Fish and Wildlife Service and the Estuary Partnership worked together to develop the project with the shared goals of flood protection, restoring habitat and natural ecosystem functions, and improving recreation opportunities at the Refuge. The project cost more than $32 million dollars and took three years to construct.

Initial work wrapped up and the Refuge reopened in May 2022.

Partners break ground at Steigerwald.

Crews broke ground in summer 2019, when BioHabitats, Inc., a Portland-based restoration company, anchored 84 large wood habitat structures in the Gibbons Creek historic alluvial fan. Some of the wood installed was donated by BNSF Railroad. The structures help stabilize the area and support a variety of species once Gibbons Creek was released into its alluvial fan in the fall of 2021.

Adding large wood habitat structures to the floodplain.

Meanwhile, workers with certified B Corp. Ash Creek Forest Management treated invasive species and reforested and [illegible]3 acres of the alluvial fan in during the first year of construction.

Planting willows and cottonwoods with the aid of an auger

Over the 2020 and 2021 construction seasons, crews from Vancouver-based Rotschy, Inc. built setback levees to the east and west to protect the neighboring Port of Camas-Washougal industrial park and other landowners, while allowing the Refuge to be reconnected to the Columbia River.

The project removed all Port and City of Washougal infrastructure from the FEMA-mapped floodplain for internal flooding from Gibbons Creek, and is estimated to save the Port $40,000 in pumping costs each year. It also reduces the risk of Gibbons Creek flooding to the highway that runs through the Refuge and adjacent private residences.

View of the east levee near its northern end

In summer of 2021, Rotschy crews removed more than 2 miles of the current levee and created four direct connections with the Columbia River, allowing for seasonal flooding and providing unfettered access to the area for salmon and lamprey.

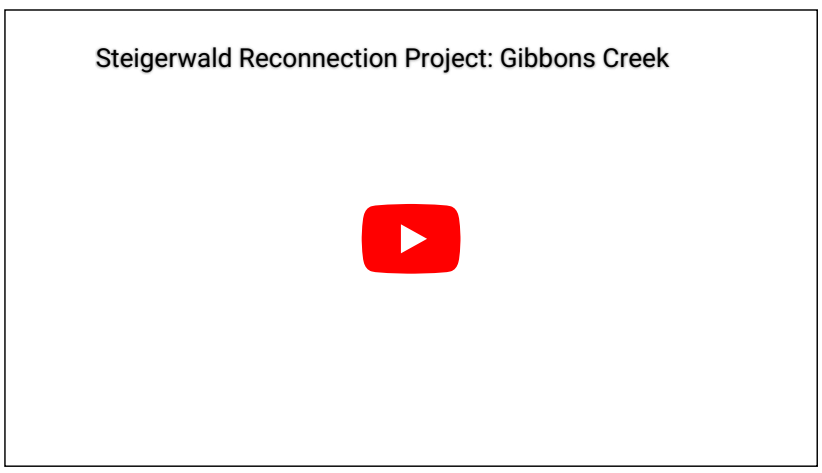
Crews breach the old levee to reconnect the Refuge to the Columbia River.

A critical component of reconnecting the refuge was reconfiguring Gibbons Creek as it flows through the Refuge. For decades, the creek was diverted by a weir and constrained to an artificial elevated canal before it connected to the Columbia River through a fish ladder. This configuration also caused flooding, as Gibbons Creek frequently overflowed its channel. This internal flooding cost the Port of Camas-Washougal thousands of dollars in pumping and maintenance costs.

Gibbons Creek flooding in 2015.

The new channel for Gibbons Creek features large wood and gravel to create good habitat for salmon.

Before Gibbons could be released from its elevated canal, crews from Washougal's LKE Corporation created a more natural, meandering channel, and added large wood and gravel riffles. Finally, in fall 2021, crews from Rotschy removed the weir, elevated channel, and fish ladder. This video gives an overview of work done on the creek.



There are also over 115 acres of new wetlands that were created, along with extensive replanting with native species. Overall throughout the project, contractors including Ash Creek Forestry and R. Franco Restoration planted more than half a million trees and shrubs and 14,000 pounds of native seeds. Estuary Partnership staff made a concerted effort to expand the existing wapato community at the site by harvesting and planting 2,000 wapato tubers, seeding wetland areas with 30 pounds of hand-harvested wapato seed, and transplanting live plants that would otherwise be impacted by levee construction. Wapato is an important first food and members of local Tribes will be able to harvest here in the future.

Transplanting wapato salvaged from construction areas

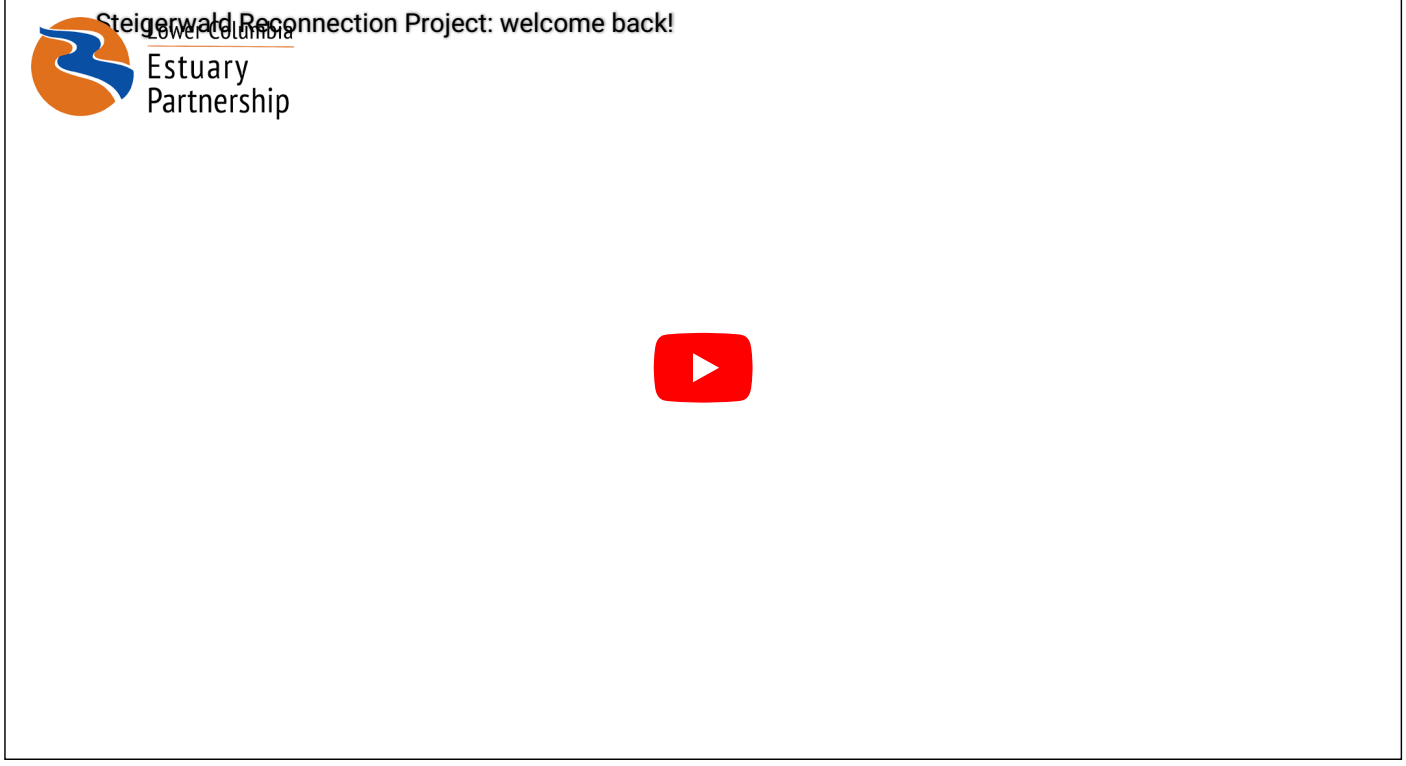
Wapato stands already exist in Scaup Pond (pictured). Staff have planted additional sites with seeds and bulbs.

Additionally, in coordination with the Washington Department of Transportation, the project raised State Route 14 three feet to bring it up to the Columbia River's 500 year flood stage. SR-14 also benefits from reduced flood risk from Gibbons Creek.

The project also includes a new parking lot and amenities, viewing platforms, and adds more than a mile of trail to the Refuge's trail system.

Over the three years of construction, the project also generated 550 local family wage jobs and provided opportunities for thousands of local students and community members to volunteer and contribute to the project.

Project Videos:


Steigerwald Reconnection Project: welcome back!
Lower Columbia
Estuary
Partnership

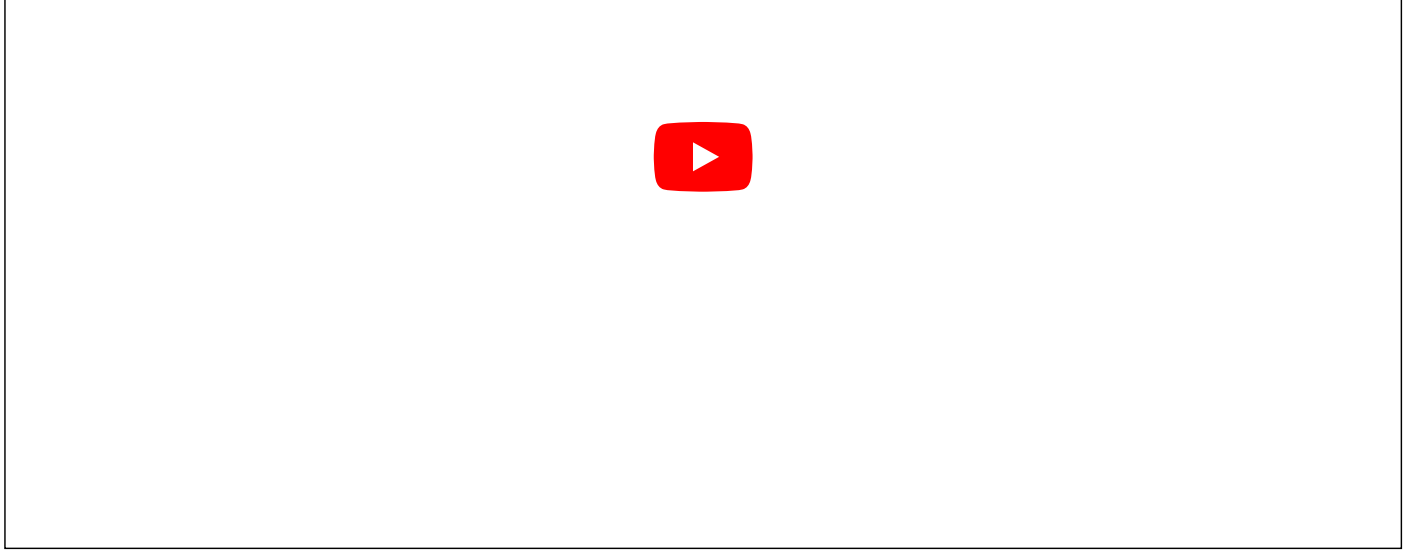

Steigerwald Reconnection Project 360 Tour


Steigerwald Reconnection Project: Gibbons Creek

Steigerwald Reconnection Project Update July 2021

Steigerwald Reconnection Project: 360 Sights and Sounds June-July 2021

Steigerwald Reconnection Project Update



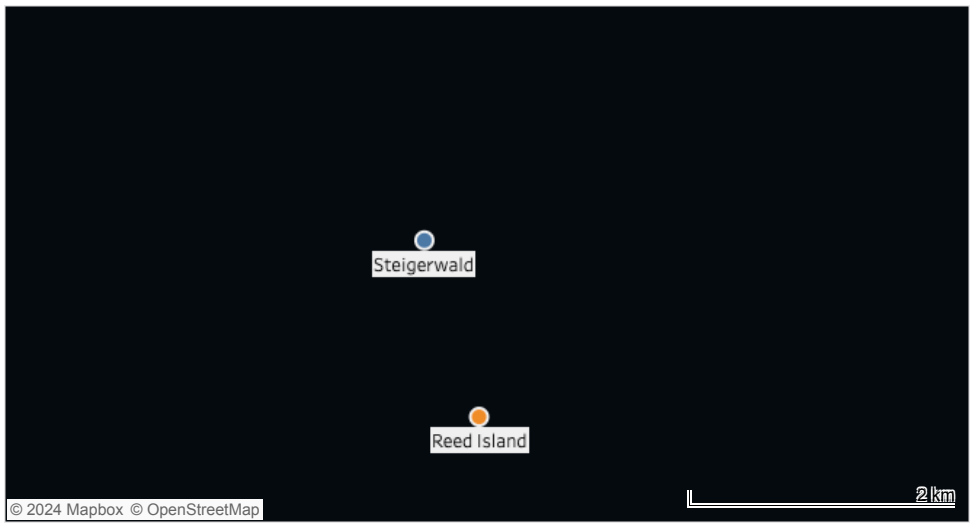
See the Steigerwald Tableau dashboard

View data from our monitoring at the refuge

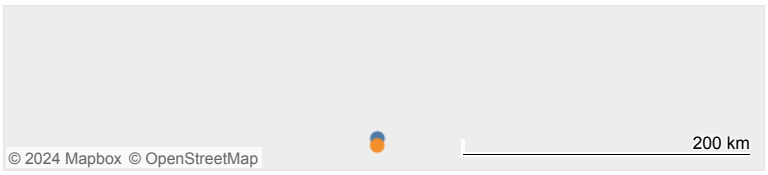
Welcome to the Steigerwald Lake National Wildlife Refuge Restoration Project Research D

Developed for Bonneville Power Administration and Partners
Authors (Lower Columbia Estuary Partnership): Sarah Kidd, Ian Edgar, Sneha Rao
Major Contributors (Columbia River Estuary Study Taskforce): April Silva, Narayan Elsmar

Steigerwald Lake National Wildlife Refuge Project Overview Map



Site Type
AEMR
Reference



This Dashboard Provides a Brief Methods Overview and Links to all the Results Summaries: Click any of the buttons below to access more data.

Navigate to Hydrology data

Navigate to Sediment Accretion and Erosion

Navigate to Soil Development

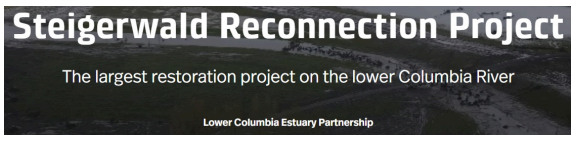
Navigate to Macroinvertebrate Communities

Navigate to Vegetation Development - Awaiting fixes

Navigate to Cross Section data

Action Effectiveness Monitoring for the Lower Columbia River Estuary Habitat Restoration Program

↑ **2022 AEMR Report**



↑ **Steigerwald History** **Steigerwald Monitoring Plan** ↓

Steigerwald Lake National Wildlife Refuge Habitat Restoration Project Effectiveness Monitoring & Adaptive Management Plan

Steigerwald Lake National Wildlife Refuge Project Description
Project Sponsor: Lower Columbia Estuary Partnership

Need for restoration:
Steigerwald Lake National Wildlife Refuge floodplain is a large (1000 acre) site that was dike during the early 1900s. Primary alterations include: A constructed flood control levee separa properties from the Columbia River; relocation and channelization of Gibbons Creek, includir elevated channel; conversion of wetlands and forests into agricultural lands; railway and hig along the northern margin; urban and industrial development adjacent to the Refuge and as Creek and Steigerwald Lake hydrology; and proliferation of invasive species like reed canary Steigerwald National Wildlife Refuge was first protected in 1987; however, it remained cut Estuary Partnership seeks to restore high-quality habitat and fish access to the wetland sys

Project goals:
1) Restoration of aquatic connectivity (to the greatest extent practical given alterations to between the site's wetland complex, Gibbons Creek, and the Columbia River at the full range restoration of fish access between the Columbia River and site for all native fish species and

2) Recovery of physical, habitat-forming, and food web processes, including: more normative alluvial fan on Gibbons Creek, and a moderated thermal regime resulting from the reestablis

Project objectives: The primary objectives are as follows.
1) Create floodplain habitats, including self-sustaining emergent wetlands, herbaceous wetl communities.

2) Provide fish access between the Columbia River and the Refuge for all native fish species a of hydrologic conditions.

3) Enhance water quality by increasing the spatial and thermal diversity of Gibbons Creek, ir extent of cold-water refugia within the alluvial fan.

4)Increase fish access between the Columbia River and Gibbons Creek for all native fish spec range of hydrologic conditions.

5) Restoration of the native riparian plant community.

6) Maintain the current level of flood protection for infrastructure and adjacent properties.

Construction actions taken:
1) Breach and remove 2.2 miles of the levee to restore access to the rerouted Gibbons Creek

2) Reroute and restore Gibbons Creek into its historic channel, south of SR14.

3) Restore native, riparian and vegetation communities across the site.

4) Construction of a new setback levee along the west side of the site.

Steigerwald Lake National Wildlife Refuge was restored in 2022. The local reference site for

Executive Summary of Results

Initial results for wetland development are promising; however, we are still lacking data due the time of this report (November 2022). The initial results do imply that the project has vas the site for salmonid species from virtually zero to a much higher percentage of the year; esp side of the site. Furthermore, photo point evidence points to a nicely developing riparian cor We anticipate less Reed canarygrass cover within the site as well due to the flooding that oc

A full site survey including PIT Tag fish use and vegetation mapping and modeling is planned

Steigerwald Drone Flight

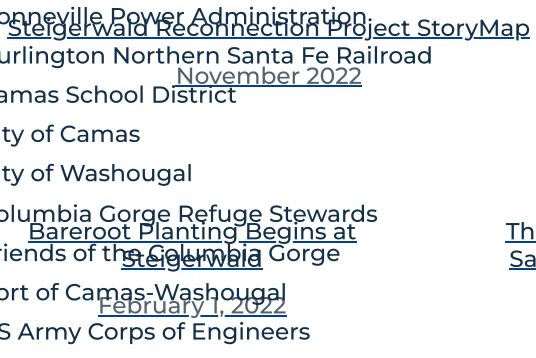
Flight performed

Lower Columbia Estuary Partnership

Project

Habitat Restoration

Project Updates:


Steigerwald Reconnection Project StoryMap

November 2022

Bareroot Planting Begins at Steigerwald

February 1, 2022

Preparing in Partnership: Levee Closure Test Success for the Steigerwald Reconnection Project

August 25, 2021

Steigerwald Reconnection Project: Gearing up for Year Two

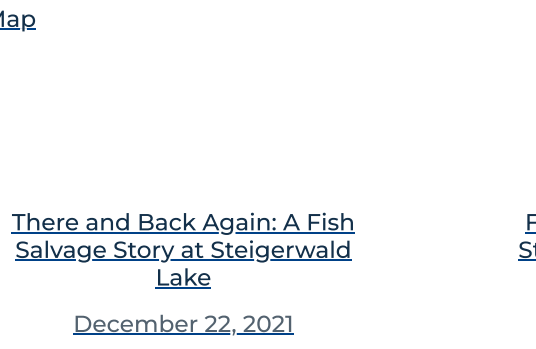
April 16, 2021

What About the Fish? Relocation at Steigerwald Lake NWR

October 1, 2020

Steigerwald Reconnection Project: Construction Begins June 1st

May 18, 2020


There and Back Again: A Fish Salvage Story at Steigerwald Lake

December 22, 2021

Diverted No Longer: Reconnecting Gibbons Creek to the Floodplain

July 7, 2021

Great Blue Heron Hazing

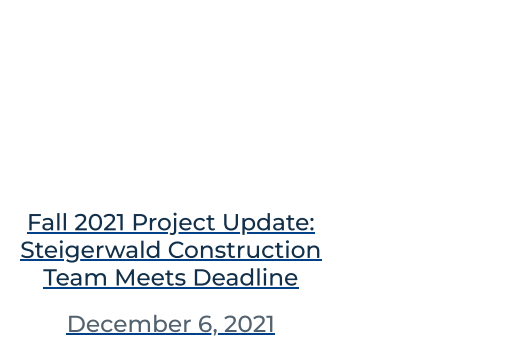
February 10, 2021

Steigerwald Reconnection: Roadwork Nearly Complete

September 17, 2020

Steigerwald Reconnection Project Breaks Ground

September 6, 2019


Fall 2021 Project Update: Steigerwald Construction Team Meets Deadline

December 6, 2021

Contractor Spotlight: Supporting Local Economies Through Restoration

June 7, 2021

A 'Big Year' for Steigerwald Reconnection: Summer Recap

November 5, 2020

Steigerwald Reconnection: Tree Salvage

August 7, 2020

Project Partners

Bonneville Power Administration
Burlington Northern Santa Fe Railroad
Camas School District
City of Camas
City of Washougal
Columbia Gorge Refuge Stewards
Friends of the Columbia Gorge
Port of Camas-Washougal
US Army Corps of Engineers
US Fish & Wildlife Service
Washington Department of Transportation
Washougal School District

Funders

Bonneville Environmental Foundation
Bonneville Power Administration
Floodplains by Design
Washington Department of Ecology
National Fish & Wildlife Foundation
US Fish and Wildlife Service

Restoration Activities

Channel Modification
Levee Removal
Re-vegetation
Water Control Structure Modification/Removal
Wood Debris Placement

Download a brochure about the project.

Monitoring Plan

View the effectiveness monitoring and adaptive management plan for Steigerwald

Estuary Partnership

Protecting the Columbia River in partnership with its communities.

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