

Project 1: Marine Hills Conveyance System Repair – North of S 293rd St

Project Location: Marine Hills Subdivision



Marine Hills Conveyance Repairs

The Marine Hills subdivision was the first target area of Surface Water Management’s conditional asset video inspection program. Video inspections to date have identified several failing or substandard storm drain pipes and structures. A sinkhole in S 288th Place this March was the result of a failed CMP storm pipe. This project is a proactive repair program to maintain the City’s conveyance assets, protect roadways and ensure resident safety.

This project includes funding for analysis of the existing system and design of the repair or replacement projects. The stretch of S 288th Place and S Marine Hills Way where storm drain is replaced will receive an asphalt overlay.

Project Category: Major CIP (Restoration)

Land Acquisition: Not Required

Project Benefits

- Replaced failing or substandard infrastructure
- Improved or restored conveyance capacity
- Installation of new water quality elements
- Life/safety and asset protection

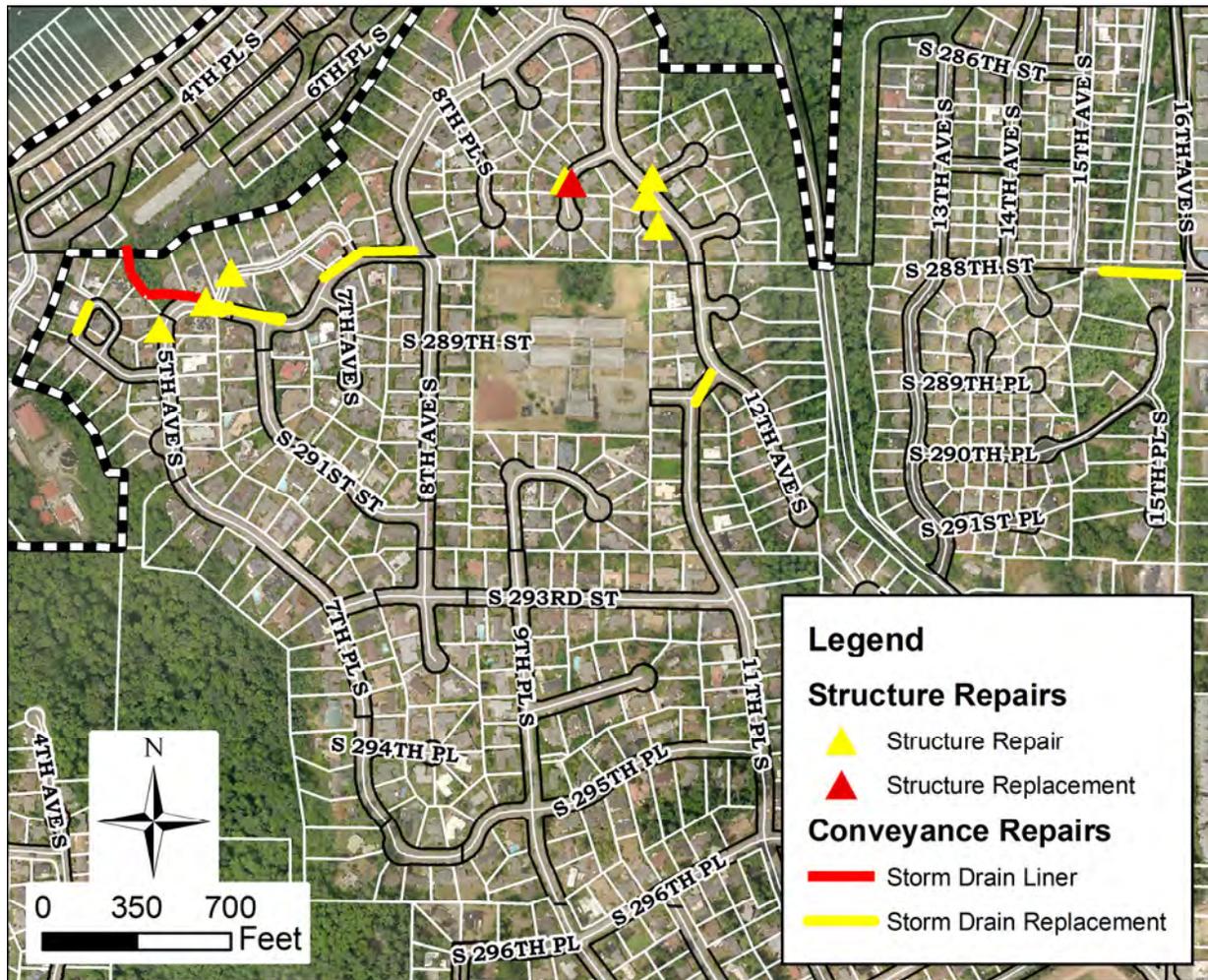
Project Facts

- Two sinkholes have developed in Marine Hills within the last five years due to storm drain failing infrastructure
- Recent and on-going video inspections have identified several failing and substandard conveyance assets for replacement
- Concurrent modeling evaluations will assess conveyance capacity and increase pipe diameters if needed.



Photo: Example of broken concrete pipe observed during video inspections

Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 100,000
Construction Subtotal	\$ 871,535
Total	\$ 971,535



Example Conveyance System Repair Project – Marine Hills Subdivision

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design	1	EA	\$ 75,000	\$ 75,000
2	Survey	1	EA	\$ 25,000	\$ 25,000
3	Design Subtotal				\$ 100,000
Construction Items					
4	Mobilization	1	EA	\$ 100,000	\$ 100,000
5	18" Pipe lining	650	LF	\$ 210	\$ 136,500
6	Open cut 18" Pipe Replacement	250	LF	\$ 250	\$ 62,500
7	Open cut 15" Pipe Replacement	730	LF	\$ 220	\$ 160,600
8	Open cut 12" Pipe Replacement	260	LF	\$ 150	\$ 39,000
9	Repair/replace Type 1 catch basin	4	EA	\$ 2,000	\$ 8,000
10	Repair/replace Type 2 catch basin/manhole	4	EA	\$ 5,000	\$ 20,000
11	Install Filterra Units	4	EA	\$ 20,000	\$ 80,000
12	Pavement Overlay	4,500	SY	\$ 19	\$ 85,500
13	Construction Management (10%)	1	EA	\$ 69,210	\$ 69,210
14	Erosion and Sediment Control (5%)	1	EA	\$ 34,605	\$ 34,605
15	Washington State Sales Tax (9.5%)				\$ 75,620
16	Construction Subtotal				\$ 871,535
17	Total				\$ 971,535

Project 2: Marine Hills Conveyance System Repair – South of S 293rd St

Project Location: Marine Hills Subdivision



Broken Concrete Pipe



Joint Separation in Concrete



Remnant of Corrugated Metal Pipe Invert

Marine Hills Conveyance Repairs

The Marine Hills subdivision was the first target area of Surface Water Management’s conditional asset video inspection program. Video inspections to date have identified several failing or substandard storm drain pipes and structures. A sinkhole in S 288th Place this March was the result of a failed CMP storm pipe. This project is a proactive repair program to maintain the City’s conveyance assets, protect roadways and ensure resident safety.

This project includes funding for analysis of the existing system and design of the repair or replacement projects. The stretch of 9th Place S where storm drain is replaced will receive an asphalt overlay.

Project Category: Major CIP (Restoration)

Land Acquisition: Not Required

Project Benefits

- Replaced failing or substandard infrastructure
- Improved or restored conveyance capacity
- Installation of new water quality elements
- Life/safety and asset protection

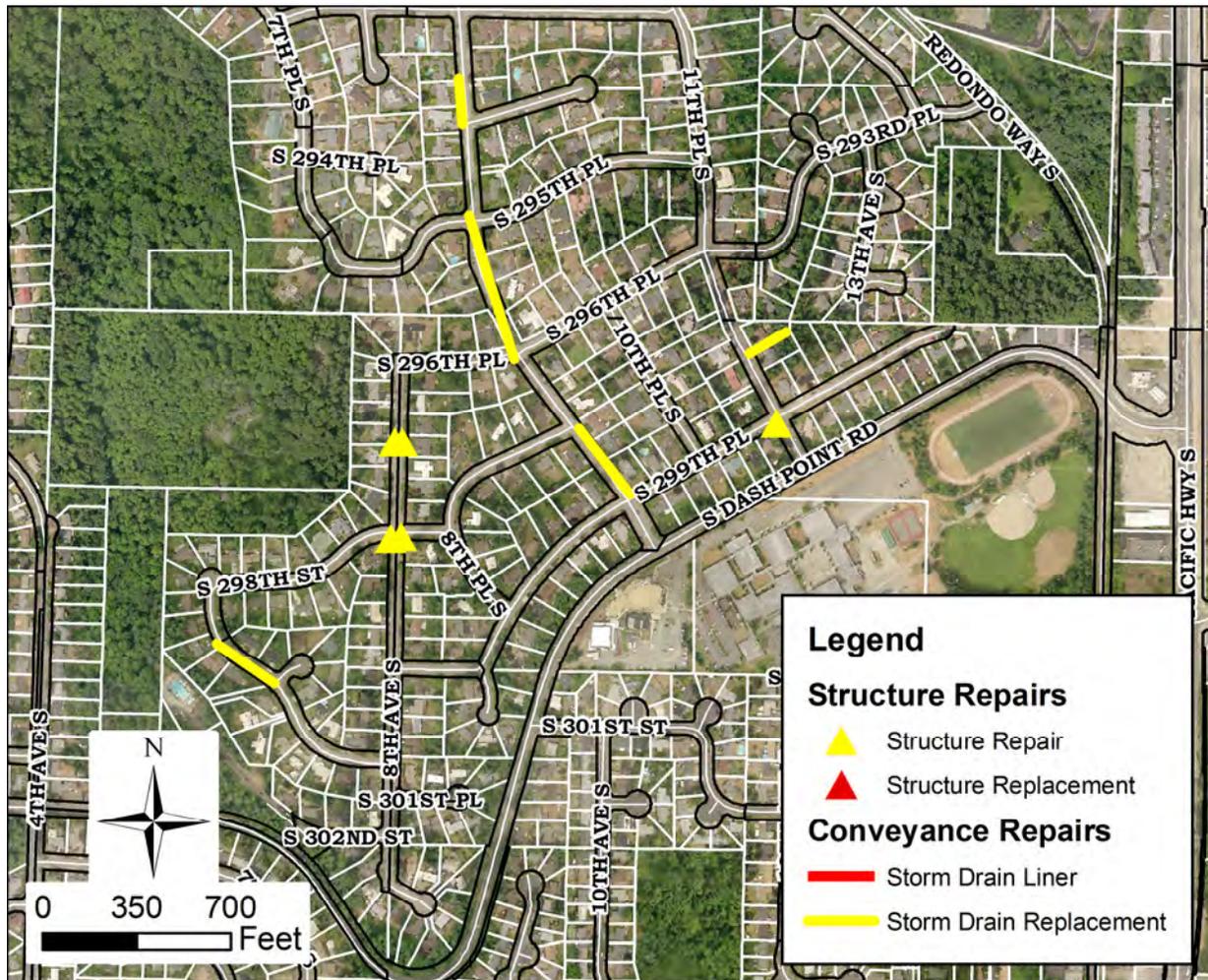
Project Facts

- Two sinkholes have developed in Marine Hills within the last five years due to storm drain failing infrastructure
- Recent and on-going video inspections have identified several failing and substandard conveyance assets for replacement
- Concurrent modeling evaluations will assess conveyance capacity and increase pipe diameters if needed.



Rusted and deformed Corrugated Metal Pipe

Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 100,000
Construction Subtotal	\$ 714,375
Total	\$ 814,375



Example Conveyance System Repair Project – Marine Hills Subdivision

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design	1	EA	\$ 75,000	\$ 75,000
2	Survey	1	EA	\$ 25,000	\$ 25,000
3	Design Subtotal				\$ 100,000
Construction Items					
4	Mobilization	1	EA	\$ 100,000	\$ 100,000
5	Open cut 12" Pipe Replacement	1500	LF	\$ 150	\$ 225,000
6	Repair/replace Type 1 catch basin	3	EA	\$ 2,000	\$ 6,000
7	Repair/replace Type 2 catch basin/manhole	2	EA	\$ 5,000	\$ 10,000
8	Install Filterra Units	4	EA	\$ 20,000	\$ 80,000
9	Pavement Overlay	7,700	SY	\$ 19	\$ 146,300
10	Construction Management (10%)	1	EA	\$ 56,730	\$ 56,730
11	Erosion and Sediment Control (5%)	1	EA	\$ 28,365	\$ 28,365
12	Washington State Sales Tax (9.5%)				\$ 61,980
13	Construction Subtotal				\$ 714,375
14	Total				\$ 814,375

Project 3: South 373rd Street Stream Crossing Re-Route and Restoration

Project Location: South 373rd Street north of Pacific Highway



Stream Crossing Re-Route and Restoration

The project will re-route a tributary stream to the Hylebos that crosses S 373rd Street via a substandard culvert crossing. The re-routed stream would join West Hylebos Creek north of S 373rd Street. Undetained and untreated stormwater flows from Pacific Highway will also be treated and dispersed prior to integrating with the West Hylebos. Additional project elements include replacing the failing outlet control structure at the outlet of Hidden Lake with a meandering open channel that will facilitate fish passage thereby expanding critical juvenile salmon habitat within the West Hylebos Watershed.

Project Category: Roadway Flooding & Environmental Restoration

Land Acquisition: Required Negotiation with WSDOT

Project Benefits

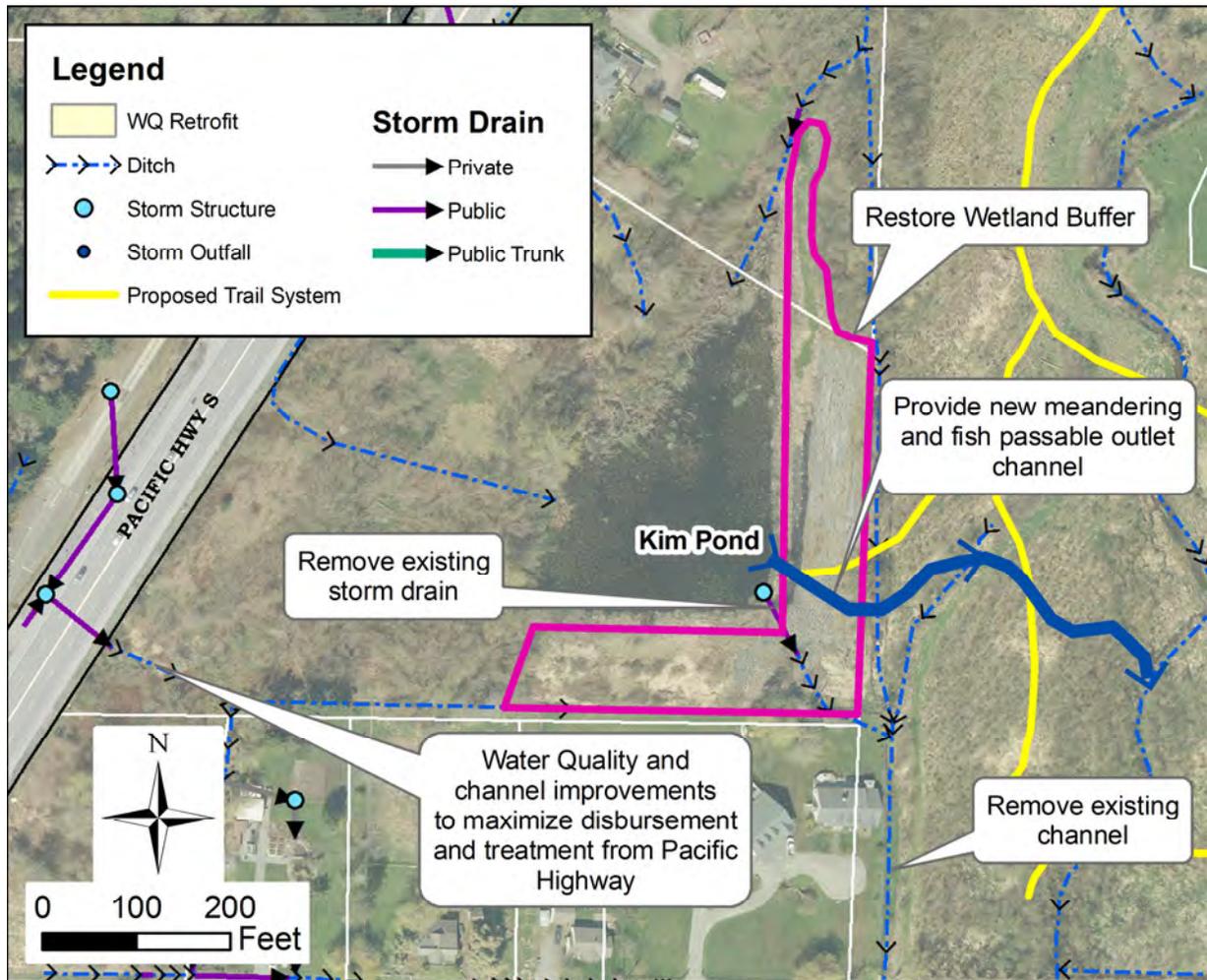
- Infrastructure protection
- Flood protection
- Habitat preservation
- Salmon recovery

Project Facts

- The project is located on the 10.6 acre Kim property purchased by the SWM Division in 2007
- SWM, local volunteers and Friends of the Hylebos planted numerous trees and have been working to restore the wetland buffer since the property was acquired
- WSDOT mitigated the adjacent property to the east in 2007



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 105,000
Construction Subtotal	\$ 736,300
Total	\$ 841,300



S 373rd Street Stream Crossing Re-route and Restoration

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Geotechnical analysis/design recommendations	1	EA	\$ 40,000	\$ 40,000
2	Hydraulic Design and Layout (Perform in-house)	1	EA	\$ -	\$ -
3	Biological Assessment	1	EA	\$ 50,000	\$ 50,000
4	Survey	1	EA	\$ 15,000	\$ 15,000
5	Design Subtotal				\$ 105,000
Construction Items					
6	Mobilization (20%)	1	EA	\$ 110,000	\$ 110,000
7	Demolish and remove existing concrete outlet structure	1	EA	\$ 5,000	\$ 5,000
8	Remove CMP	100	LF	\$ 50	\$ 5,000
9	Herbicide application prior to clearing and grubbing for invasive species removal	1	EA	\$ 5,000	\$ 5,000
10	Site prep/clearing & grubbing	1.5	AC	\$ 20,000	\$ 30,000
11	Stream construction with fish passage and habitat amenities	1	LS	\$ 180,000	\$ 180,000
12	Wetland seeding, fertilizing and mulching	1.5	AC	\$ 6,000	\$ 9,000
13	Topsoil	615	CY	\$ 25	\$ 15,375
14	Tree Plantings	5,000	EA	\$ 8	\$ 40,000
15	Log with rootwad	12	EA	\$ 1,600	\$ 19,200
16	Brush piles	15	EA	\$ 110	\$ 1,650
17	Bark or wood chip mulch	615	CY	\$ 26	\$ 15,990
18	Inlet improvements from Pacific Highway	1	EA	\$ 20,000	\$ 20,000
19	Water quality vault in Pacific Highway	1	EA	\$ 200,000	\$ 200,000
20	Construction Management	1	EA	\$ 25,000	\$ 25,000
21	Erosion and Sediment Control (10%)	1	EA	\$ 55,000	\$ 55,000
22	Washington State Sales Tax (9.5%)				\$ 69,950
23	Construction Subtotal				\$ 736,300
24	Total				\$ 841,300

Project 4: West Hylebos Conservation Property Acquisition

Project Location: West Hylebos Watershed



Bridges Property



Enticknap Property

Conservation Property Acquisition

This project focuses on leveraging SWM funds with King County Conservation Futures Grant funds (50% matching) for the purchase of conservation properties within the West Hylebos Watershed. Purchase of these riparian corridor properties helps to protect the remaining high value habitat and wildlife areas within the City, improves the likelihood of salmon recovery within the Hylebos and provides future education and outreach opportunities for the citizens of Federal Way.

Project Category: Conservation Property Acquisition

Land Acquisition: Required

Project Benefits

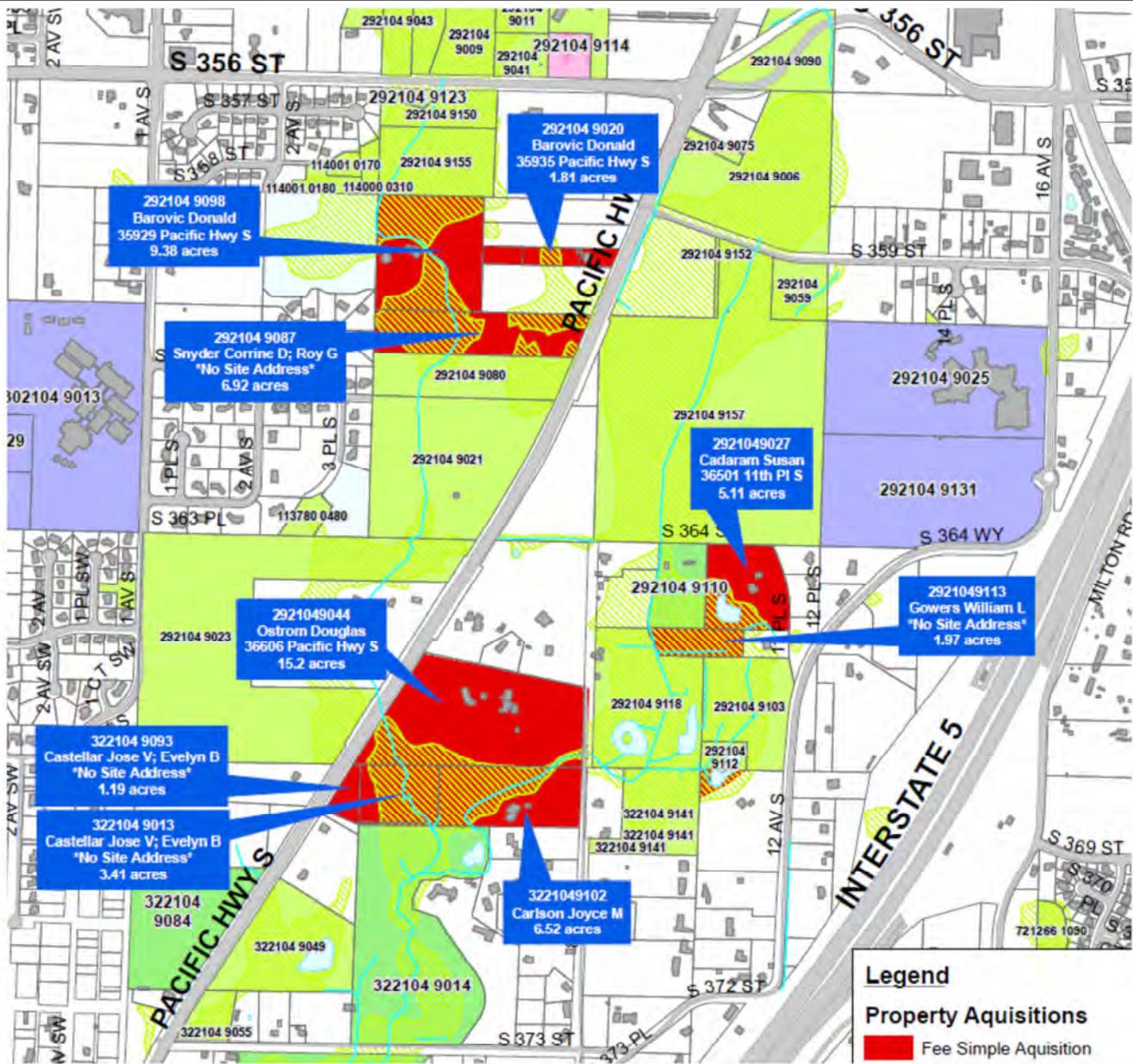
- Preserved natural stormwater attenuation and water quality treatment in wetland and riparian habitat
- Protection and restoration of habitat critical to salmon recovery in the West Hylebos
- Education and outreach opportunities through volunteer projects, stewardship and nature trails

Project Facts

- The City has already acquired four properties through this program
- Property acquisitions will provide the opportunity to create more public spaces like the West Hylebos Wetland Park
- Conservation property acquisition is a highly effective way to protect existing wetland and riparian areas



Description	Cost
Property Acquisition Subtotal	\$ 1,120,000
Grand funding from King County (50% match)	\$ (560,000)
Construction Subtotal	\$ -
Total	\$ 560,000



West Hylebos Conservation Property Acquisition

Line	Description	Quantity	Units	Assessed Value	Est. Market Value	Cost
Property Acquisition Items						
1	Castellar Parcel 3221049093 (Fee Simple Acquisition)	1	EA	\$ 36,000	\$ 100,000	\$ 100,000
2	Castellar Parcel 3221049013 (Fee Simple Acquisition)	1	EA	\$ 46,000	\$ 150,000	\$ 150,000
3	Gowers Parcel 2921049113 (Fee Simple Acquisition)	1	EA	\$ 89,000	\$ 50,000	\$ 50,000
4	Snyder Parcel 2921049087 (Fee Simple Acquisition)	1	EA	\$ 138,000	\$ 200,000	\$ 200,000
5	Carlson Parcel 3221049102 (Conservation Easement)	1	EA	\$ 404,000	\$ 60,000	\$ 60,000
6	Ostrom Parcel 2921049044 (Conservation Easement)	1	EA	\$ 629,000	\$ 60,000	\$ 60,000
7	Barovic Parcel 2921049020 (Fee Simple Acquisition)	1	EA	\$ 106,000	\$ 200,000	\$ 200,000
8	Barovic Parcel 2921049098 (Fee Simple Acquisition)	1	EA	\$ 276,000	\$ 300,000	\$ 300,000
9	Property Acquisition Subtotal					\$1,120,000
10	Total					\$1,120,000

Project 5: South 356th Street Culvert Replacement

Project Location: South 356th Street between Pacific Highway and 1st Ave South



Remove and replace existing culverts with fish passable concrete box culverts

The proposed project will replace twin 57"x38" arch culverts which convey West Hylebos Creek under S 356th Street. The culverts are subject to blockage from debris emanating from the upstream wetland complex (including the West Hylebos Wetland Park) and provide substandard fish passage. The existing culverts will be removed and replaced with a concrete box culvert designed to eliminate debris blockage and meet current requirements for fish passage.

The highly developed nature of the upstream contributing basin is such that flows at this location may become problematic as we experience more frequent high intensity events.

Project Category: Flood Prevention & Fish Passage

Land Acquisition: Not Required

Project Benefits

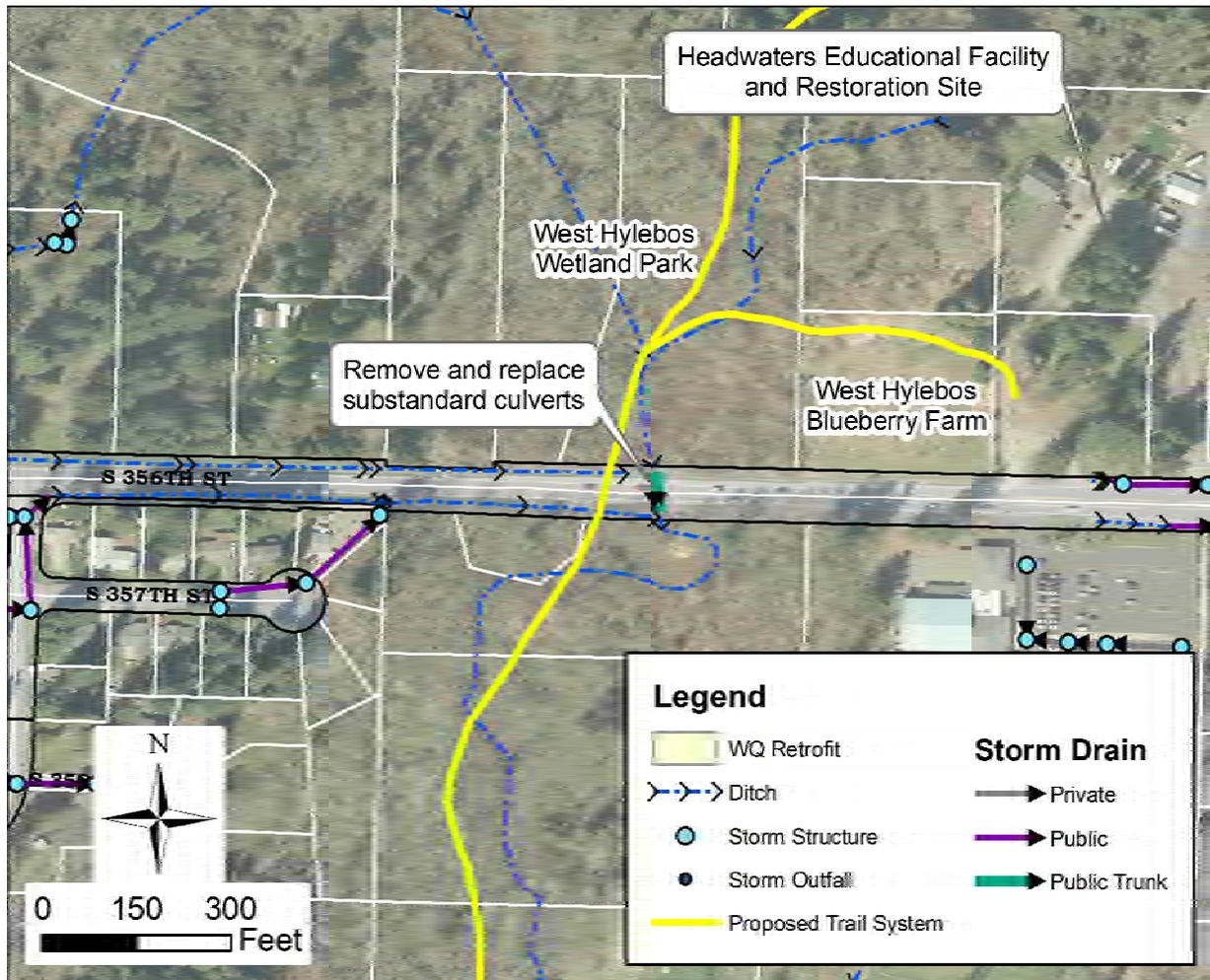
- Improved fish and wildlife passage
- Reduced annual and long term maintenance

Project Facts

- The S 356th Street culvert is one of the City's last potential flooding concerns along West Hylebos Creek
- WSDOT is replacing the culvert under Pacific Highway 99 south of this project in 2016
- The culvert replacement is a major step in the City's ongoing efforts to restore the Hylebos Watershed
- Improved fish passage will open the West Hylebos Wetlands to salmon spawning and rearing habitat



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 207,270
Construction Subtotal	\$ 2,335,880
Total	\$ 2,543,150



S 356th Street Culvert Replacement

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design (7.5%)	1	EA	\$ 148,050	\$ 148,050
2	Environmental Assessment (2%)	1	EA	\$ 39,480	\$ 39,480
3	Survey (1%)	1	EA	\$ 19,740	\$ 19,740
4	Design Subtotal				\$ 207,270
Construction Items					
5	Mobilization	1	EA	\$ 100,000	\$ 100,000
6	Site preparation	1	LS	\$ 75,000	\$ 75,000
7	Grading/Earthwork	1	LS	\$ 350,000	\$ 350,000
8	Drainage	1	LS	\$ 100,000	\$ 100,000
9	Utilities	1	LS	\$ 24,000	\$ 24,000
10	Structures	1	LS	\$ 650,000	\$ 650,000
11	Roadway Construction	1	LS	\$ 300,000	\$ 300,000
12	Erosion Control and Landscaping	1	LS	\$ 100,000	\$ 100,000
13	Traffic	1	LS	\$ 225,000	\$ 225,000
14	Other (Concrete sidewalk, C&G, demobilization)	1	LS	\$ 150,000	\$ 150,000
15	Construction Management (3%)	1	EA	\$ 59,220	\$ 59,220
16	Washington State Sales Tax (9.5%)				\$ 202,660
17	Construction Subtotal				\$ 2,335,880
18	Total				\$ 2,543,150

Project 6: Phase V Highway 99 Project – S 344th Street at Highway 99

Project Location: South 344th Street at Highway 99



S 344th Street Water Quality Facility

The project will acquire an undeveloped parcel along S 344th Street west of Pacific Highway 99 for the construction of a bioretention water quality facility. The facility will treat runoff from Pacific Highway and be incorporated as part of the surface water requirements associated with the Phase V HOV lane improvements. Runoff to the facility originates from Pacific Highway 99, one of the most heavily traveled roads in the City. Detention capacity will be integrated into the facility if possible, but this is a retrofit project intended to provide the most additional water quality treatment possible.

Project Category: Water Quality, Flow Control

Land Acquisition: Required

Project Benefits

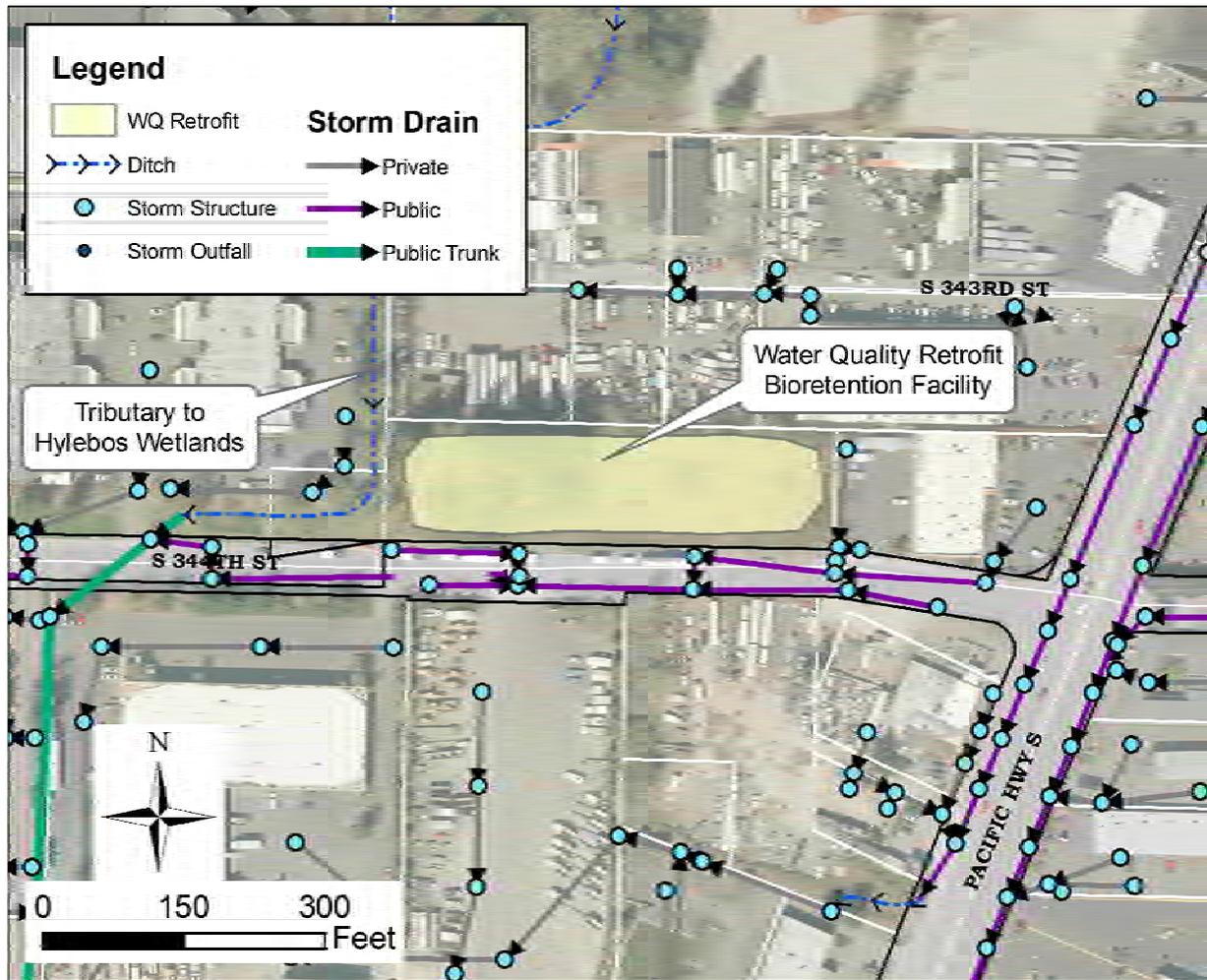
- Water quality treatment
- Added flow control
- Education and outreach opportunities
- Infiltration and groundwater recharge

Project Facts

- The City is nearing completion of a similar project at S 356th Street and Pacific Highway 99
- The Phase V HOV lane improvements are currently being designed
- Treated water from the facility will contribute to the West Hylebos Creek and wetlands complex and add to conservation efforts



Description	Cost
Property Acquisition Subtotal	\$ 500,000
Design Subtotal	\$ 30,750
Construction Subtotal	\$ 673,430
Total	\$ 1,204,180



S 344th Street Water Quality Facility

Line	Description	Quantity	Units	Assessed Value	Market Value	Construction Cost
Property Acquisition Items						
1	Parcel 2021049121	1	EA	\$ 343,000	\$ 500,000	\$ 500,000
2	Property Acquisition Subtotal					\$ 500,000
Design Items						
				Unit Price		
3	Engineering Design (5%)	1	EA	\$ 25,000	\$ 25,000	\$ 25,000
4	Geotechnical Analysis	1	EA	\$ 15,000	\$ 750	\$ 750
5	Survey (1%)	1	EA	\$ 5,000	\$ 5,000	\$ 5,000
6	Design Subtotal					\$ 30,750
Construction Items						
7	Mobilization (10%)	1	EA	\$ 50,000	\$ 50,000	\$ 50,000
8	Bioretention facility	25,000	SF	\$ 20	\$ 500,000	\$ 500,000
9	Construction Management (3%)	1	EA	\$ 15,000	\$ 15,000	\$ 15,000
10	Erosion and Sediment Control (10%)	1	EA	\$ 50,000	\$ 50,000	\$ 50,000
11	Washington State Sales Tax (9.5%)					\$ 58,430
12	Construction Subtotal					\$ 673,430
13	Total					\$ 1,204,180

Project 7: South 359th Street Weir Repair

Project Location: South 359th Street east of Pacific Highway 99



Weir Repair

This project will repair/replace a series of weirs constructed immediately downstream of the culvert crossing in S 359th Street. The purpose of the weirs is to stabilize the streambed/stream bank, protect the roadway embankment from scour and to provide fish passage to the wetlands upstream of the culvert crossing. The project will add longer term stability to the channel and the culvert crossing.

Project Category: Restoration/Stream Bank Stabilization

Land Acquisition: None Required

Project Benefits

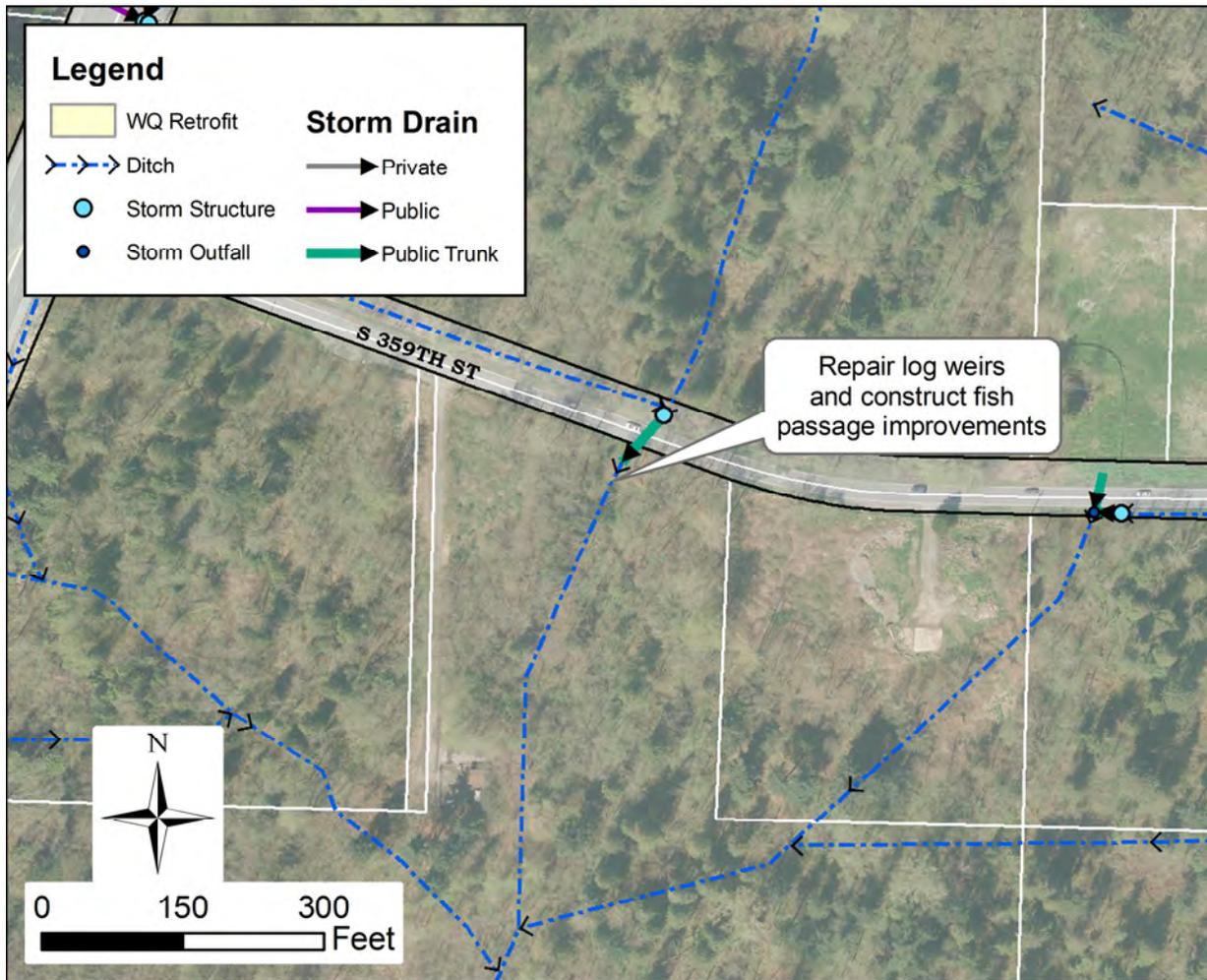
- Infrastructure protection
- Stream stabilization
- Erosion prevention
- Salmon recovery

Project Facts

- The weir repair will limit channel erosion by providing a series of controlled elevation drops at the weirs and downstream pools
- The weirs and corresponding pools are “fish friendly” and mimic natural conditions to encourage and enable fish passage
- Weirs have been utilized effectively at other locations throughout the City



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 45,000
Construction Subtotal	\$ 242,440
Total	\$ 287,440



S 359th Street Weir Repair

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design (15%)	1	EA	\$ 27,000	\$ 27,000
2	Survey (10%)	1	EA	\$ 18,000	\$ 18,000
3	Design Subtotal				\$ 45,000
Construction Items					
4	Mobilization (10%)	1	EA	\$ 18,000	\$ 18,000
5	Weir repair and fish passable channel features	1	EA	\$ 180,000	\$ 180,000
6	Erosion and Sediment Control (10%)	1	EA	\$ 18,000	\$ 18,000
7	Construction Management (3%)	1	EA	\$ 5,400	\$ 5,400
8	Washington State Sales Tax (9.5%)				\$ 21,040
9	Construction Subtotal				\$ 242,440
10	Total				\$ 287,440

Project 8: Alderdale Park Trunk Replacement

Project Location: SW 340th St North to SW 336th Street



Alderdale Park Trunk Replacement

The Alderdale Park Trunk Replacement project is one of the few remaining items recommended from the City's 1996 Comprehensive Surface Water Management Plan. The existing trunk line was identified as providing inadequate conveyance capacity between SW 340th Place and SW 336th Street, including through the Alderdale Park detention facility. The existing 18- to 24-inch CMP trunk needs to be replaced with 36-inch RCP from SW 336th Street to the detention facility. The existing 24-inch CMP trunk from the detention facility upstream to SW 340th Place needs to be replaced with 30-inch RCP.

Project Category: Conveyance

Land Acquisition: Not required

Project Benefits

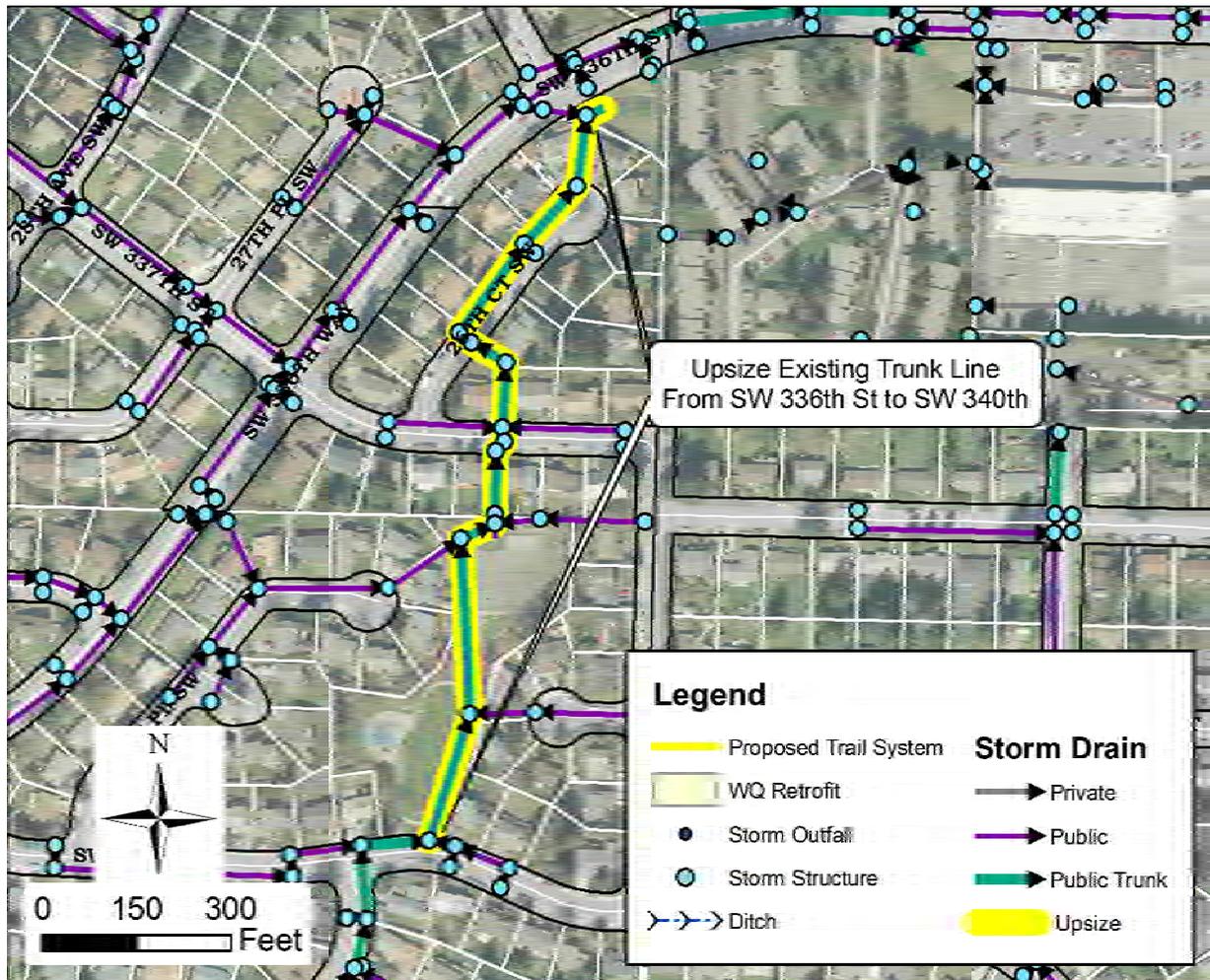
- Improved conveyance capacity
- Reduced flooding
- Aging CMP will be replaced with RCP
- Although a longer route than the existing alignment, the proposed route avoids construction through developed residential property

Project Facts

- The project is one of the few remaining items from the City's 1996 Comprehensive Plan
- The Alderdale detention facility can be improved if construction funding is available



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 20,000
Construction Subtotal	\$ 1,060,415
Total	\$ 1,080,415



Alderdale Park Trunk Replacement

Line	Description	Quantity	Units	Unit Price	Construction Cost
1	Engineering Design (in-house)	1	EA	\$ -	\$ -
2	Survey	1	EA	\$ 15,000	\$ 20,000
3	Design Subtotal				\$ 20,000
Construction Items					
4	Mobilization	1	EA	\$ 150,000	\$ 150,000
5	Construction Management	1	EA	\$ 75,000	\$ 75,000
6	Detention Facility expansion	1	EA	\$ 75,000	\$ 75,000
7	36" RCP	1,765	LF	\$ 175	\$ 308,875
8	30" RCP	710	LF	\$ 150	\$ 106,500
9	54" Type 2 CB	2	EA	\$ 5,000	\$ 10,000
10	72" Type 2 CB	13	EA	\$ 5,000	\$ 65,000
11	Asphalt pavement patching	1000	SY	\$ 25	\$ 25,000
12	Hydroseed	1,520	SY	\$ 2	\$ 3,040
13	Restoration and landscaping	1	EA	\$ 40,000	\$ 40,000
14	Dewatering	1	EA	\$ 20,000	\$ 20,000
15	Traffic Control	1	EA	\$ 40,000	\$ 40,000
16	Erosion and Sediment Control	1	EA	\$ 50,000	\$ 50,000
17	Washington State Sales Tax (9.5%)				\$ 92,000
18	Construction Subtotal				\$ 1,060,415
19	Total				\$ 1,080,400

Project 9: Low Impact Development (LID) Retrofit Project

Project Location: Several Locations in the City



LID Retrofit Project

This project will construct low impact development (LID) projects within and/or adjacent to the developed right-of-way (ROW) with the intent to provide additional flow control and water quality treatment. LID projects are currently being designed and vetted in-house in partnership with grant funding from the Department of Ecology. The focus of the project is to implement LID techniques, employ filtration and/or bioretention in high uses areas. The primary goal is to provide systems that better treat non-point source pollutants that are concentrated in the initial volume of surface water runoff following a dry period of weather, also known as the “first flush.” Multiple engineering and environmental criteria are being evaluated for selecting the street ROW areas for the retrofit projects. Construction will be dependent upon successful grant funding.

Project Category: Water Quality, Flow Control Retrofit

Land Acquisition: Possible

Project Benefits

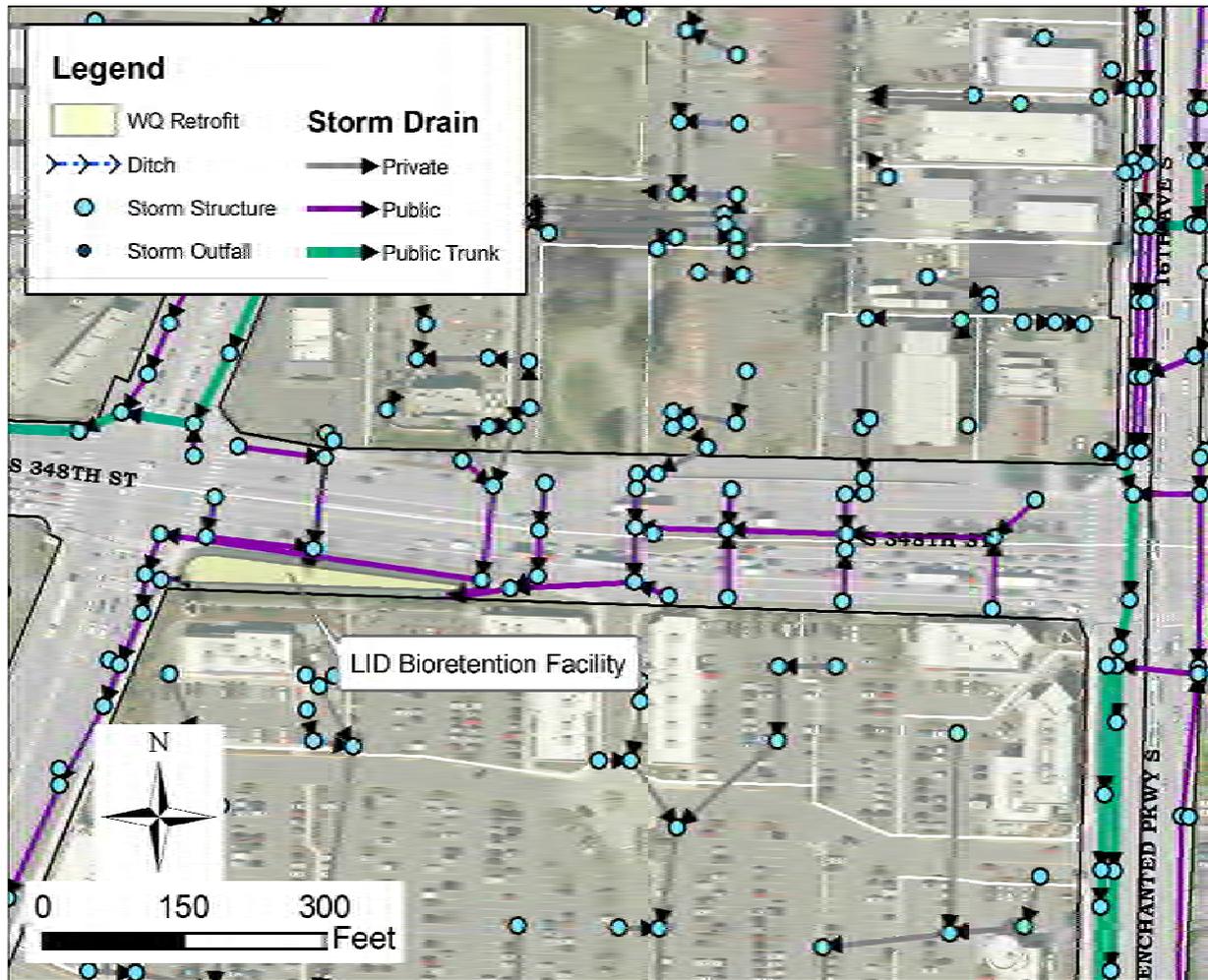
- Water quality treatment
- Improved flow control
- Stormwater education and outreach
- Salmon recovery

Project Facts

- Types of projects include rain gardens, infiltration galleries, plant based filtration and mechanical water quality treatment
- The retrofit projects will serve as a proof of concept for future LID integration into development standards
- Many LID elements can be incorporated into future “Green Streets” projects to enhance transportation projects



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 160,000
Design Grant Funding (Department of Ecology)	\$ (160,000)
Construction Subtotal	\$ 2,036,700
Construction Grant Funding (Department of Ecology)	\$ (1,527,525)
Total	\$ 509,175



Site 1 – Bioretention at S 348th St and Pacific Highway

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering design	1	EA	\$ 160,000	\$ 160,000
3	Design Subtotal				\$ 160,000
Construction Items					
4	Site 1 - Bioretention at S 348th St and Pacific Highway	1	EA	\$ 475,000	\$ 475,000
5	Site 2 - Bioretention at S 312th St/Steel Lake	1	EA	\$ 1,045,000	\$ 1,045,000
6	Site 3 - Bioretention at City Hall	1	EA	\$ 280,000	\$ 190,000
7	Site 4 - StormFilter Units at S 304th St	1	EA	\$ 150,000	\$ 150,000
8	Washington State Sales Tax (9.5%)				\$ 176,700
9	Construction Subtotal				\$ 2,036,700
10	Total				\$ 2,196,700

Project 10: Bridges Property Culvert Removal and Replacement

Project Location: Former Bridges Property, located off of 8th Ave S north of S 373rd St



Culvert Removal and Replacement

This project will remove multiple 12” diameter culverts on the main branch of the North Fork of West Hylebos Creek and a single 48” diameter culvert underneath 8th Ave S. The 12” culverts will be replaced with a foot bridge to maintain access to the existing trail system. The 48” culvert will be replaced with a box culvert sized for hydraulic conveyance and fish passage. The 12” culverts present a significant obstacle for fish migration, while the 48” culvert presents a flooding hazard. SWM maintenance crews visit the 48” culvert multiple times each year to remove debris and prevent washout of 8th Ave S.

Project Category: Restoration

Land Acquisition: None Required

Project Benefits

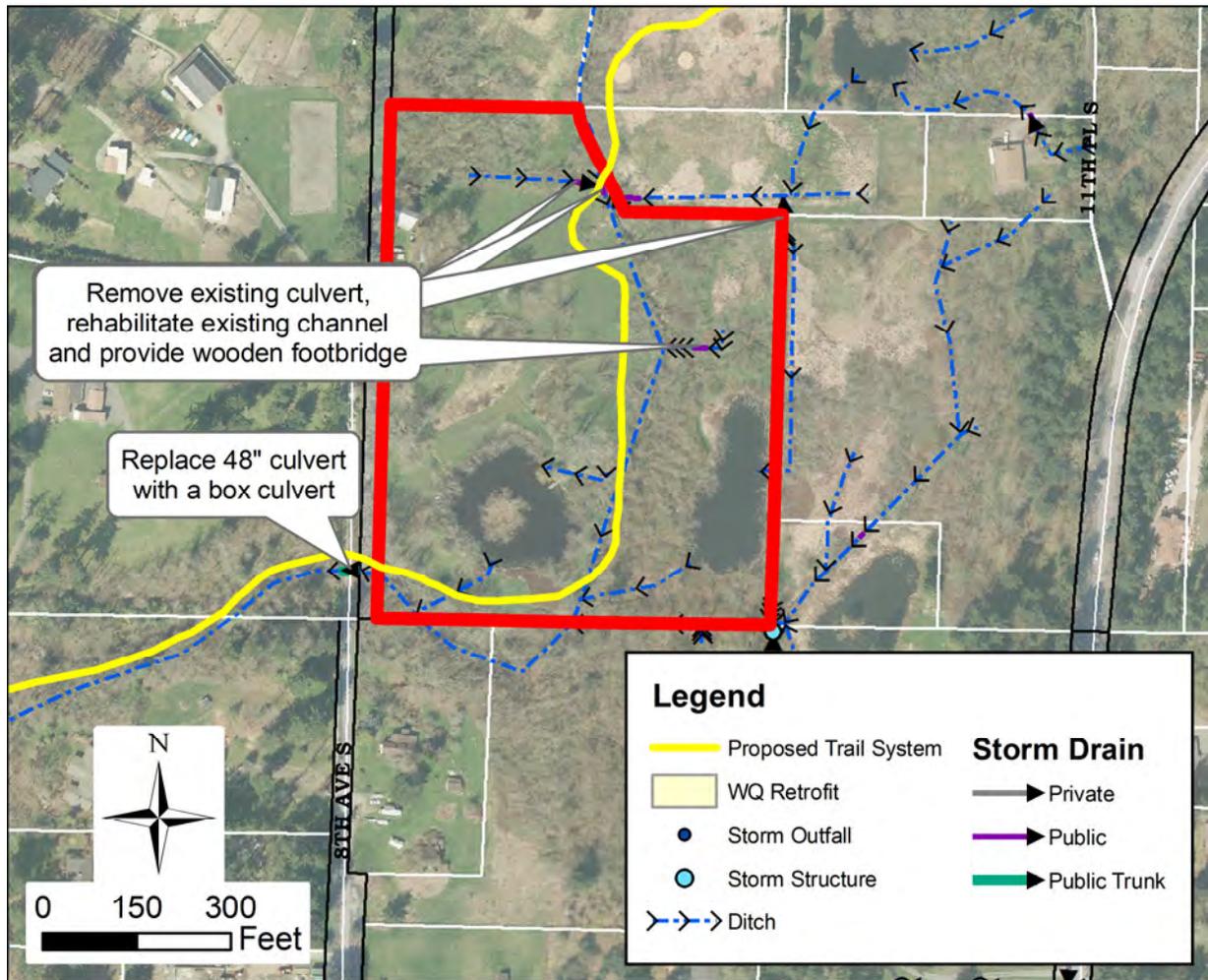
- Flood prevention/Infrastructure protection
- Improved fish passage and access to upstream spawning and rearing habitat
- Improved foot travel and potential access for future trails opportunities.

Project Facts

- The Bridges property features two ponds and a number of stream channels in the wetland complex ideal for fish habitat
- The City recently acquired the Bridges property in partnership with the King County Conservation Futures Grant
- WSDOT mitigated a similar property just north of the Bridges Property as part of the Interstate 5/SR 161/SR 18 Interchange Improvements



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 35,660
Construction Subtotal	\$ 275,110
Grant Funding	\$ (233,078)
Total	\$ 77,693



Bridges Property Culvert Removal and Replacement

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Geotechnical analysis/Design	1	EA	\$ 30,000	\$ 30,000
2	Survey (3%)	1	EA	\$ 5,660	\$ 5,660
3	Design Subtotal				\$ 35,660
Construction Items					
4	Mobilization (10%)	1	EA	\$ 18,860	\$ 18,860
5	12" culvert removal	176	LF	\$ 50	\$ 8,800
6	48" culvert removal	36	LF	\$ 70	\$ 2,520
7	Clearing and grubbing/site prep for new culvert and foot bridges	1	EA	\$ 2,000	\$ 2,000
8	New foot bridge	5	EA	\$ 5,000	\$ 25,000
9	Temporary culvert bypass	1	EA	\$ 3,000	\$ 3,000
10	Excavation (including Haul costs)	360	CY	\$ 20	\$ 7,200
11	Pre-cast box culvert (20'x35'x8' 4-sided box with 5' headwall) and installation	1	EA	\$ 120,000	\$ 120,000
12	Riprap, bank run gravel, culvert backfill	1	LS	\$ 10,000	\$ 10,000
13	Backfill, base course, pavement replacement	1	LS	\$ 10,000	\$ 10,000
14	Construction Management	1	EA	\$ 25,000	\$ 25,000
15	Erosion and Sediment Control (10%)	1	EA	\$ 18,860	\$ 18,860
16	Washington State Sales Tax (9.5%)				\$ 23,870
17	Construction Subtotal				\$ 275,110
18	Total				\$ 310,770

Project 11: West Hylebos Educational Center and Trail

Project Location: Former Brook Lake Community Center at the northwest corner of S 356th Street and Pacific Highway 99



Headwaters Educational Facility and Restoration Site

This project would result in the conversion of a portion of the Brook Lake Community center site into an education and outreach center focused on stormwater education and environmental stewardship. The site will provide a trailhead location for the expansion of the Hylebos Wetlands Park Trail to the south. This will be a joint project between Surface Water Management and the Parks Department. Both the scope and timing of the project will be highly dependent on grant funding sources.

Project Category: *Flow Control, Water Quality, Education and Outreach*

Land Acquisition: *None Required*

Project Benefits

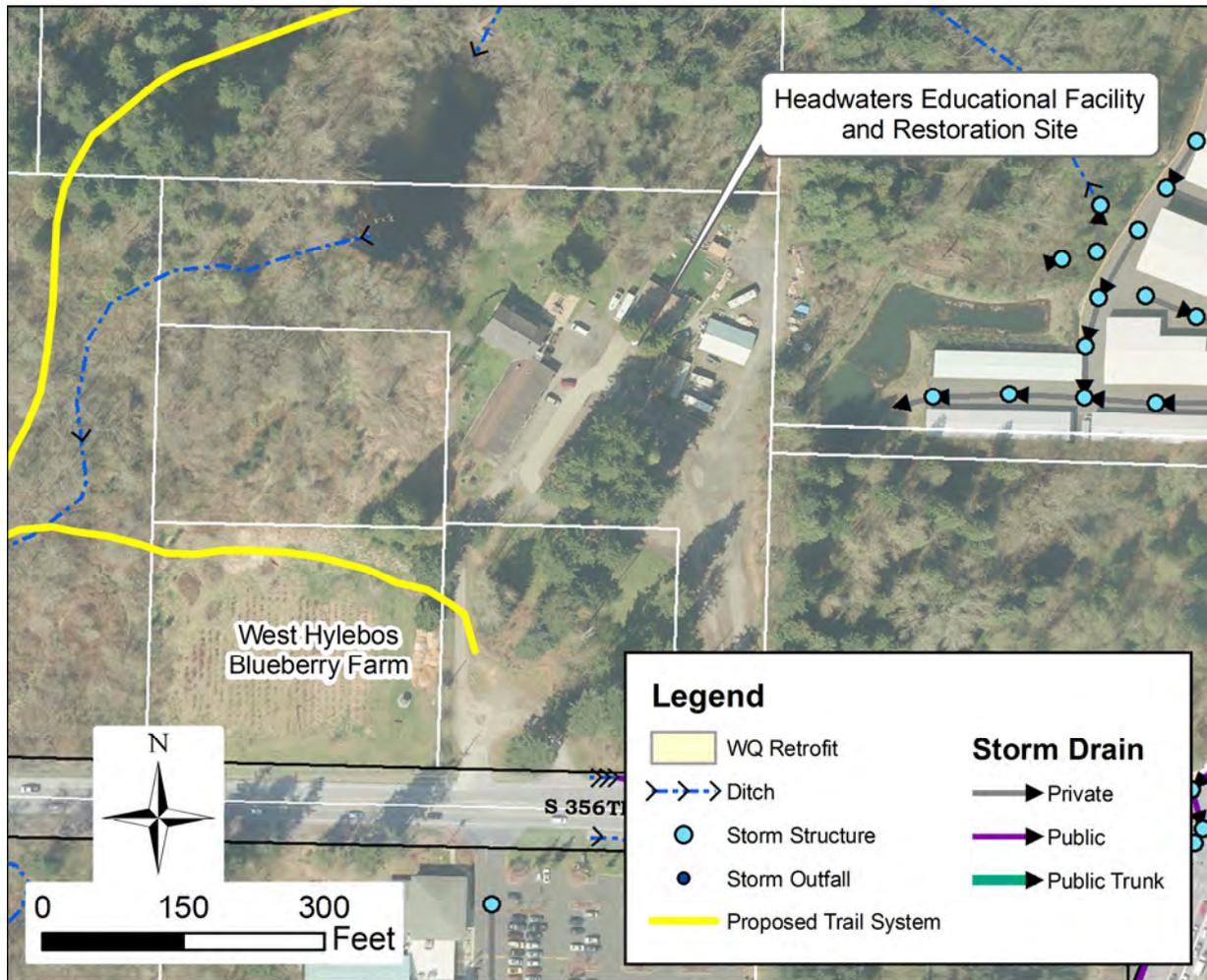
- Stormwater education and outreach
- Trailhead facility location
- Habitat preservation and restoration
- Creation of a new wildlife and outdoor activity destination for City residents

Project Facts

- The Facility site is adjacent to the West Hylebos blueberry farm and northeast of the West Hylebos Wetlands Park
- The existing community center buildings provide at least one existing structure to renovate and create educational displays
- The site will provide excellent parking accommodations for recreation access



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 105,000
Construction Subtotal	\$ 1,231,880
Grant Funding	\$ (1,002,660)
Total	\$ 334,220



West Hylebos Educational Center Facility

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design	1	EA	\$ 60,000	\$ 60,000
2	Survey (5%)	1	EA	\$ 45,000	\$ 45,000
3	Design Subtotal				\$ 105,000
Construction Items					
4	Mobilization (10%)	1	EA	\$ 90,000	\$ 90,000
5	Building conversions/retrofit	1	LS	\$ 300,000	\$ 300,000
6	Entrance driveway and parking lot improvements	1	LS	\$ 500,000	\$ 500,000
7	Educational displays	1	LS	\$ 100,000	\$ 100,000
8	Construction Management (5%)	1	EA	\$ 45,000	\$ 45,000
9	Erosion and Sediment Control (10%)	1	EA	\$ 90,000	\$ 90,000
10	Washington State Sales Tax (9.5%)				\$ 106,880
11	Construction Subtotal				\$ 1,231,880
12	Total				\$ 1,336,880

Project 12: West Hylebos Watershed Trail

Project Location: Spring Valley and Lower West Hylebos Watershed



West Hylebos Watershed Trail

This project will create a nature trail system within the Spring Valley and Lower West Hylebos conservation areas to expand on the existing West Hylebos Wetland Park trails. The trails will better connect the community with the natural environment, provide numerous education and outreach opportunities and encourage environmental stewardship. Similar to the Headwaters Educational Facility, this project would be a joint venture between SWM and the Parks Department. The scope and timing of the project will be highly dependent upon grant funding success.

Project Category: Education and Outreach

Land Acquisition: Required

Project Benefits

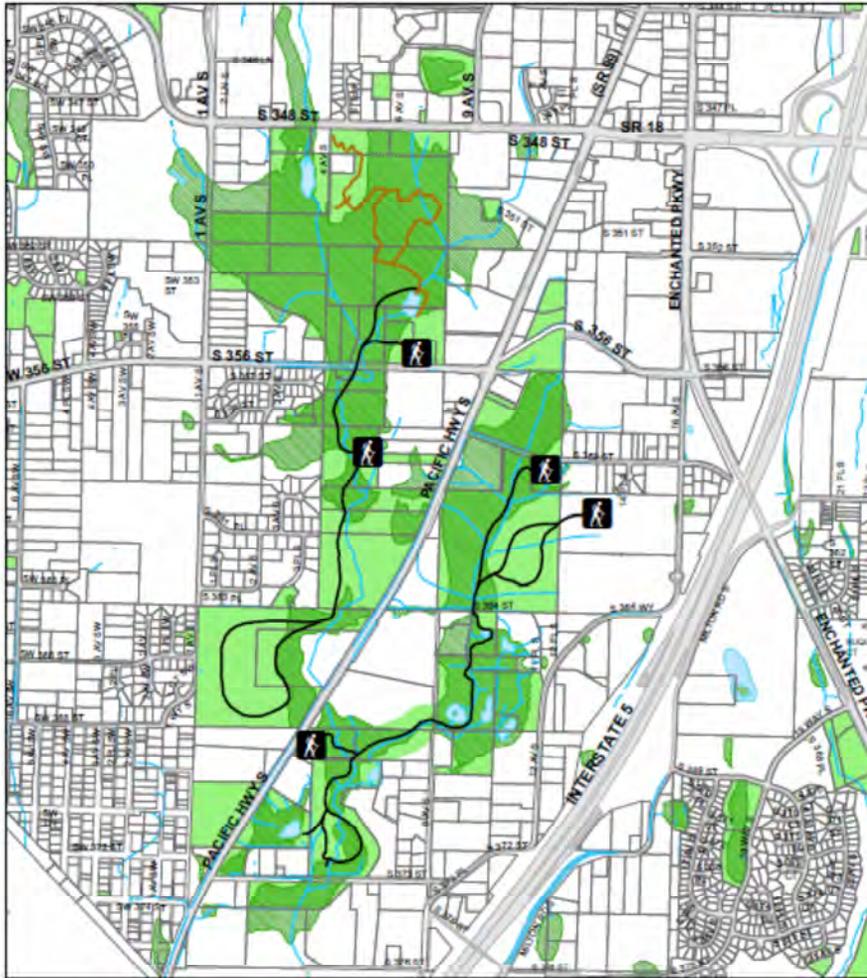
- Stormwater education and outreach
- Preservation/restoration of valuable habitat
- Creation of a new wildlife and outdoor activity destination for City residents

Project Facts

- The project would create nearly three miles of nature trail in vibrant wetland settings
- Four possible trailhead locations would provide nearly unrestricted access to the trail system
- The trail system is an opportunity to display the City’s restoration and conservation efforts in the West Hylebos Watershed



Description	Cost
Property Acquisition Subtotal	\$ -
Design Subtotal	\$ 82,520
Construction Subtotal	\$ 2,716,910
Grant Funding	\$ (2,099,573)
Total	\$ 699,858



Legend

- Proposed Trail Head Location
- Proposed Trail System
- Existing Trails
- Parcels
- Property & Easment Acquisitions
- Streams & Open Conveyance
- Lakes
- Wetlands (1998 City Survey)
- Impervious Surfaces

Map Date: April 2012
 City of Federal Way
 33325 8th Ave S
 Federal Way WA 98003
 (P) (253)-835-7000
 (W) www.cityoffederalway.com



West Hylebos Watershed Trail

Line	Description	Quantity	Units	Unit Cost	Construction Cost
Design Items					
1	Engineering Design/planning (3%)	1	EA	\$ 61,890	\$ 61,890
2	Survey (1%)	1	EA	\$ 20,630	\$ 20,630
3	Design Subtotal				\$ 82,520
Construction Items					
4	Mobilization	1	EA	\$150,000	\$ 150,000
5	Hylebos Trail Clearing and Grubbing	2.5	AC	\$ 10,000	\$ 26,000
6	Hylebos Boardwalk Trail (including foundations, benches, plantings)	2,500	LF	\$ 140	\$ 350,000
7	Hylebos Gravel Trail	5,500	LF	\$ 22	\$ 121,000
8	Spring Valley Trail Clearing and Grubbing	3.2	AC	\$ 10,000	\$ 32,000
9	Spring Valley Boardwalk Trail (including foundations, benches, plantings)	3,500	LF	\$ 140	\$ 490,000
10	Spring Valley Gravel Trail	7,000	LF	\$ 22	\$ 154,000
11	Trailhead Parking areas	4	EA	\$200,000	\$ 800,000
12	Viewing Platforms/educational signage	1	LS	\$ 90,000	\$ 90,000
13	Construction Management (3%)	1	EA	\$ 61,890	\$ 61,890
14	Erosion and Sediment Control (10%)	1	EA	\$206,300	\$ 206,300
15	Washington State Sales Tax (9.5%)				\$ 235,720
16	Construction Subtotal				\$ 2,716,910
17	Total				\$ 2,799,430

Project 13: South 336th Street at Highway 99

Project Location: South 336th Street at Highway 99



S 336th Street Water Quality Facility

The project will acquire a portion of three undeveloped parcels (primarily area encumbered by stream setbacks) along Pacific Highway South north of S 336th Street west of Pacific Highway 99 and construct a bioretention water quality facility. The facility will treat runoff from Pacific Highway and the downtown core area, which is the most heavily developed and utilized part of the City. Detention capacity will be integrated into the facility if possible, but this is a retrofit project intended to provide the most additional water quality treatment possible.

Project Category: Water Quality, Flow Control

Land Acquisition: Required

Project Benefits

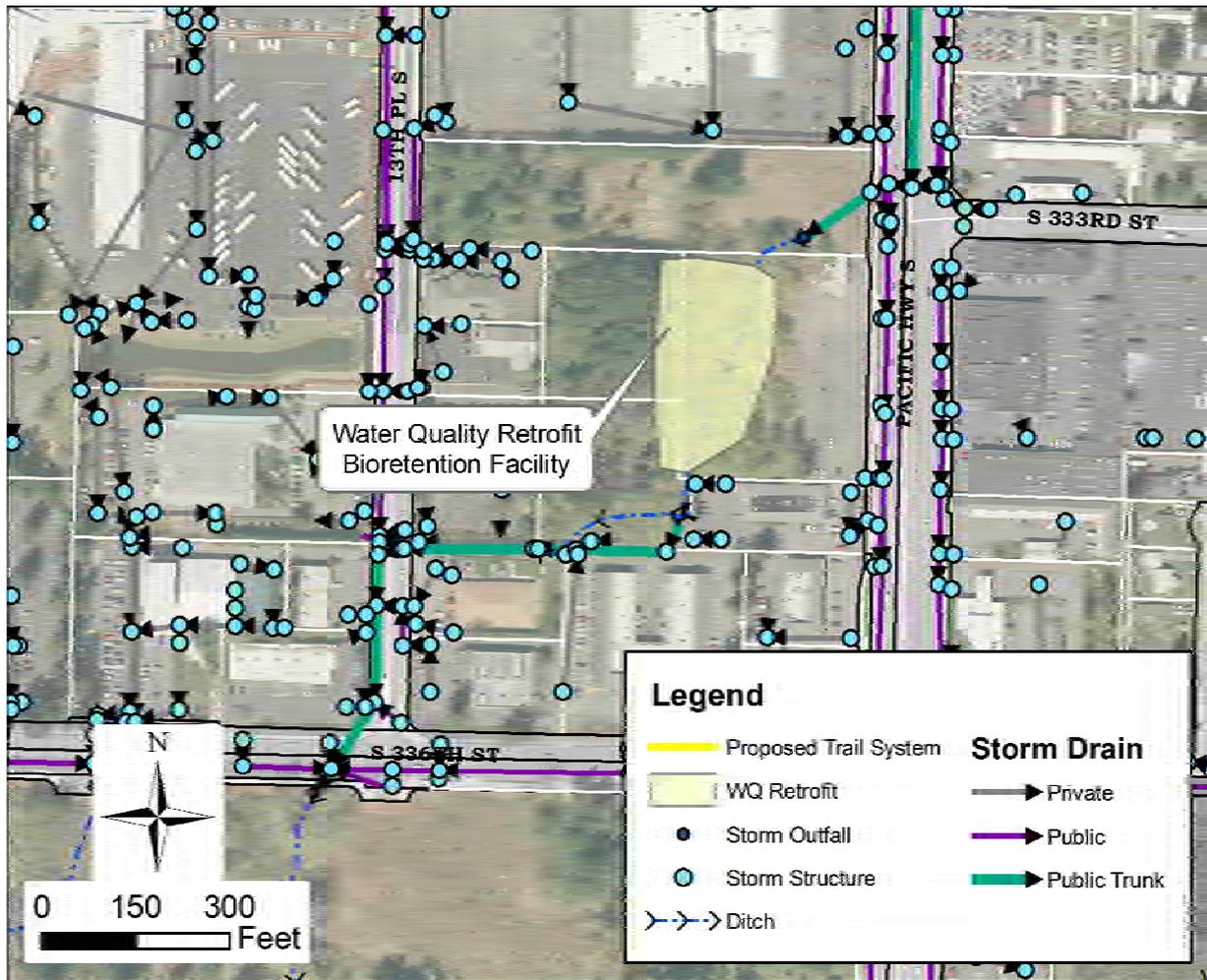
- Water quality treatment
- Added flow control
- Infiltration and groundwater recharge

Project Facts

- The City is nearing completion of a similar project at S 356th Street and Pacific Highway 99
- The City recently completed HOV lane improvements on the segment of Pacific Highway Contributing to the water quality facility
- Treated water from the facility will contribute to the West Hylebos Creek and wetlands complex and add to conservation efforts



Description	Cost
Property Acquisition Subtotal	\$ 634,145
Design Subtotal	\$ 58,815
Construction Subtotal	\$ 1,260,615
Grant Funding	\$ (989,573)
Total	\$ 964,003



S 336th Street Water Quality Facility

Line	Description	Quantity	Units	Assessed Value	Market Value	Construction Cost
Property Acquisition Items						
1	Parcel 1721049047 (55%)	1	EA	\$ 557,755	\$ 557,755	\$ 557,755
2	Parcel 7681900030 (10%)	1	EA	\$ 37,550	\$ 37,550	\$ 37,550
3	Parcel 7681900020 (10%)	1	EA	\$ 38,840	\$ 38,840	\$ 38,840
4	Property Acquisition Total					\$ 634,145
Design Items						
				Unit Price		
5	Engineering Design (5%)	1	EA	\$	49,005	\$ 49,005
6	Survey (1%)	1	EA	\$	9,810	\$ 9,810
7	Design Subtotal					\$ 58,815
Construction Items						
8	Mobilization (10%)	1	EA	\$	98,010	\$ 98,010
9	Bioretention facility	65,340	SF	\$	15	\$ 980,100
10	Construction Management (3%)	1	EA	\$	29,410	\$ 29,410
11	Erosion and Sediment Control (5%)	1	EA	\$	49,005	\$ 49,005
12	Washington State Sales Tax (9.5%)					\$ 104,090
13	Construction Subtotal					\$ 1,260,615
14	Total					\$ 1,953,600