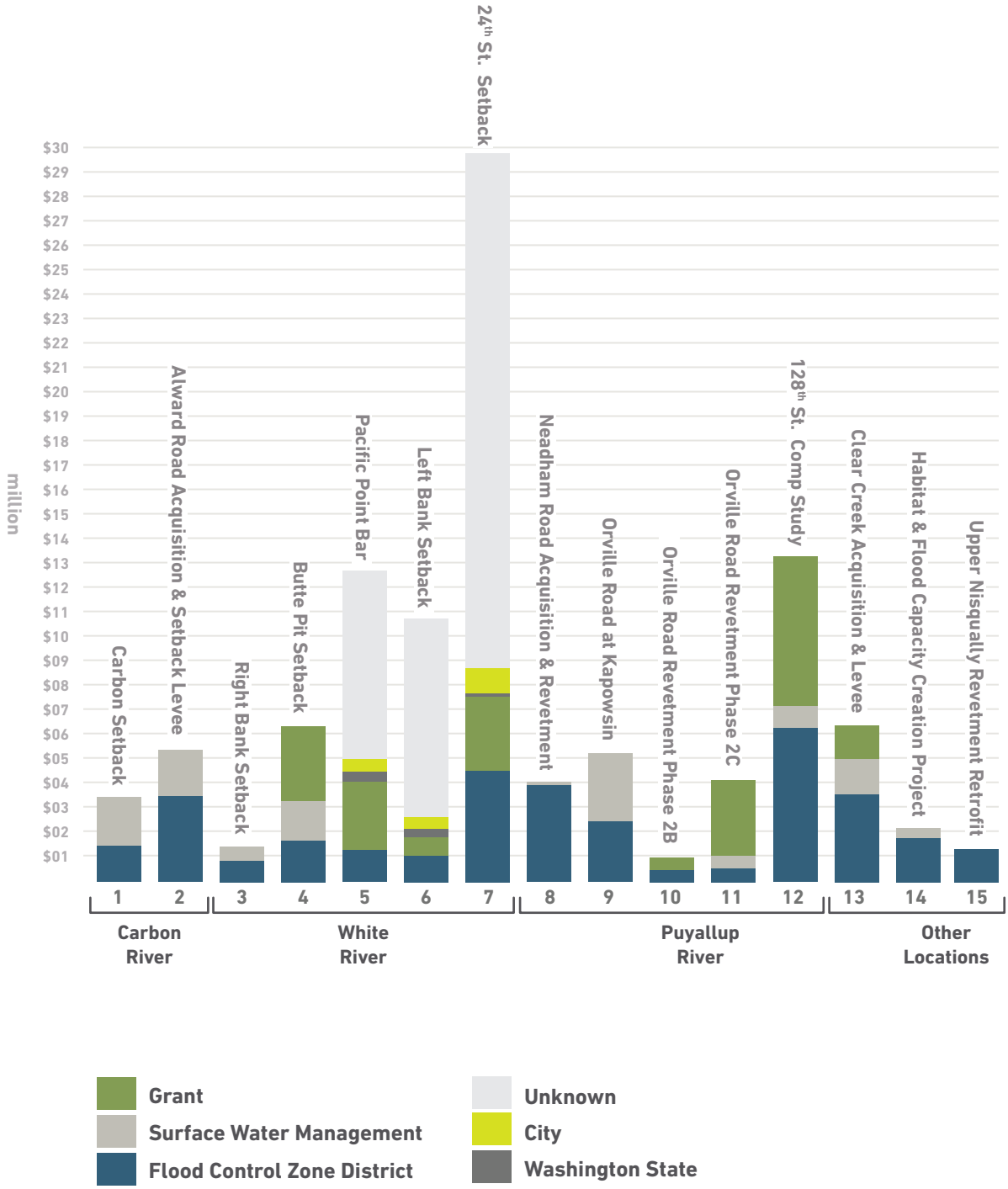


Proposed Pierce County Flood Control Zone District

CIP 2019–2024

PIERCE COUNTY
FLOOD CONTROL
ZONE DISTRICT

6-year Project Cost



Carbon River



1 Carbon Setback

The project will install approximately 15-20 engineered log jams or dolotimbers within the channel to encourage the river to migrate away from the levee/revetment back to its former channel on the right bank of the river.

Project Benefits Flood risk reduction, Habitat Improvement
Location Carbon River; LB; RM 3.2–4.9
Obligations USACE
Justification This flood control project is also proposed as an HCP project for it's habitat benefits.
Notes This project was formally known as the Carbon Levee Bank Stabilization/Flow Deflection and Coplar Creek Backwater Improvement in the CPOD. CPOD #C2.

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2 Alward Road Acquisition & Setback Levee

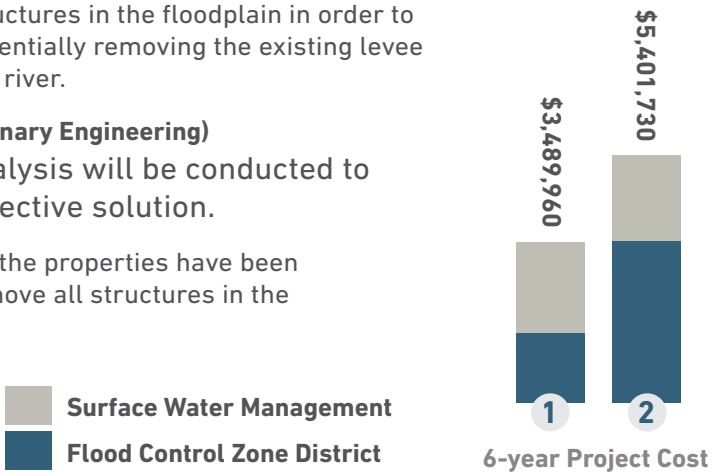
The Alward Road Acquisition and Setback Levee project is a part of a larger effort to reduce flood risk and improve floodplain habitat on the Carbon River.

Location Carbon River; Alward Road; LB; RM 6.4–8.4.
Obligations US Army Corps of Engineers, Floodplain management, Endangered Species Act
Current Status To date, 56 of the 81 properties have been purchased between the river and 177th Street East, also known as Alward Road. Once all the properties have been purchased the County will remove all structures in the floodplain in order to construct a setback levee, essentially removing the existing levee that constrains the main stem river.

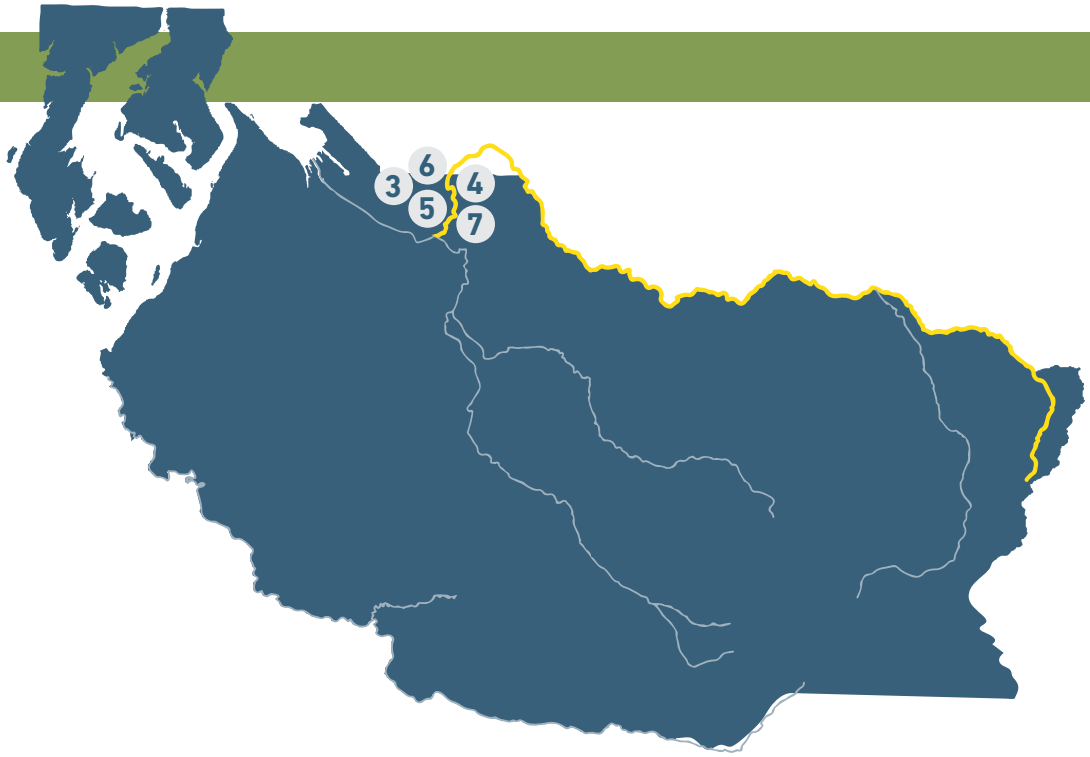
Alward Setback Levee (Preliminary Engineering)

A project alternatives analysis will be conducted to identify the most cost-effective solution.

Project six-year plan: Once all the properties have been purchased the County will remove all structures in the floodplain in order to construct a setback levee.



White River



3 Right Bank Setback

This project involves setting back approximately 1,200 lineal feet of existing flood risk reduction structure along the right bank of the White River within the warehouse district in the City of Sumner.

Project Benefits This project reduces flood risk while also increasing public safety. Improved fish habitat will also be created for juvenile salmonids.

Location Lower White River; RB; RM 3.85

Obligations Flood risk reduction and floodplain management obligations in compliance with the 2013 Pierce County Rivers Flood Hazard Management Plan.

Justification This project will address ongoing maintenance issues on the 100 year-old facility that continues to deteriorate over time. The project reach is in need of substantial improvements to promote better flood protection and fish habit.

Notes This project contributes to the protections of a major economic center in Pierce County Project. CPOD #LW2.

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4 Butte Pit Setback

This project will work in conjunction with the Pacific Park setback that will be constructed by King County and other drainage improvements in the area.

Project Benefits Flood Risk Reduction

Location White River; RB; RM 4.9–5.7

Obligations Floodplain management

Justification This project would coordinate with the work that King County is currently doing.

Notes This project was formally known as the Butte Ave Levee and Berm in the CPOD. CPOD #LW3.

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5 Pacific Point Bar

This project will provide flood control and habitat benefits on the White River. The overall intent is to create a sustainable river system to the extent feasible in this reach of the river. Elements of this project include setback levees, side channels, back water alcove, channel roughening, engineering log jams, revetments, property acquisitions and other methods to create a more sustainable system.

Project Benefits Flood Risk Reduction, Habitat Improvement
Location White River; RB, RM 3.9–4.5
Justification This project is a part of the 2018 Flood Control Zone six-year Capital Improvement Program budget.
Notes This project is a part of the larger Lower White River Floodplain Restoration and Flood Protection project which has been broken up into four phases. Funding for 2020 through 2024 will go towards property acquisition, preliminary design, and construction. This project has also been put in the County Capital Facilities Plan.

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6 Left Bank Setback

This project will provide flood control and habitat benefits on the White River. The overall intent is to create a sustainable river system to the extent feasible in this reach of the river. Elements of this project include setback levees, channel roughening, revetments, property acquisitions and other methods to create a more sustainable system.

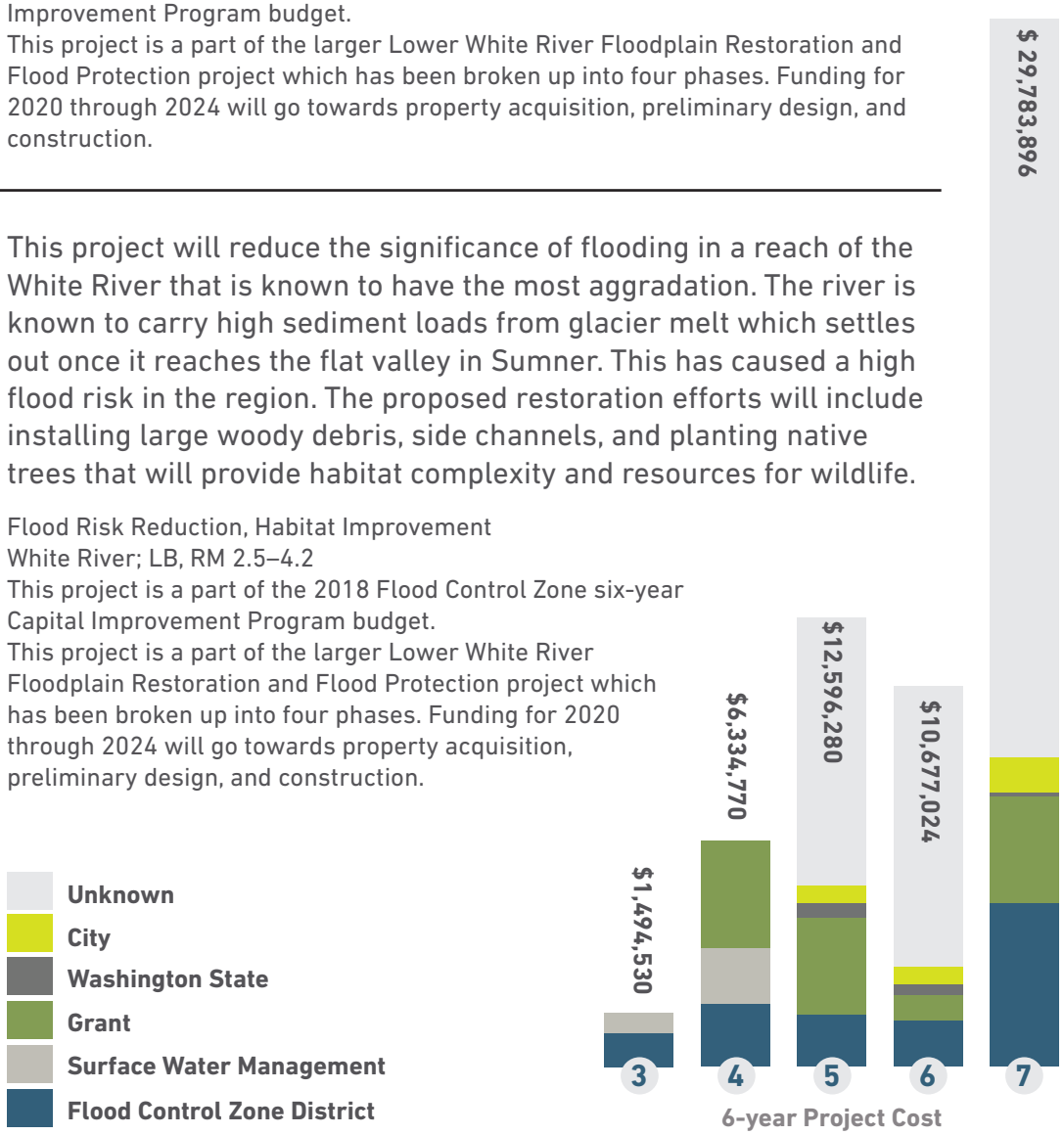
Project Benefits Flood Risk Reduction, Habitat Improvement
Location White River; LB, RM 4.4–4.9
Justification This project is a part of the 2018 Flood Control Zone six-year Capital Improvement Program budget.
Notes This project is a part of the larger Lower White River Floodplain Restoration and Flood Protection project which has been broken up into four phases. Funding for 2020 through 2024 will go towards property acquisition, preliminary design, and construction.

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7 24th Street Setback

This project will reduce the significance of flooding in a reach of the White River that is known to have the most aggradation. The river is known to carry high sediment loads from glacier melt which settles out once it reaches the flat valley in Sumner. This has caused a high flood risk in the region. The proposed restoration efforts will include installing large woody debris, side channels, and planting native trees that will provide habitat complexity and resources for wildlife.

Project Benefits Flood Risk Reduction, Habitat Improvement
Location White River; LB, RM 2.5–4.2
Justification This project is a part of the 2018 Flood Control Zone six-year Capital Improvement Program budget.
Notes This project is a part of the larger Lower White River Floodplain Restoration and Flood Protection project which has been broken up into four phases. Funding for 2020 through 2024 will go towards property acquisition, preliminary design, and construction.



Puyallup River



8 Neadham Road Acquisition & Revetment

This project will provide improvement of channel migration protection in the Neadham Road area along the Upper Puyallup River near RM 26.5.

Project Benefits Water Quality Improvement
Location Puyallup River; RB; RM 25.3–26.9
Obligations US Army corps of Engineers, Floodplain management; Endangered Species Act
Current Status Pierce County continues to acquire properties located at RM 5.5 south of Orting. When the acquisition phase is complete the existing levee will be removed along with Neadham Road and all utilities.
Project 6-year plan This project will continue to acquire property and will begin construction in 2021.

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9 Orville Road at Kapowsin

This project will involve constructing a revetment along Orville Road and installing ELJ's.

Location Puyallup River; LB; RM 26.2–26.6
Obligations Flood Control
Current Status This project is currently in the monitoring phase.
Project 6-year plan Preliminary engineering will begin in 2019. Anticipated construction 2021 and 2022.

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10 Orville Road Revetment, Phase 2B

This project is proposing to continue to dismantle the existing levee and install a series of Engineered Logjams (ELJs) in the Upper Puyallup River Watershed. The existing levee hinders habitat forming processes, and exacerbates local flooding by restricting flow from returning to the main channel. The proposed ELJs are designed to split and defect flow to protect Orville Road East which will significantly reduce flooding and will enhance juvenile salmon habitat.

Project Benefits Habitat Improvement & Flood Risk Reduction
Location Puyallup River; LB; RM 27.6–27.8
Obligations Floodplain Management; US Army Corps of Engineers
Notes This project will result in 200 acres of reconnected historic floodplain and the restoration of approximately 1.5 miles of shoreline.
Project 6-year plan Approximately 75% of construction is complete and will be finished in 2019.

11 Orville Road Revetment, Phase 2C

This project is proposing to continue to dismantle the existing levee and install a series of Engineered Logjams (ELJs) in the Upper Puyallup River Watershed. The existing levee hinders habitat forming processes, and exacerbates local flooding by restricting flow from returning to the main channel. The proposed ELJs are designed to split and defect flow to protect Orville Road East which will significantly reduce flooding and will enhance juvenile salmon habitat.

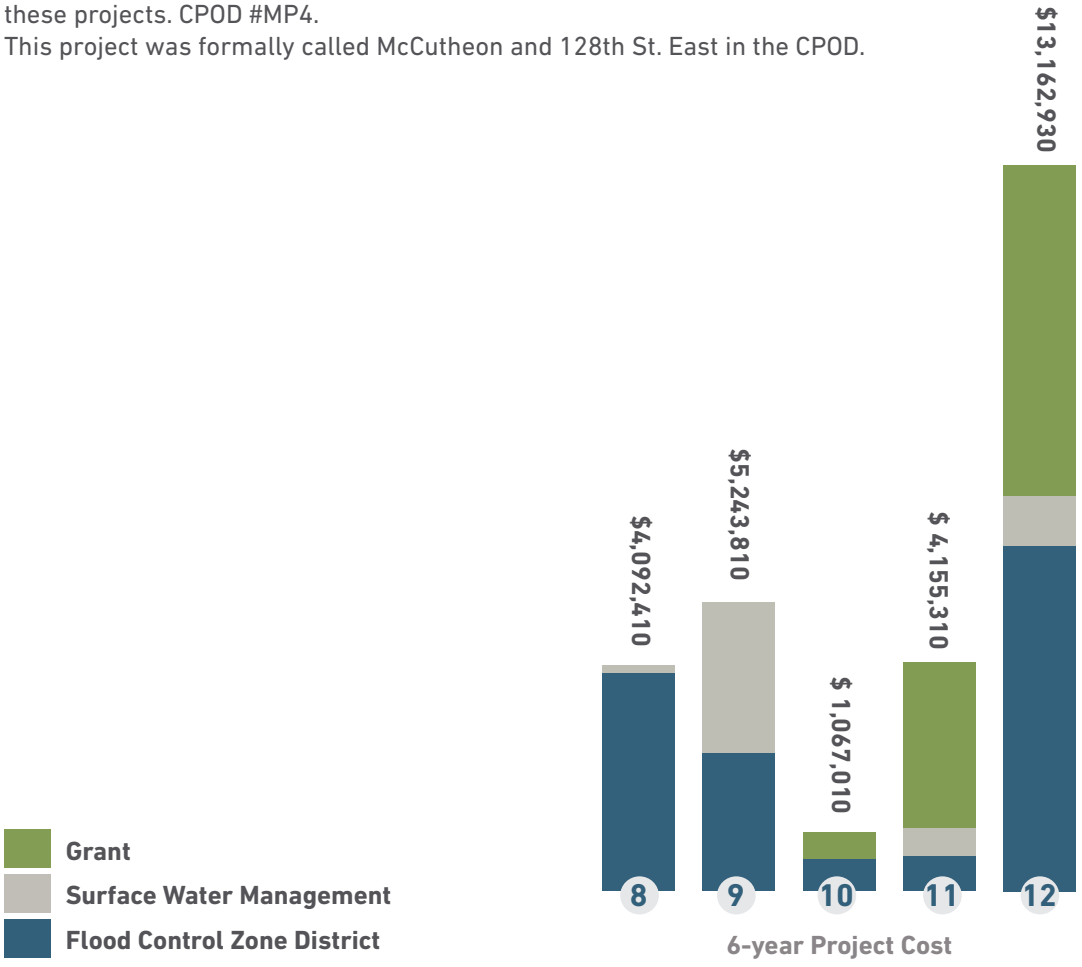
Project Benefits Habitat Improvement & Flood Risk Reduction
Location Puyallup River; LB; RM 27.6–27.8
Obligations Floodplain Management; US Army Corps of Engineers
Current Status This project is currently in the design phase.
Project 6-year plan Construction will take place in 2020 and 2021.

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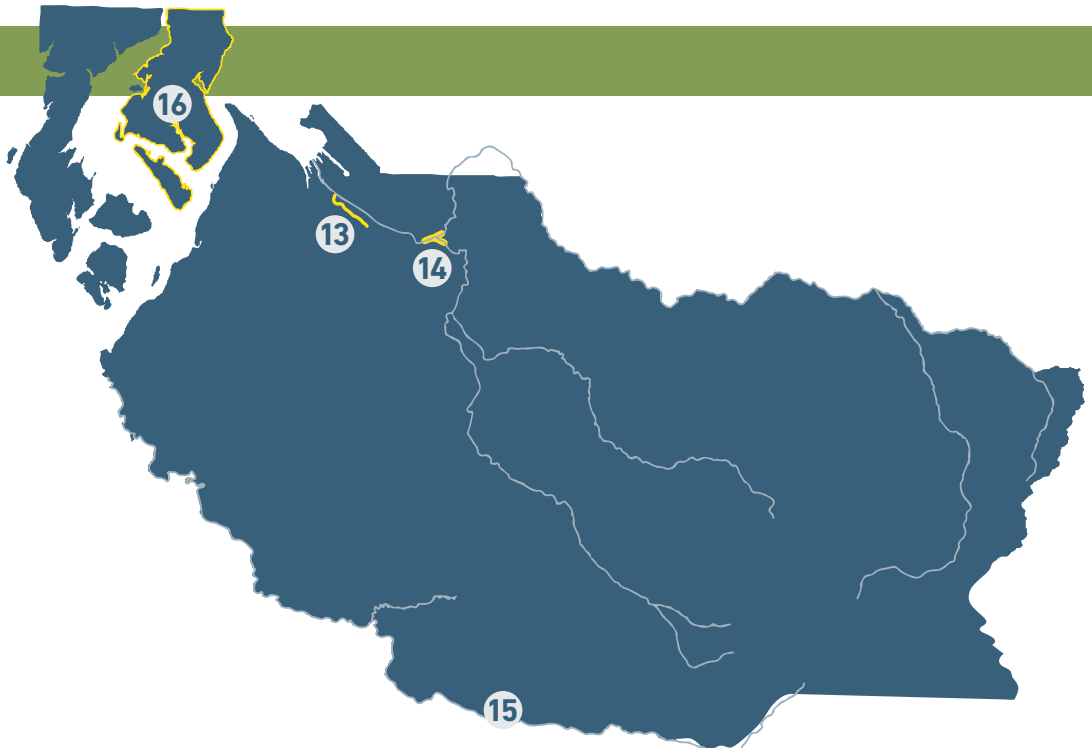
12 128th St Comprehensive Study

This project will evaluate design alternatives for four setback levees on the Puyallup River.

Project Benefits Flood Risk Reduction, ESA, Habitat Improvement
Location Puyallup River; LB; RM 16.0–17.4
Obligations Flood risk reduction, Habitat Improvement
Justification The setback levee study recommended four projects in this vicinity which will require coordinated a design. This project is also a of the HCP.
Notes The County owns most of the land needed for one of these projects. CPOD #MP4.
This project was formally called McCutheon and 128th St. East in the CPOD.



Other Locations



13 Clear Creek Acquisition & Levee

This project will acquire property and remove structures (Phase 1), and examine alternatives for flood protection.

Project Benefits Water Quality Improvement, Habitat Improvement, Agriculture, Flood Risk Reduction
Location Clear Creek; LB/RB; RM 0.2–2.9
Obligations Floodplain Management
Notes Coordination with the Clear Creek Strategic plan will continue throughout this project.
Current Status This project is in the property acquisition phase.
Project six-year plan Continue to acquire property necessary for future project completion.

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14 Habitat & Flood Capacity Creation Project

The Habitat and Flood Capacity Creation Project (HFCCP) is a river restoration effort designed to result in significant aquatic habitat enhancement, with the added benefit of reduced risk from moderate-sized flooding events (up to the 25-year flood in this reach). The selected project site is along the Puyallup River, downstream and upstream of the confluence with the White River, at two sand and gravel bars: the "Confluence Bar", at approximate RM 10.1; and the "Upstream Bar", at approximate RM 10.5. This project was formally called the Sediment Management as a Risk Reduction Tool Project.

Habitat Creation Create one new secondary channel providing approximately two acres of holding area for salmonid species during summer flows; enhance another existing secondary channel providing approximately four acres in improved salmonid species habitat; incorporate 94 large woody material structures. In total the project will increase channel diversity and geomorphic complexity resulting in over a 500 percent increase in habitat for fish at low-flow conditions and over 40 percent increase in habitat for fish at the 1.5 year flood event.
Flood Capacity The project has a positive net benefit on inundated areas. Hydraulic analyses show a reduction in flooded area for all inundation events - up to a one foot reduction for the 2-year and 100-year flood events.
Notes The results of this project will inform future studies and help respond to citizen's concerns about rising sediment levels in the Pierce County river system.

Location RB/LB; RM 10.1–10.5
Obligations Rivers Flood Hazard Management Plan
Current Status Waiting for direction to proceed with permit submittal.
Project six-year plan Continued permitting in 2019; construction could occur in 2020 or 2021.

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15 Upper Nisqually Revetment Retrofit

The purpose of this project is to provide roughness elements to the existing levee face that will reduce and divert erosive flows away from the levee structure. The levee protects SR-706 and the historic main entrance to Mount Rainier National Park, as well as the Nisqually Park subdivision.

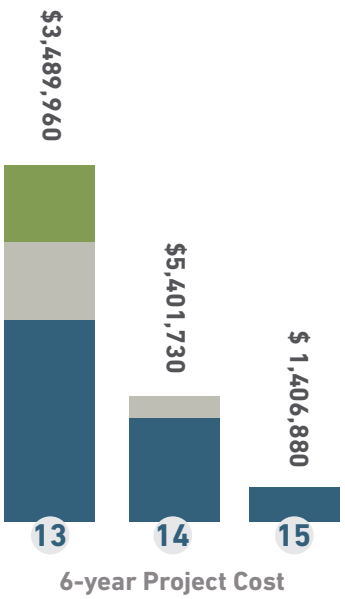
Project Benefits Habitat Improvement, Flood Risk Reduction
Location Nisqually River; LB, RM 4.4–4.9
Obligations US Army Corps of Engineers, Floodplain Management, and Endangered Species Act
Current Status This project is currently in the permitting phase.
Project 6-year plan This project is anticipated to be constructed in July 2019 through September 30th 2019.

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16 Marine Shoreline Erosion Protection Through Living Shorelines

This project will partner with private and public landowners along the marine shoreline to remove human barriers such as bulk heads and replace them with living shoreline features engineered to protect the shoreline from erosion and mudslides while improving habitat for people, fish and wildlife.

Project Benefits Water Quality, Habitat improvement, Flood risk reduction
Location Coastal floodplains along Pierce County with an emphasis on the Key Peninsula and Gig Harbor areas
Justification Coastal floodplains face increasing risk to significant erosion, sloughing, and mudslides when they experience the impacts of flooding and intense rain events such as storm surges. Installing living shoreline practices along the marine shoreline on willing landowners' property helps protect the coastal floodplain from the impacts of storm surges. It also improves public access of the shoreline and habitat function for fish and wildlife. This pilot program will attempt to meet this critical need in an underserved floodplain of Pierce County.
Notes Projects will work with 2–5 property owners to install living shoreline practices. Private landowners are asked to contribute between 25% - 50% of the "cost-share" to increase their ownership over the new living shoreline features.
Additional funding sources Private landowners, Pierce Conservation District, Environmental Protection Agency National Estuary Program and Washington State Conservation Commission
Estimated cost from each funding source Pierce Conservation District will pay for 100% of costs related to outreach and education, technical assistance, engineering and design; 50% of project costs can typically be found from other funding sources mentioned above. Stable local grant match is pivotal to the success of leveraging other dollars.
Project six-year plan Flood Control Zone District will contribute $50,000 over the next six years for construction of the projects.



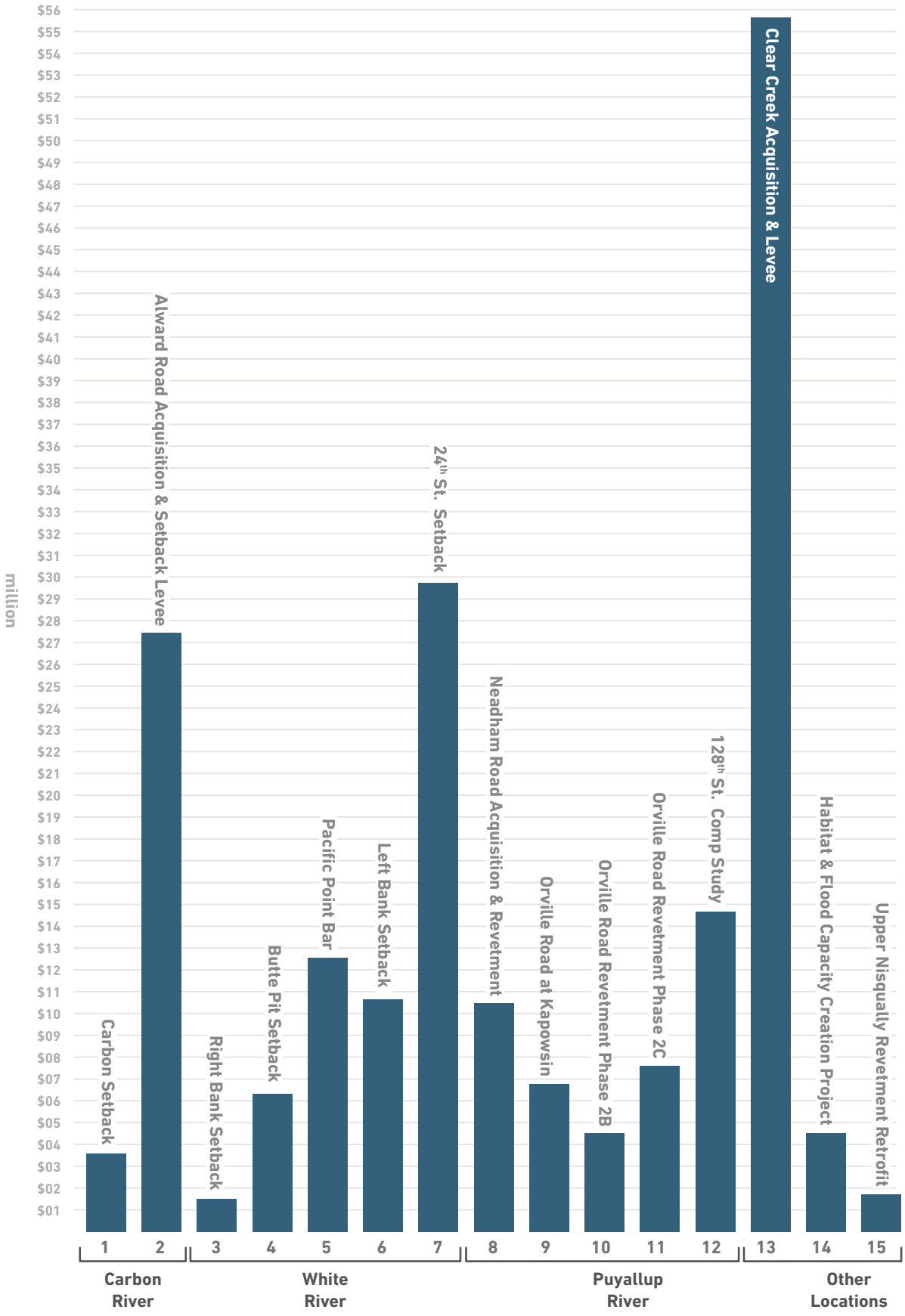
PROPOSED Pierce County Flood Control Zone District
CIP 2019 - 2024

Project Name	2019	2020	2021	2022	2023	2024
Property Acquisition ** (with estimated $/year for each project)	**$ 1,844,630**	**$ 2,400,000**	**$ 2,800,000**	**$ 3,700,000**	**$ 1,200,000**	**$ 1,600,000**
Alward Road Acquisition & Setback Levee	*$ 1,000,000*	*$ 800,000*	*$ 800,000*	*$ 800,000*	*$ -*	*$ -*
Lower Puyallup Clear Creek Acquisition and Levee	*$ 10,700*	*$ 600,000*	*$ 300,000*	*$ 900,000*	*$ 900,000*	*$ 900,000*
Neadham Road Acquisition & Revetment	*$ 553,930*	*$ -*	*$ -*	*$ -*		
Orville Road Revetment (Phase 2B)	*$ 10,000*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*
Orville Road Revetment (Phase 2C)	*$ 10,000*					
Lower White River (Pacific Point Bar & Left Bank Setback)	*$ -*	*$ 1,000,000*	*$ 700,000*	*$ 1,000,000*	*$ 300,000*	*$ 700,000*
Middle Puyallup 128th St Comp Study	*$ 260,000*		*$ 1,000,000*	*$ 1,000,000*		
Lower White River 3.85, Right Bank	**$ -**	**$ 940,000**				
White River Butte Pit Setback	**$ -**	**$ 250,000**			**$ 1,500,000**	
Lower White River *(Restoration; 24th Street Setback)*	**$ 609,725**	**$ 1,000,000**	**$ 1,000,000**	**$ 1,500,000**		**$**
Lower White River *(Pacific Point Bar)*		**$ 250,000**			**$ 500,000**	**$ 500,000**
Lower White River *(Left Bank Setback)*		**$ 250,000**			**$ 800,000**	**$ 500,000**
Habitat & Flood Capacity Creation Project	**$ 250,470**	**$ 1,600,000**				
Middle Puyallup 128th St Comp Study	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,000,000**	**$ 2,000,000**
Alward Setback Levee *(Preliminary Engineering)*	**$ 121,380**					
Carbon River Setback Levee	**$ -**		**$ 24,000**	**$ -**	**$ -**	**$ 1,500,000**
Orville Road @ Kapowsin Creek			**$ 1,500,000**	**$ 1,000,000**	**$ -**	**$ -**
Orville Road Revetment (Phase 2B)	**$ 557,010**	**$ -**	**$ -**	**$ -**		
Orville Road Revetment (Phase 2C)	**$ 105,310**	**$ 515,000**				
Neadham Road Revetment			**$ 1,700,000**	**$ 1,700,000**		
Upper Nisqually Channel Migration Protection	**$ 1,406,880**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Total Six Year Capital Improvement Projects	**$ 4,895,405**	**$7,205,000**	**$7,024,000**	**$7,900,000**	**$6,000,000**	**$6,100,000**

Strategic Reserve

PS Shoreline Project	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**
Total from Strategic Reserve	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**	**$ 50,000.00**

Total Project Cost



PIERCE COUNTY
FLOOD CONTROL
ZONE DISTRICT