PROPOSED BY: _____

INTRODUCED: 10/11/22

RESOLUTION NO. _____

(A Resolution of the Whatcom County Flood Control Zone District Board of Supervisors)

WHATCOM COUNTY FLOOD CONTROL ZONE DISTRICT SIX-YEAR WATER RESOURCES IMPROVEMENT PROGRAM FOR THE YEARS 2023 THROUGH 2028

WHEREAS, pursuant to RCW 86.15.110, flood control or storm water control improvements may be extended, enlarged, acquired, or constructed by a flood control zone pursuant to a resolution adopted by its Board of Supervisors; and

WHEREAS, Whatcom County Public Works Department on behalf of the Whatcom County Flood Control Zone District has prepared a Six-Year Water Resources Improvement Program for adoption; and

WHEREAS, pursuant to RCW 86.15.120, the Supervisors shall hold a public hearing prior to adopting the resolution; and

WHEREAS, the Six-Year Water Resources Improvement Program attached hereto as Exhibit "A" has been reviewed and determined to be consistent with Whatcom County's comprehensive plan and is consistent with the following plans:

- Lower Nooksack River Comprehensive Flood Hazard Management Plan, October 1999
- Jones Creek Debris Flow Study, March 2004
- WRIA 1 Salmon Recovery Plan, October 2005
- Birch Bay Comprehensive Stormwater Plan, July 2006
- Lake Whatcom Comprehensive Stormwater Plan, March 2008
- Lake Samish Basin Comprehensive Stormwater Plan, July 2012
- Birch Bay Central North Subwatershed Master Plan, December 2013
- Birch Bay Central South Subwatershed Master Plan, January 2015
- Nooksack River System-Wide Improvement Framework, June 2016

- Birch Point, Terrell Creek Urban Area, and Point Whitehorn Sub-watershed Master Plan, November 2016
- Lake Whatcom Comprehensive Plan: Stormwater Capital Program Update, September 2017
- Lake Whatcom Management Program 2020-2024 Work Plan, July 2020; and
- Lake Whatcom East Geneva Sub-watershed Master Plan, January 2021

WHEREAS, pursuant to RCW 86.15.110, the preliminary engineering studies for constructed improvements are on file with the Whatcom County Public Works Department; and

WHEREAS, pursuant to RCW 86.15.110, the estimated cost of the acquisition or construction of the improvement, together with supporting data, is included in the Six-Year Water Resources Improvement Program; and

WHEREAS, the improvements will benefit one or more flood control zones, subzones and the county as a whole;

NOW, THEREFORE, BE IT RESOLVED by the Whatcom County Flood Control Zone District Board of Supervisors as follows:

That the Whatcom County Flood Control Zone District Six-Year Water Resources Improvement Program for the years 2023 through 2028, which is attached hereto as Exhibit "A", is hereby adopted.

APPROVED this _____ day of _____, 2022.

ATTEST:

Flood Control Zone District Board of Supervisors
WHATCOM COUNTY, WASHINGTON

Dana Brown-Davis, Clerk of the Council

Todd Donovan, Chair

APPROVED AS TO FORM:
/S/ Christopher Quinn
Christopher Quinn, Senior Civil Deputy Prosecuting Attorney
9/26/22 by BT

Item No.	Project Description	Database ID No.	BES	Previous Expenditures		2023			2024			2025			2026			2027			2028			Total
				Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	
LAKE WHATCOM STORMWATER																								
1	**Academy Road Stormwater Improvements:** Evaluate the water quality performance of the existing Academy stormwater system and provide recommended retrofits.	20-005	63.9	$ 60,000 $ 40,000	LWSU REET	PE RW CN CN	$ 130,000 $ 420,000	REET LWSU	PE RW CN CN			PE RW CN CN			PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 650,000
2	**Geneva Bioretention Pilot Project:** Install new water quality treatment media, evaluate the effectiveness and constructability of new water quality treatment media	20-006	63.9	$ 73,500 $ 158,000	LWSU ECY Grant	PE PE RW CN CN CN	$ 645,250 $ 82,000 $ 250,000	ECY Grant LWSU REET	PE PE RW CN CN CN			PE PE RW CN CN CN			PE PE RW CN CN CN			PE PE RW CN CN CN			PE PE RW CN CN CN			$ 1,208,750
3	**Silver Beach Creek Stormwater Improvements Phase 2:** Main channel restoration below Hillsdale using natural vegetation	07-095	60.5	$ 20,000	SW Funds	PE RW CN CN	$ 130,000 $ 20,000	LWSU LWSU	PE RW CN CN	$ 600,000	LWSU	PE RW CN CN			PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 770,000
4	**Eagleridge Stormwater Improvements:** Install a water quality system to treat stormwater from the Eagleridge development.	20-007	61.4			PE RW CN CN	$ 10,000	LWSU	PE RW CN CN	$ 100,000 $ 15,000	REET LWSU	PE RW CN CN	$ 425,000	LWSU	PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 550,000
5	**Austin Court Stormwater Improvements:** Install water quality system on the discharge from Austin Court.	20-008	58.8	$ 10,000	LWSU	PE RW CN CN	$ 80,000 $ 15,000	REET LWSU	PE RW CN CN			PE RW CN CN	$ 260,000 $ 60,000	REET LWSU	PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 425,000
6	**Viewhaven Lane Water Quality & Conveyance Improvements:** Install water quality systems and improve conveyance near Viewhaven Lane.	20-009	58.8			PE RW CN CN	$ 10,000	REET	PE RW CN CN	$ 100,000 $ 15,000	REET REET	PE RW CN CN			PE RW CN CN	$ 350,000	REET	PE RW CN CN			PE RW CN CN			$ 475,000
7	**Strawberry Point/Lake Whatcom Blvd Stormwater Improvements:** System upgrades to improve water quality including vaults, biofiltration swales, and channel restoration	17-001	62.2			PE RW CN CN			PE RW CN CN			PE RW CN CN	$ 65,000 $ 50,000	REET REET	PE RW CN CN	$ 140,000	REET	PE RW CN CN	$ 455,000 $ 200,000	LWSU REET	PE RW CN CN			$ 910,000
8	**Geneva Street & Lake Louise Road Culvert Replacement:** Replace culverts along Geneva Street and Lake Louise Road to improve water quality and conveyance	20-010	58.8			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN	$ 40,000 $ 30,000 $ 10,000	REET Road Funds Road Funds	PE PE RW CN			PE PE RW CN	$ 200,000	REET	$ 280,000
9	**Lake Whatcom Blvd Media Filter Drain (EG-1):** Install media filter drain or other water quality system along west side of Lake Whatcom Blvd to improve water quality.	22-006	58.8			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN	$ 100,000 $ 25,000	LWSU LWSU	PE RW CN	$ 80,000	LWSU	PE PE RW CN	$ 630,000	LWSU	$ 835,000
10	**Sudden Valley Stormwater Improvement No. 2:** Construct drainage system upgrades and tetrofits in the Sudden Valley area of the Lake Whatcom watershed.	22-007	49.0			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN	$ 10,000	LWSU	PE PE RW CN	$ 170,000 $ 10,000	LWSU REET	PE PE RW CN			$ 190,000
11	**Lake Whatcom Boulevard Water Quality Vault (EG-4):**Install a water quality system to remove phosphorus and other pollutants from residential runoff prior to entering Lake Whatcom.	22-008	57.1			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN			PE PE RW CN	$ 90,000 $ 25,000	LWSU LWSU	$ 115,000
BIRCH BAY WATERSHED & AQUATIC RESOURCES MNGT. DIST. (BBWARM)																								
12	**Cottonwood Drive Stormwater Inlet Repair:** Repair the eroded berm and place some mitigation measures in the neighborhood to better direct future floodwaters	22-009	44.2	$ 110,000	BBWARM	PE PE RW CN	$ 15,000 $ 5,000 $ 200,000	Fed Grant Fed Grant Fed Grant	PE RW RW CN			PE RW RW CN			PE RW RW CN			PE RW RW CN			PE RW RW CN			$ 330,000
13	**Charel Terrace Stormwater Outfall Repair:** Marine outfall stabilization to protect a bluff slope (emergency repair 2022) and permanent stabilization (2023)	20-011	29.8	$ 10,000 $ 120,000	BBWARM Fed Grant	PE PE RW CN CN	$ 70,000 $ 25,000 $ 400,000 $ 50,000	Fed Grant Fed Grant Fed Grant REET	PE RW RW CN CN			PE RW RW CN CN			PE RW RW CN CN			PE RW RW CN CN			PE RW RW CN CN			$ 675,000
14	**Holeman Avenue Stormwater Improvements (PW-1):** Replace CBs, upsize culverts, re-establish ditch on Holeman Ave near Birch Bay Dr	07-242	37.8	$ 120,000	BBWARM	PE RW CN CN	$ 35,000	REET	PE RW CN CN	$ 750,000 $ 200,000	BBWARM REET	PE RW CN CN			PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 1,105,000
15	**Semiahmoo Drive South & Outfall Improvements (BP-2&5):** Upsize culverts and re-establish roadside ditch on east side of Semiahmoo Drive**.**	18-009 18-010	50.3	$ 144,000 $ 120,000 $ 10,000	BBWARM Fed Grant Road Fund	PE PE RW CN CN	$ 70,000 $ 150,000 $ 30,000	BBWARM Fed Grant REET	PE PE RW CN CN	$ 900,000 $ 300,000	Fed Grant BBWARM	PE RW CN CN			PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 1,724,000
16	**Normar Place Stormwater Improvements (BP-1):** Upsize pipes, replace CBs and install energy dissipater at pipe outfall on Normar Place	19-004	52.0			PE PE RW CN CN	$ 85,000 $ 45,000 $ 20,000	REET BBWARM BBWARM	PE PE RW CN CN	$ 40,000	BBWARM	PE PE RW CN CN	$ 300,000 $ 200,000	BBWARM REET	PE RW CN CN			PE RW CN CN			PE RW CN CN			$ 690,000
17	**Lora Lane Drainage & Tide Gate Modifications (TC1-2):** Replace tide gate structure and repair embankment; install Type 2 CB and culvert under Birch Bay Dr	18-008	42.5	$ 6,000	BBWARM	PE CN CN CN CN	$ 50,000 $ 30,000	BBWARM BBWARM	PE RW CN CN CN			PE RW CN CN CN	$ 150,000	BBWARM	PE RW CN CN CN	$ 400,000 $ 200,000 $ 600,000	BBWARM REET Road Funds	PE RW CN CN CN			PE RW CN CN CN			$ 1,436,000
18	**Birch Point Road and Outfall Improvements (BP-3 & BP-6):** Upsize culverts and replace outfall to the beach to reduce bluff erosion	21-001	33.3			PE RW CN CN	$ 50,000	BBWARM	PE RW CN CN			PE RW CN CN	$ 100,000 $ 50,000	BBWARM BBWARM	PE RW CN CN	$ 500,000	BBWARM	PE RW CN CN			PE RW CN CN			$ 700,000
19	**Richmond Park Stormwater Improvements (SH-2):** Address drainage concerns in Richmond Park by re-routing stormwater down Shintaffer Road to a Birch Bay outfall	22-010	42.5			PE RW CN CN			PE RW CN CN			PE RW CN CN	$ 100,000 $ 80,000	BBWARM BBWARM	PE RW CN CN	$ 150,000 $ 50,000	BBWARM BBWARM	PE RW CN CN	$ 50,000 $ 800,000 $ 200,000	BBWARM BBWARM REET	PE RW CN CN	$ 800,000 $ 200,000	BBWARM REET	$ 2,430,000
20	**Wooldridge Ave & Sunset Drive Stormwater Improvements (TC-2):** Improve drainage system to reduce local flooding and incorporate water quality treatment	13-007	52.2			PE RW CN CN			PE CN CN CN			PE CN CN CN			PE CN CN CN			PE RW CN CN	$ 50,000	BBWARM	PE RW CN CN	$ 100,000	BBWARM	$ 150,000
21	**Hillsdale Stormwater Improvements, Phase 1 (HL-C-1):** Upsize pipes, replace CBs, new drain line, replace blind tees on Morgan, Cottonwood and Birch Bay Dr	19-002	48.6			PE RW CN CN			PE RW CN CN			PE CN CN CN			PE CN CN CN			PE CN CN CN			PE CN CN CN	$ 50,000	BBWARM	$ 50,000
LAKE SAMISH STORMWATER																								
22	**Shallow Shore Culvert Relocation**	18-007	44.4	$ 100,000	REET	PE RW CN	$ 120,000 $ 350,000	REET REET	PE RW CN			PE RW CN			PE RW CN			PE RW CN			PE RW CN			$570,000

Item No.	Project Description	Database ID No.	BES	Previous Expenditures		2023			2024			2025			2026			2027			2028			Total
				Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	Phase	Amount	Source	
	RIVER & FLOOD																							
23	**Lynden Levee Improvement (718005):** Combine drainages and replace two culverts through levee with one larger culvert; repair 2 damaged levee sites (USACE and SWIF project)	16-003	64.5	$ 352,000	FCZD	PE			PE			PE			PE			PE			PE			Project Total:
				$ 464,000	FbD grant	PE			PE			PE			PE			PE			PE			$ 1,934,000
				$ 20,000	City of Lynden	CN			CN			CN			CN			CN			CN			(See Note 1)
				42000	FEMA	CN			CN			CN			CN			CN			CN			FCZD Total:
						CN	$ 2,500	FCZD	CN			CN			CN			CN			CN			$ 565,000
24	**Everson Overflow Pipeline Bank Stabilization (720009):** Stabilize bank at erosion site from 2020 flood at pipeline crossing	20-002	66.3	$ 22,000	FCZD	PE	$ 125	FCZD	PE			PE			PE			PE			PE			Project Total:
				$ 187,000	FEMA/State	PE	$ 4,750	FEMA/State	PE			PE			PE			PE			PE			$ 1,517,125
				$ 125	Pipeline	PE	$ 125	Pipeline	PE			PE			PE			PE			PE			
						CN	$ 32,000	FCZD	CN	$ 2,000	FCZD	CN			CN			CN			CN			FCZD Total:
						CN	$ 1,216,000	FEMA/State	CN	$ 20,000	FEMA	CN			CN			CN			CN			$ 24,000
						CN	$ 32,000	Pipeline	CN	$ 1,000	State	CN			CN			CN			CN			
25	**Marine Drive Levee Repair (720004):** Repair crest and backslope flood damage	20-001	61.4	$ 49,000	FCZD	PE			PE			PE			PE			PE			PE			Project Total:
				$ 51,000	FEMA	PE			PE			PE			PE			PE			PE			$ 1,201,000
				$ 3,000	State	CN	$ 53,000	FCZD	CN	$ 2,000	FCZD	CN			CN			CN			CN			FCZD Total:
						CN	$ 1,007,000	FEMA/State	CN	$ 36,000	FEMA/State	CN			CN			CN			CN			$ 104,000
26	**Truck Road Bank Stabilization (720008):** Phase 1 emergency construction in 2022 and Phase 2 road rehab and environmental mitigation in 2023	20-003	59.4	$ 38,000	FCZD	PE	$ 300	FCZD	PE			PE			PE			PE			PE			Project Total
				$ 1,364,000	FEMA	PE	$ 11,000	FEMA/State	PE			PE			PE			PE			PE			$ 4,267,000
				$ 76,000	State	PE	$ 300	Roads	PE			PE			PE			PE			PE			
				$ 38,000	Roads	CN	$ 66,000	FCZD	CN	$ 5,000	FCZD	CN			CN			CN			CN			FCZD Total
						CN	$ 2,524,000	FEMA/State	CN	$ 74,000	FEMA/State	CN			CN			CN			CN			$ 109,000
						CN	$ 66,000	Roads	CN	$ 4,000	Roads	CN			CN			CN			CN			
27	**Jones Creek Debris Flow Risk Reduction (712004):** Construct deflection berms and realign roadway	07-105	70.6	$ 3,344,000	FCZD	PE	$ 22,000	FCZD	PE			PE			PE			PE			PE			
				$ 350,000	FEMA/State grant	PE	$ 8,000	Roads	PE			PE			PE			PE			PE			Project Total:
				$ 1,541,000	FbD grant	RW	$ 1,000	FCZD	RW			RW			RW			RW			RW			$ 10,675,000
						RW	$ 4,000	FbD grant	CN			CN			CN			CN			CN			
						CN	$ 1,477,000	FCZD	CN			CN			CN			CN			CN			FCZD Total:
						CN	$ 3,680,000	FbD grant	CN			CN			CN			CN			CN			$ 4,854,000
						CN	$ 208,000	Roads	CN			CN			CN			CN			CN			
						CN	$ 30,000	Utilities	CN	$ 10,000	FCZD	CN			CN			CN			CN			
28	**Hudson Rd Bridge No. 132 Repair (722006):** Repair Nov 2021 damages to bridge approaches	22-001	38.9			PE	$ 500	FCZD	PE			PE			PE			PE			PE			Project Total:
						PE	$ 9,500	FEMA/State	PE			PE			PE			PE			PE			$ 135,000
						CN	$ 12,000	FCZD	CN	$ 500	FCZD	CN			CN			CN			CN			FCZD Total
						CN	$ 103,000	FEMA/State	CN	$ 9,500	FEMA/State	CN			CN			CN			CN			$ 13,000
29	**Timon Levee USACE Rehabilitation (722001):** USACE to repair Nov 2021 flood damages.	22-002	64.5			PE			PE			PE			PE			PE			PE			Project Total:
						CN			CN			CN			CN			CN			CN			$ 607,500
						CN			CN			CN			CN			CN			CN			(See Note 1)
						CN	$ 245,000	FCZD	CN			CN			CN			CN			CN			FCZD Total
						CN	$ 25,000	LE Subzone	CN			CN			CN			CN			CN			$ 245,000
30	**Upper Hampton USACE Levee Rehabilitation (722008):** USACE to repair Nov 2021 flood damages.	22-004	58.7			PE			PE			PE			PE			PE			PE			Project Total:
						CN			CN			CN			CN			CN			CN			$ 258,750
						CN			CN			CN			CN			CN			CN			(See Note 1)
						CN	$ 90,000	FCZD	CN			CN			CN			CN			CN			FCZD Total
						CN	$ 25,000	LE Subzone	CN			CN			CN			CN			CN			$ 90,000
31	**Jones Creek Revetment Repair (722004):** Repair Nov 2021 flood damages to riprap revetment upstream of bridge	22-003	55.3	$ 500	FCZD	PE	$ 500	FCZD	PE			PE			PE			PE			PE			Project Total:
				$ 9,800	FEMA/State	PE	$ 7,000	FEMA/State	PE			PE			PE			PE			PE			$ 120,800
						CN	$ 5,000	FCZD	CN	$ 500	FCZD	CN			CN			CN			CN			FCZD Total
						CN	$ 88,000	FEMA/State	CN	$ 9,500	FEMA/State	CN			CN			CN			CN			$ 6,500
32	**Cougar Creek Early Action/Neevel Levee Improvement (720010):** Stabilize oversteepened section of levee (SWIF project) with new flood gate and restoration (FLIP project)	16-008	59.4	$ 77,000	FCZD	PE	$ 11,000	FCZD	PE			PE			PE			PE			PE			Project Total:
				$ 117,000	NOAA grant	PE	$ 12,000	FbD grant	PE			PE			PE			PE			PE			$ 2,029,000
				$ 77,000	FbD grant	PE			RW			RW			RW			RW			RW			
						RW			CN	$ 288,000	FCZD	CN			PE			PE			PE			
						CN	$ 12,500	FCZD	CN	$ 386,000	EQUIP	CN	$ 11,000	FCZD	CN			CN			CN			FCZD Total:
						CN	$ 40,000	FbD grant	CN	$ 953,000	FbD grant	CN	$ 44,000	FbD	CN			CN			CN			$ 400,000
33	**Abbott Levee Protection and Improvement (718010):** Interim erosion protection measures for levee & road (Ph. 1); Extend and realign upstream end of levee (Ph. 2 - SWIF project)	16-007	70.4	$ 754,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE			PE			PE			Project Total:
				$ 564,000	Roads	PE	$ 25,000	Roads	PE	$ 25,000	Roads	PE	$ 25,000	Roads	PE			PE			PE			$ 3,843,000
						RW			RW	$ 37,500	FCZD	CN	$ 1,000,000	FCZD	CN			CN			CN			FCZD Total:
						RW			RW	$ 37,500	Roads	CN	$ 1,300,000	Roads	CN			CN			CN			$ 1,892,000
34	**Bertrand Creek Levee Stabilization (721002):** Restore right and left levee prisms and install bank protection (SWIF project)	16-005	54.4	$ 7,000	FCZD	PE			PE	$ 20,000	FCZD	PE	$ 35,000	FCZD	PE			PE			PE			Project Total:
						CN			CN			CN	$ 225,000	FCZD	CN			CN			CN			$ 312,000
						CN			CN			CN	$ 25,000	DD#4?	CN			CN			CN			
35	**Devries Levee Improvements:** Widen and establish full crest width and backslope levee (SWIF project)	19-001	49.3			PE			PE	$ 10,000		PE	$ 25,000		PE			PE			PE			Project Total:
						CN			CN			CN	*$ 200,000*		CN			CN			CN			$ 235,000
36	**Ferndale Levee Improvement (719008):** Reconstruct and realign Ferndale and Treatment Plant Levees to improve level of protection and address deficiencies	07-104	68.9	$ 131,000	FCZD	PE	$ 65,000	FCZD	PE	$ 60,000	FCZD	PE	*$ 50,000*		PE	*$ 50,000*		PE	*$ 50,000*		PE			Construction
				$ 496,000	FbD grant	PE	$ 260,000	FbD grant	PE	$ 240,000	FbD grant	RW			RW			RW			RW			Expected
						RW			RW	*$ 100,000*	*FCZD*	CN			CN			CN			CN			
						CN			CN			CN	*$ 2,000,000*		CN	*$ 5,000,000*		CN	*$ 1,000,000*		CN			in 2025-27
37	**Glacier-Gallup Alluvial Fan Restoration (718007):** Remove all or part of Glacier Creek levee and construct setback levee along Gallup Creek. Interim revetment fix in 2023	18-006	88.9	$ 165,000	FCZD	PE	$ 55,000	FCZD	PE	$ 40,000	FCZD	PE	$ 40,000	FCZD	PE	$ 20,000	FCZD	PE			PE			Construction
				$ 556,000	FbD grant	PE	$ 100,000	FbD grant	PE	$ 160,000	FbD grant	PE	$ 160,000	FbD grant	PE	$ 80,000	FbD grant	PE			PE			Expected
						RW			RW	*$ 100,000*	FCZD	RW	*$ 100,000*	FCZD	RW			RW			RW			in
						RW			RW	*$ 400,000*	FbD grant	RW	*$ 400,000*	FbD grant	RW			RW			RW			2027-2028
						CN	$ 210,000	FCZD	CN			CN			CN			CN	*$ 4,000,000*		CN			
						CN	$ 680,000	FbD grant	CN			CN			CN			CN			CN			
38	**Dahlberg Wetland Mitigation Site (719006):** Develop advanced mitigation site for future impacts from Flood and Road projects (likely phased implementation as projects are permitted)	20-004	66.3	$ 885,000	FCZD	PE	$ 15,000	FCZD	PE	*$ 240,000*	FCZD	PE	*$ 100,000*		PE			PE	*$ 100,000*		PE			Project Total:
						CN			CN			CN			CN	*$ 1,000,000*		CN			CN	*$ 500,000*		*$ 2,840,000*
						CN			CN			CN			CN			CN			CN			
39	**Upper Hampton Levee Improvements:** Widen levee crest and flatten backslope at two sites and seepage at retaining wall deficienies(SWIF project)	16-006	70.4	$ 6,000	LE Subzone	PE	$ 5,000		PE			PE			PE			PE			PE			Project Total:
					Under Lynden project	RW			RW			RW			RW			RW			RW			$ 236,000
						CN	$ 25,000		CN			CN			CN	*$ 200,000*		CN			CN			
40	**Floodplain Acquisition:** Acquire key properties for future levee reconfiguration to reduce risk and improve habitat (may include land for Glacier-Gallup depending on timing of purchase)	07-002	79.6	$ 300,000	FCZD	RW	$ 1,600,000	FCZD	RW	*$ 5,000,000*		RW	*$ 5,000,000*		RW			RW			RW			
				$ 828,000	FbD grant	RW	$ 1,280,000	FbD grant	RW			RW			RW			RW			RW			
41	**Marietta Acquisition:** Acquire properties in repetitive flood loss area and remove structures	07-002	79.6	$ 663,000	FCZD	RW			RW			RW			RW			RW			RW			Total through '21
				$ 1,044,000	FEMA/State	RW	$ 100,000		RW	$ 100,000		RW	$ 100,000		RW	$ 100,000		RW	$ 100,000		RW			$ 1,852,000
				$ 145,000	ESRP grant	CN	$ 25,000		CN	$ 25,000		CN	$ 25,000		CN	$ 25,000		CN	$ 25,000		CN			FCZD Total:
						CN			CN			CN			CN			CN			CN			$ 663,000
42	**High Creek Sediment Trap (720005):** Annual clean out of sediment traps	22-005	58.8	$ 67,000	FCZD	CN			CN			CN			CN			CN			CN			FCZD Total thru '23
				$ 99,000	FEMA/State	CN	$ 115,000	FCZD	CN	*$ 120,000*	*FCZD*	CN	*$ 125,000*	*FCZD*	CN	*$ 130,000*	*FCZD*	CN	*$ 135,000*	*FCZD*	CN	*$ 140,000*	*FCZD*	$ 182,000
43	**Emergency/New Projects:** Typically repair projects that result from new damage, as needed	08-003	Varies			PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	PE	$ 25,000	FCZD	
						RW			RW			RW			RW			RW			RW			Total/year:
						CN	$ 50,000	Local sponsor	CN	$ 50,000	Local sponsor	CN	$ 50,000	Local sponsor	CN	$ 50,000	Local sponsor	CN	$ 50,000	Local sponsor	CN	$ 50,000	Local sponsor	$ 425,000
						CN	$ 350,000	FCZD	CN	$ 350,000	FCZD	CN	$ 350,000	FCZD	CN	$ 350,000	FCZD	CN	$ 350,000	FCZD	CN	$ 350,000	FCZD	

NOTES

Numbers in *italics* are placeholders for projects still being conceived.

Previous expenditures includes work contracted in 2022 that will continually appropriate into 2023.

Note 1: Estimated total project cost includes work done by U.S. Army Corps of Engineers (USACE) and funded directly by USACE.

Academy Road Stormwater Improvements
Database ID No. 20-005

Construction Funding Year(s): **2023**

Project Narrative:

Whatcom County and the City of Bellingham jointly developed this project to improve water quality from the Academy sub-basin of the Lake Whatcom Watershed. This project, originally constructed during the summer of 2015, will undergo an evaluation and perform recommended modifications to improve phosphorus removal. City of Bellingham will adopt the facility after the evaluation and improvements.

Project Status:

Design is occuring in 2021-2022 and construction scheduled to take place in the summer of 2023.

Total Estimated Project Cost: $650,000

Geneva Bioretention Pilot Project
Database ID No. 20-006

Construction Funding Year(s): **2023**

Project Narrative:

This project will utilize a Washington State Department of Ecology grant to install and monitor the performance of new bioretention soil media. The existing swales are approaching the end of the media's effective life. New media will be required to replace the existing depleted media in the near future.

A portion of the existing swales will be used to test the new media, which is designed to reduce the amount of phosphorus and other pollutants entering the lake. Preliminary testing has shown the new media is much more effective in removal of phosphorus than more traditional media. If tests show significant improvement over the original media, the media will be adopted as a Best Management Practice (BMP) and be included in the updated WDOE Stormwater Manual.

Project Status:

Design is occurring in 2021-2022, construction in 2023, and monitoring performance in 2024-2026.

Total Estimated Project Cost: $1,208,750 (without monitoring costs)

Silver Beach Creek Phase 2
Database ID No. 07-095

Construction Funding Year(s): **2024**

Project Narrative:

This project will address the stream bank erosion found on Silver Beach Creek and other tributaries. The project will reduce the amount of erosion and bank material that has been generally associated with the sediment-laden phosphorus loading to Lake Whatcom. The project will reconfigure approximately 950 linear feet of stream channels with a more stable cross-section to reduce erosion and the export of sediment.

Project Status:

Design is anticipated to occur in 2022-23 and construction scheduled to take place in 2024.

Total Estimated Project Cost: $770,000

Eagleridge Stormwater Improvements
Database ID No. 20-007

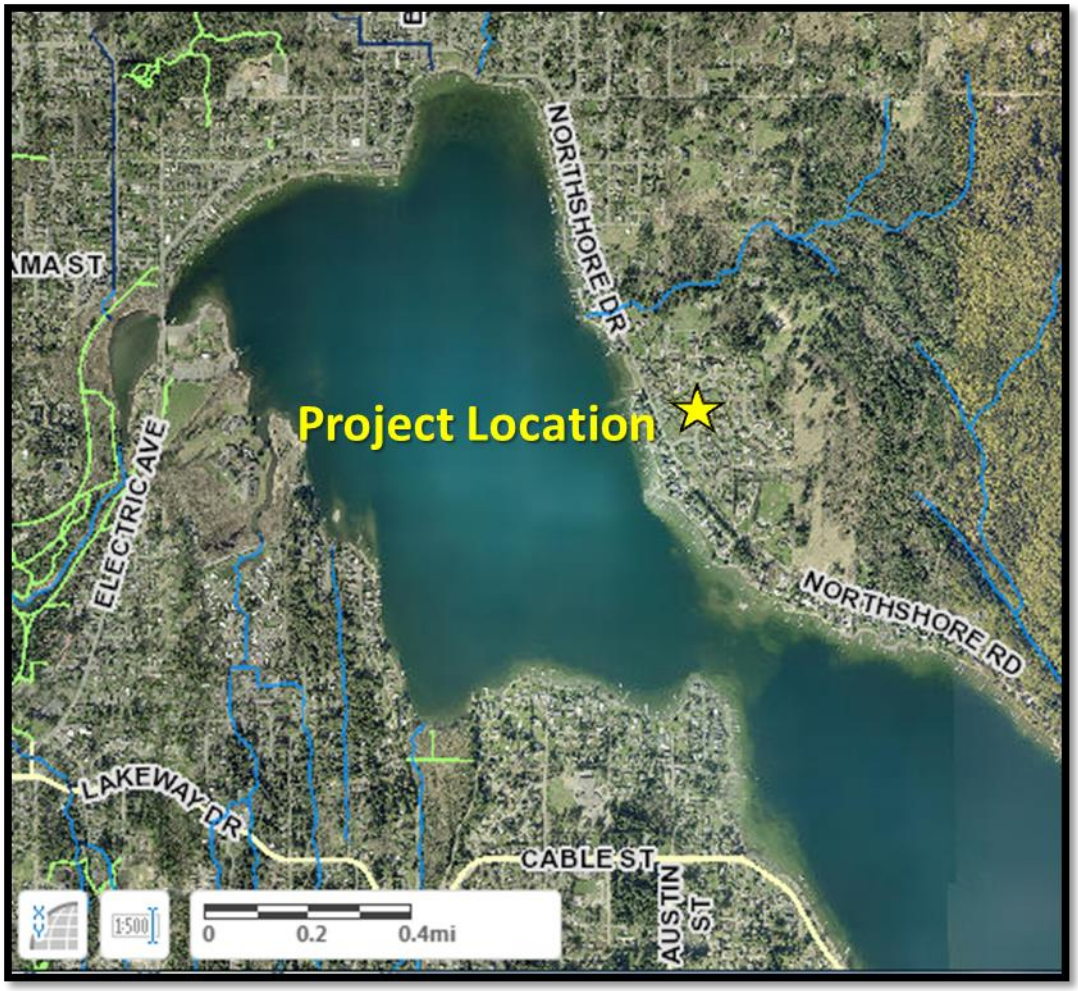
Construction Funding Year(s): **2025**

Project Narrative:
This project includes the installation of a water quality treatment facility associated with the Eagleridge neighborhood in the Lake Whatcom watershed. The Eagleridge development is approximately 34 acres and runoff from this development will be routed through a water quality facility to help remove sediments and phosphorus before entering Lake Whatcom.

Project Status:

Design is anticipated in 2023-2024 and construction scheduled to take place in 2025.

Total Estimated Project Cost: $550,000



Austin Court Stormwater Improvements
Database ID No. 20-008

Construction Funding Year(s): **2025**

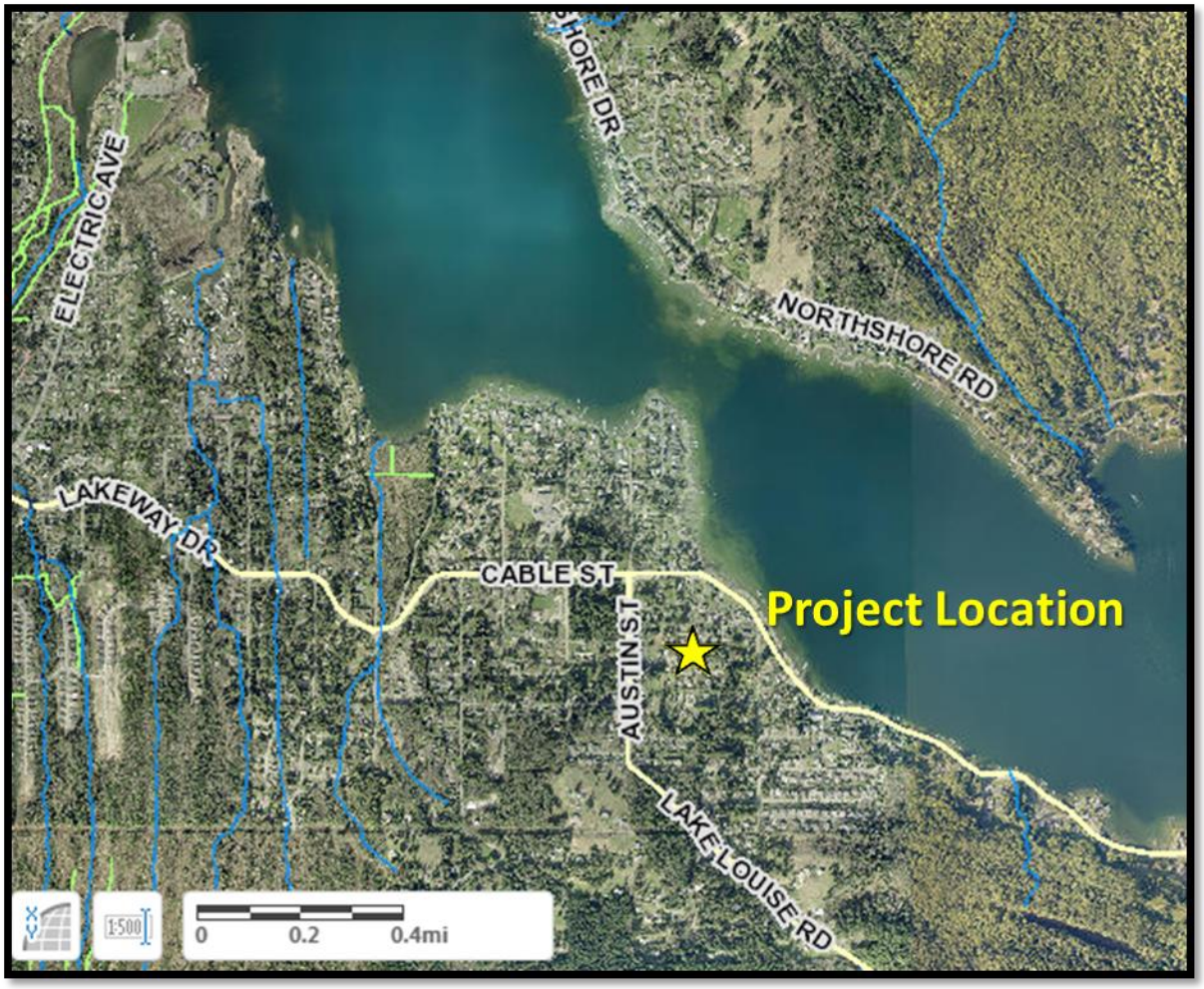
Project Narrative:

This project includes the installation of a large filter vault to improve water quality in the existing Austin Court stormwater system. The tributary area is approximately three acres and the water quality system will remove sediments and phosphorus prior to entering Lake Whatcom.

Project Status:

Design is anticipated in 2022-2023 and construction scheduled to take place in 2025.

Total Estimated Project Cost: $425,000



Viewhaven Lane Water Quality & Conveyance Improvements
Database ID No. 20-009

Construction Funding Year(s): **2026**

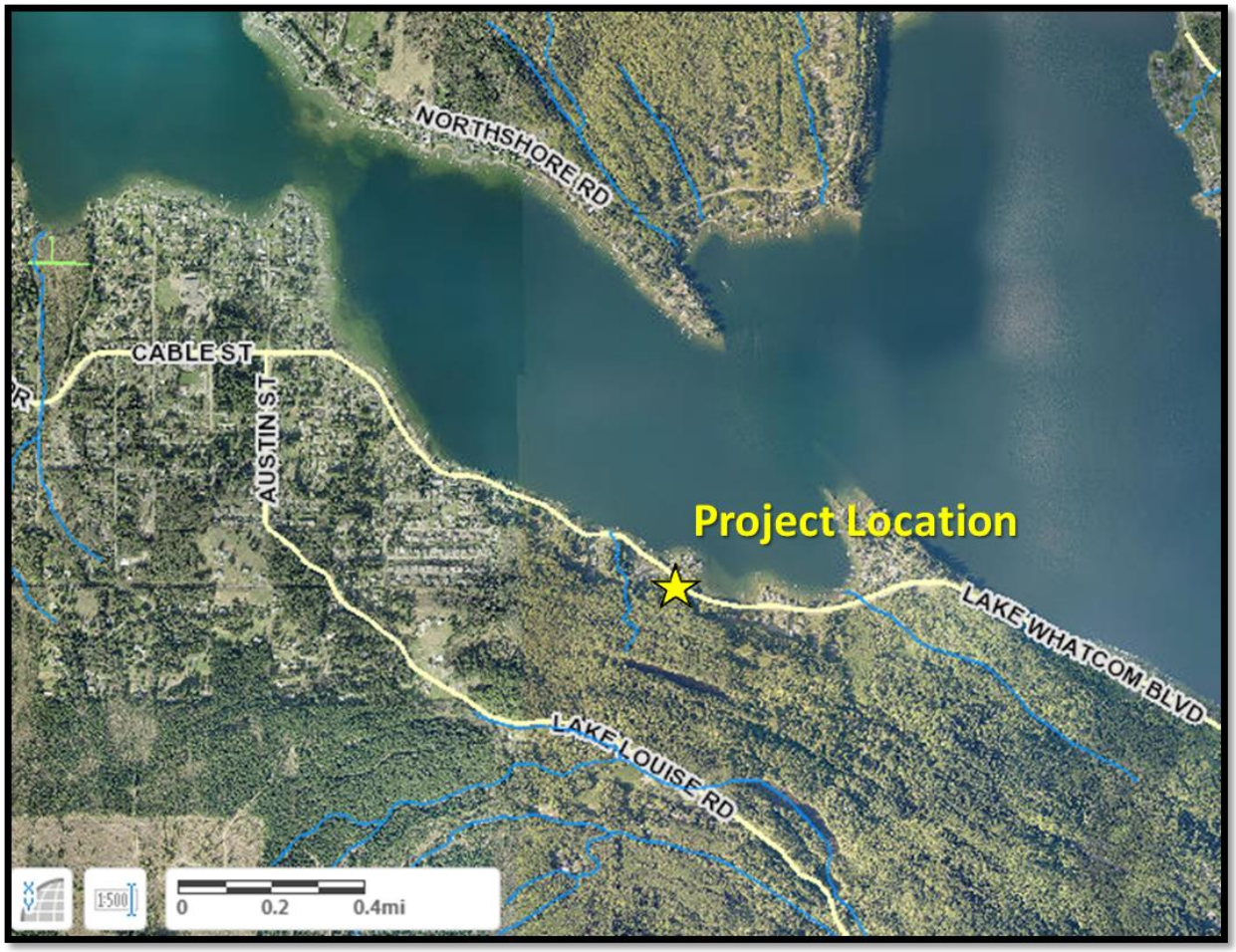
Project Narrative:

This project will improve conveyance and water quality near Viewhaven Lane and Lake Whatcom Blvd intersection. Project will include approximately 100 linear feet of conveyance improvements by replacing two undersized culverts and regrading a ditch. The project will also install approximately 135 linear feet of water quality facility. Project elements may include: bioinfiltration swales, filter vaults, media filter drains, and rain gardens.

Project Status:

Design is anticipated in 2023-2024 and construction scheduled to take place in 2026.

Total Estimated Project Cost: $475,000



Strawberry Point/ Lake Whatcom Blvd Stormwater Improvements
Database ID No. 17-001

Construction Funding Year(s): **2027**

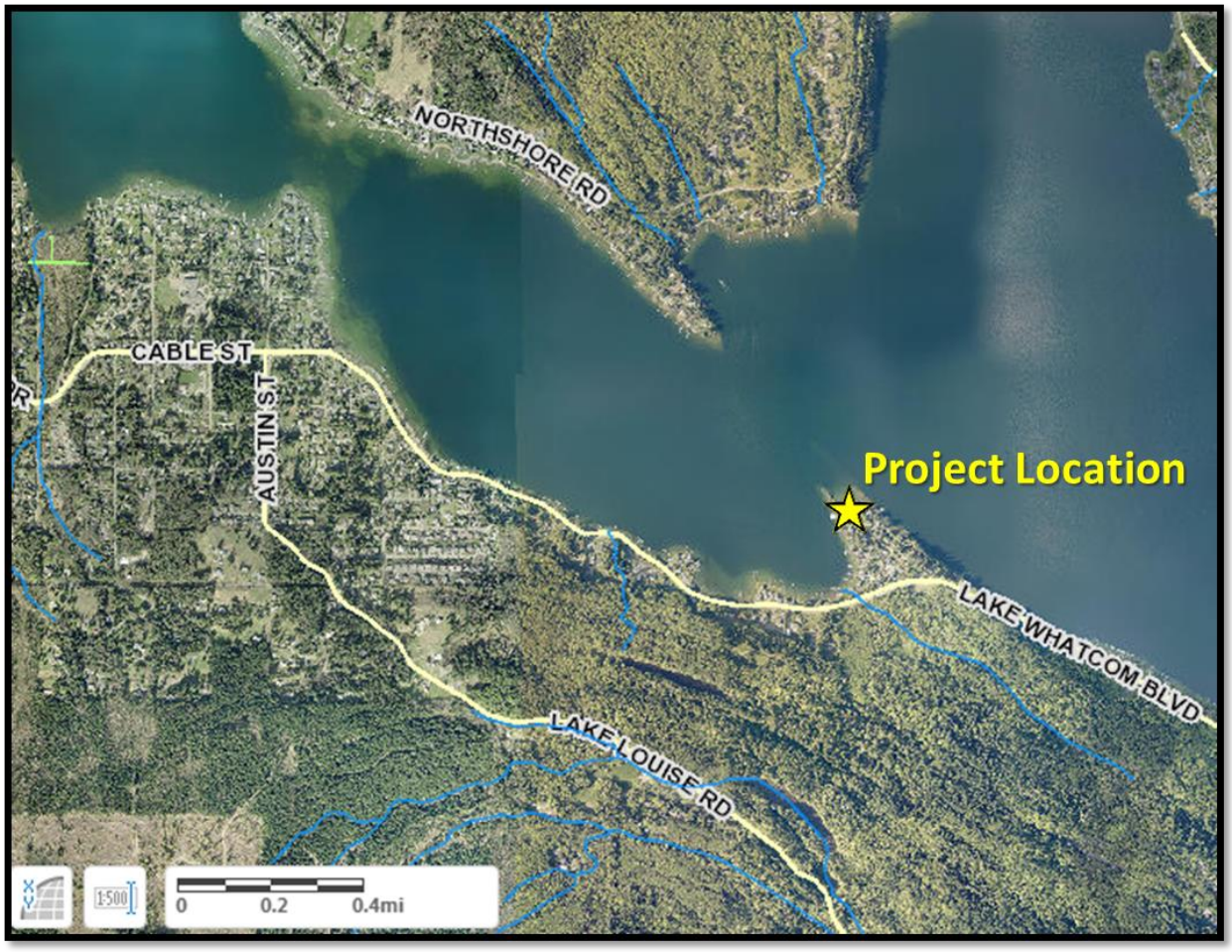
Project Narrative:

This project will involve the installation of a water quality facility to treat approximately three acres of residential area. Project elements may include: bio-infiltration swales, filter vaults, media filter drains, and rain gardens in order to improve water quality.

Project Status:

Design is anticipated in 2025-2026 and construction scheduled to take place in 2027.

Total Estimated Project Cost: $910,000



Geneva Street & Lake Louise Road Culvert Replacement
Database ID No. 20-010

Construction Funding Year(s): **2028**

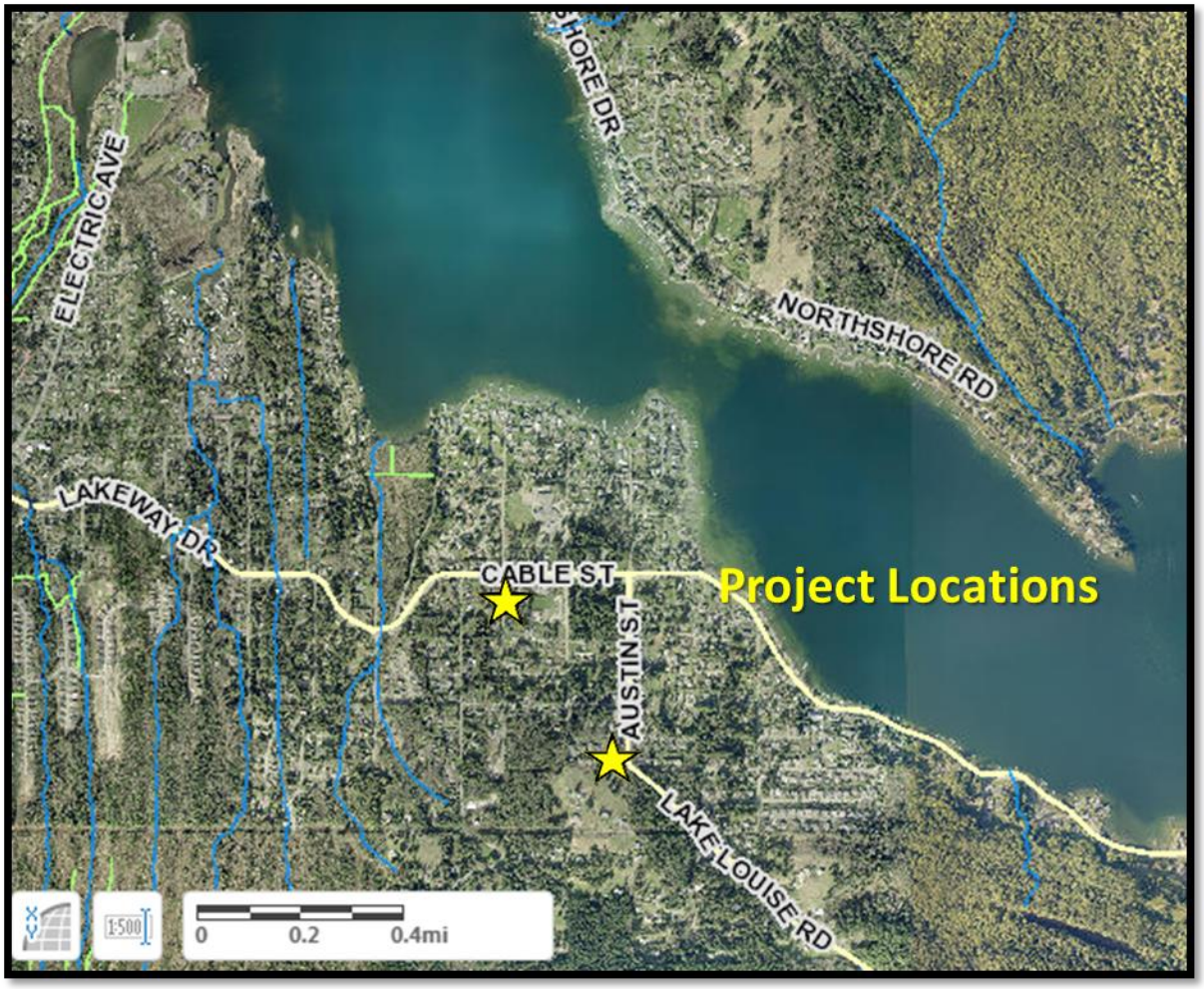
Project Narrative:

Project will improve conveyance of roadside ditches and culverts along Geneva Street and Lake Louise Road. The project will replaced approximately 200 linear feet of undersized or damaged culverts.

Project Status:

Design is anticipated in 2026 and construction scheduled to take place in 2028.

Total Estimated Project Cost: $280,000



Lake Whatcom Boulevard Media Filter Drain (EG-1)
Database ID No. 22-006

Construction Funding Year(s): **2028**

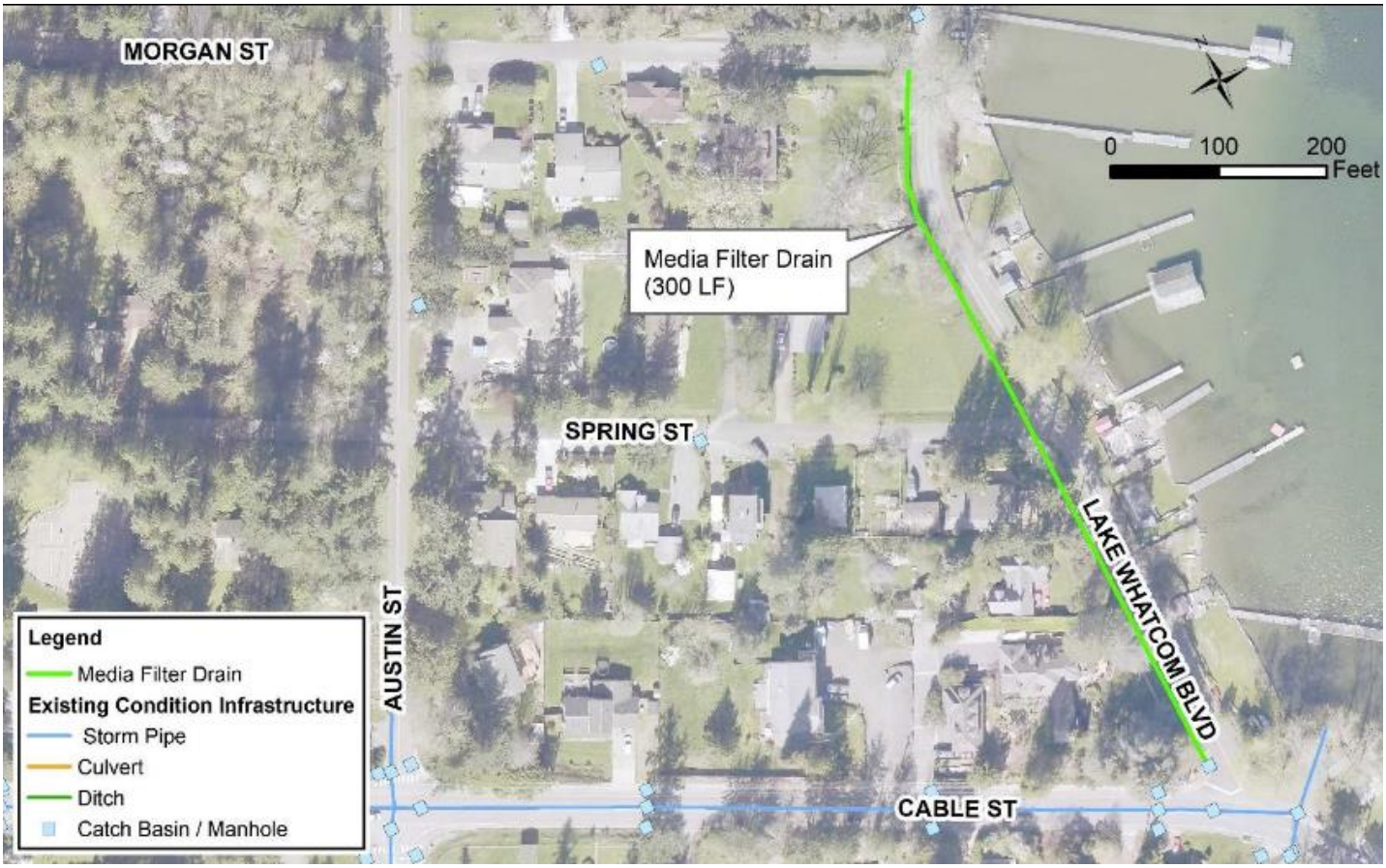
Project Narrative:

The project would install Media Filter Drain (MFD), or other appropriate water quality system, along approximately 300 linear feet of roadway on the west side of Lake Whatcom Blvd. Stormwater runoff from approximately 8.5 acres on the west side of Lake Whatcom Blvd. is collected in a shallow roadside ditch, this project would treat this water prior to discharging to Lake Whatcom.

Project Status:

Design is anticipated in 2026-27 and construction scheduled to take place in 2028.

Total Estimated Project Cost: $835,000



Sudden Valley Stormwater Improvements No. 2
Database ID No. 22-007

Construction Funding Year(s): **2029**

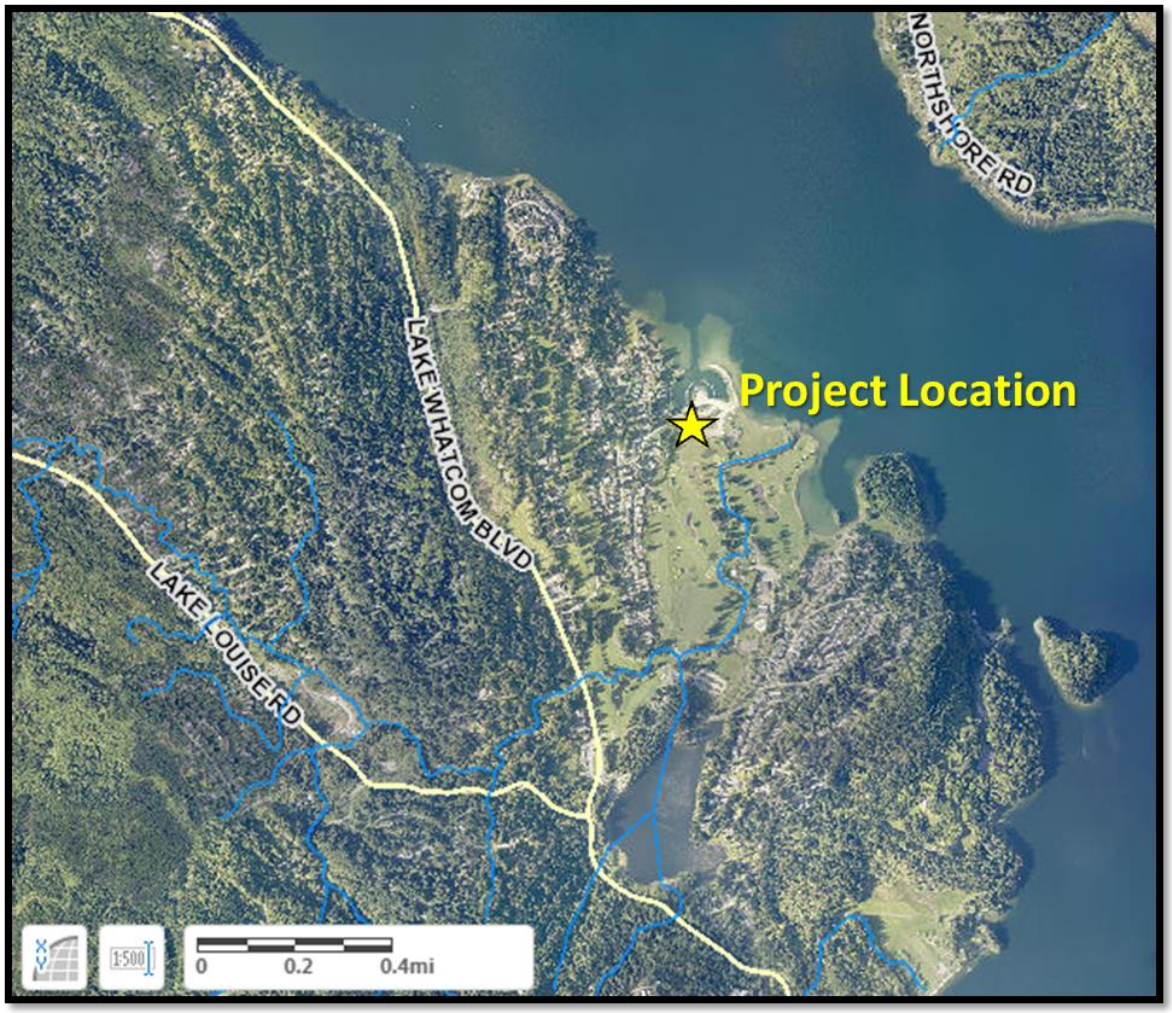
Project Narrative:

A project, to be determined, will be constructed within the Sudden Valley area as the second water quality improvement project focused on removing sediment and treating phosphorus in a continued collaboration with the Sudden Valley community. Details will be forthcoming as Whatcom County works with representatives of the Sudden Valley Community Association.

Project Status:

Design is anticipated in 2026-2027 and construction scheduled to take place in 2029.

Total Estimated Project Cost: $600,000



Lake Whatcom Boulevard Water Quality Vault (EG-4)
Database ID No. 22-008

Construction Funding Year(s): **2030**

Project Narrative:

This project includes the installation of a filter vault to improve water quality in the existing Lake Whatcom Blvd stormwater system. The water quality system will remove sediments and phosphorus from approximately 3 acres of residential runoff prior to entering Lake Whatcom.

Project Status:

Design is anticipated in 2028-2029 and construction scheduled to take place in 2030.

Total Estimated Project Cost: $500,000

Cottonwood Drive Stormwater Inlet Repair
Database ID No. 22-009

Construction Funding Year(s): **2023**

Project Narrative:

The Cottonwood neighborhood experienced significant flooding during the storms in November 2021. A plugged pipe caused Cottonwood Creek to overflow and erode an existing earthen berm, which flooded the neighborhood and damaged public and private property. This project will clean up the flood debris, repair the eroded berm, and place some additional mitigation measures in the neighborhood to better direct flood water to a safer location during future storm events occurs.

Project Status:

Design is occurring in 2022 and construction is scheduled to take place in 2023.

Total Estimated Project Cost: $330,000

Charel Terrace Stormwater Outfall Repair
Database ID No. 20-011

Construction Funding Year(s): **2023**

Project Narrative:

The December 20, 2018 “Solstice Eve” windstorm caused damage to the stormwater outfall on Birch Point installed as part of the Charel Terrace project in 2011. In March 2019 a “Major Disaster Declaration” that covered Whatcom County for the December storm was granted. In December 2019, the Consolidated Resource Center approved the Washington State Emergency Management Division’s $110,887 request for Architectural & Engineering Services to assess the site and develop conceptual design options. An RFP was advertised by Whatcom County in March 2020 and Herrera Environmental Consultants completed a preliminary study that assessed the outfall stabilization approaches to maintain a functional outfall. From this study, a temporary repair will be constructed in early fall 2022 to secure the catch basin to the bluff and reposition the outfall tee. The permanent repair will be constructed in the summer of 2023, which may consist of hard armoring of the slope to protect cultural resources.

Project Status:

Design is occurring in 2021-2022 and construction scheduled to take place in 2023.

Total Estimated Project Cost: $675,000

Holeman Avenue Stormwater Improvements (PW-1)
Database ID No. 07-242

Construction Funding Year(s): **2024**

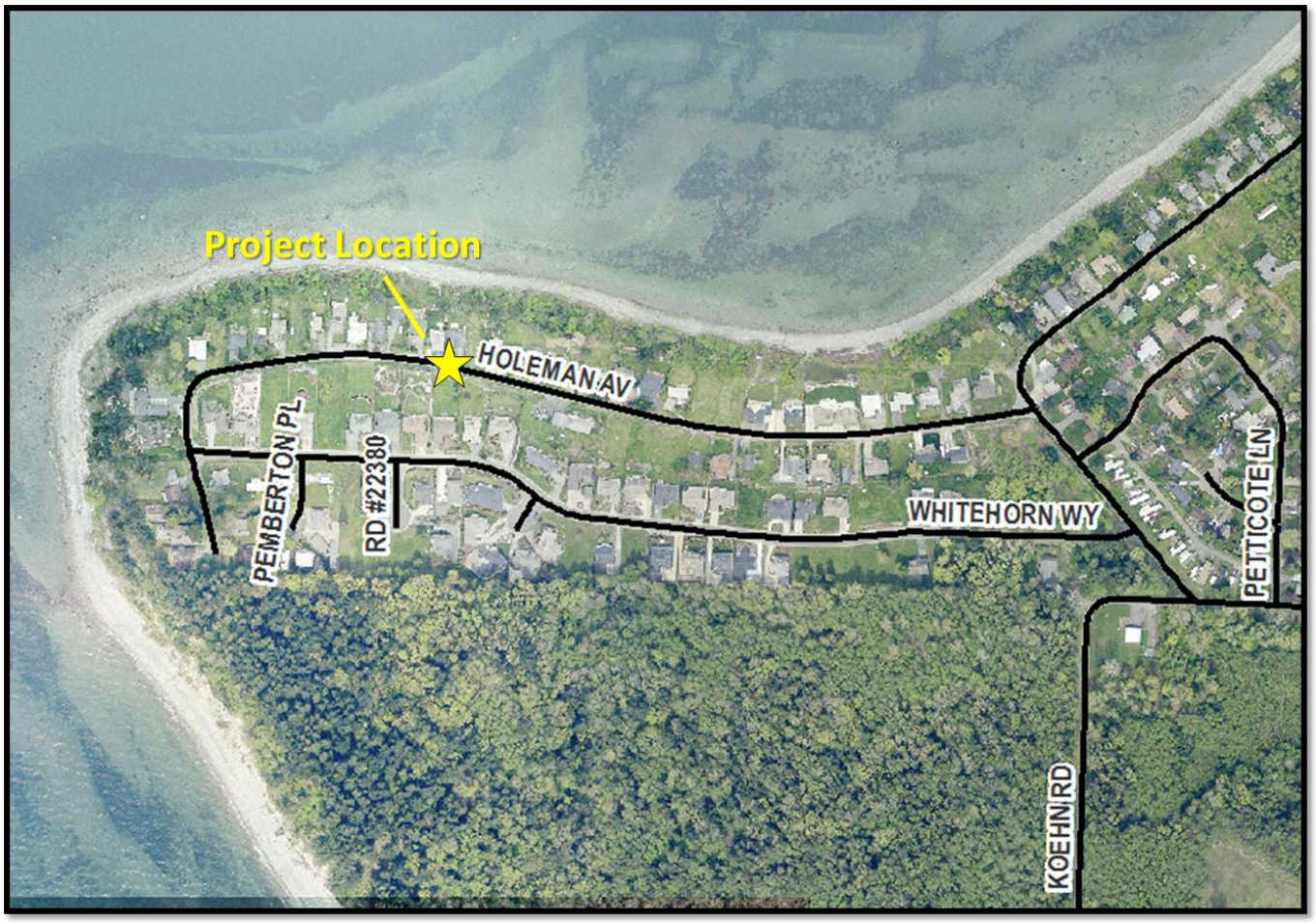
Project Narrative:

The project goal is to reduce roadway flooding on Holeman Avenue by replacing undersized pipe and catch basins and re-establish existing ditch to match pipe invert elevations. This area is particularly sensitive due to the steep, unstable bluff along the shoreline and the concern is that flooding could lead to bluff failure and property damage. This is a critical public safety issue.

Project Status:

Design is anticipated in 2022-23 and construction scheduled to take place in 2024.

Total Estimated Project Cost: $1,105,000



Semiahmoo Drive South & Outfall Improvements (BP-2, BP-5)
Database ID No. 18-009 & 18-010

Construction Funding Year(s): **2024**

Project Narrative:

This project will improve the conveyance system along the east side of Semiahmoo Drive by upsizing pipes and re-establishing/deepening ditches to reduce flooding and increase traffic safety.

Project Status:

Design is taking place in 2021-2023 and construction scheduled to take place in 2024.

Total Estimated Project Cost: $1,724,000

Normar Place Stormwater Improvements (BP-1)
Database ID No. 19-004

Construction Funding Year(s): **2025**

Project Narrative:

This project involves upsizing pipes, replacing catch basins and installing an outfall pipe over the bluff with an energy dissipater at Normar Place to reduce roadway flooding, scour and sediment transport.

Project Status:

Design is anticipated in 2023-24 and construction in 2025.

Total Estimated Project Cost: $690,000

Lora Lane Drainage & Tide Gate Modifications (TC1-2)
Database ID No. 18-008

Construction Funding Year(s): **2026**

Project Narrative:

The purpose of this project is to replace the existing 48" corrugated metal pipe culvert under Birch Bay Drive with a fish passage culvert that is anticipated to be an 8-ft wide box culvert, remove the existing tide gate on the water side of Birch Bay Drive, install a new side hinge tide gate on the east side of Birch Bay Drive on the new 8-ft wide culvert, and install shoreline armoring at the outfall area.

Project Status:

Preliminary engineering design will begin in 2021 and be completed prior to construction in 2026.

Total Estimated Project Cost: $1,436,000*

*Road Fund contributions are tentative

Birch Point Road Stormwater & Outfall Improvements (BP-3 & BP-6)
Database ID No. 21-001

Construction Funding Year(s): **2026**

Project Narrative:

A corrugated metal outfall pipe over a steep bluff on Birch Point collapsed due to undermining. The driveway culverts, ditches and upstream storm drain system leading to the outfall are undersized and cause flooding and erosion during storm events. This project will involve upsizing culverts, reestablishing ditches and replacing the halfpipe outfall with an HDPE tightline, anchor and energy dissipater.

Project Status:

Design will be completed in 2024-25. Construction is scheduled to take place in 2026.

Total Estimated Project Cost: $700,000

Richmond Park Stormwater Improvements (SH-2)
Database ID No. 22-010

Construction Funding Year(s): **2027-2028**

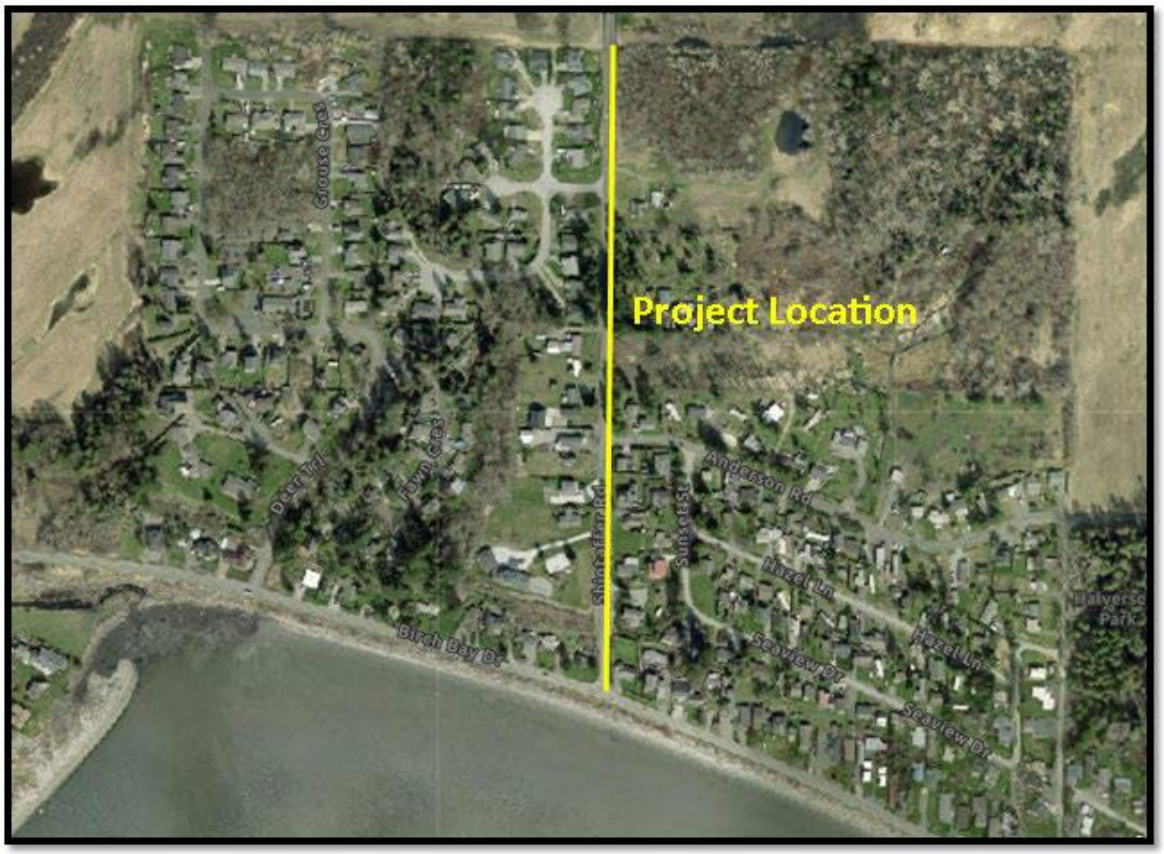
Project Narrative:

This project will address drainage concerns in Richmond Park by re-routing the large volume of water that currently moves through the development down Shintaffer Road to an outfall in Birch Bay. It would involve replacing 2,000 feet of ditch/culvert on Shintaffer Road with 24" diameter HDPE pipe, installing 15 type 2 catch basins and building a new outfall into Birch Bay.

Project Status:

Design will occur in 2025-26 and construction is scheduled to take place in 2027-2028.

Total Estimated Project Cost: $2,430,000



Wooldridge Avenue & Sunset Drive Stormwater Improvements (TC-2)
Database ID No. 13-007

Construction Funding Year(s): **2029**

Project Narrative:

This project will improve the conveyance system along Wooldridge Avenue, Jackson Road and Sunset Drive by upsizing pipes, installing or replacing catch basins and culverts, reestablishing roadside ditches, installing a water quality filter vault and 100 linear feet of water quality treatment swale.

Project Status:

Design is anticipated in 2027-2028 and construction is scheduled to take place in 2029.

Total Estimated Project Cost:

DOE Water Quality Grant:	$750,000*
BBWARM:	**$470,000**
Total:	$1,220,000

*Unsecured grant funding

Hillsdale Stormwater Improvements, Phase 1 (HL-C-1)
Database ID No. 19-002

Construction Funding Year(s): **2030**

Project Narrative:

This project involves upsizing pipes, replacing catch basins, installing new drain line, and replacing blind tee connections on Morgan, Cottonwood and Birch Bay Drives to reduce flooding and allow for maintenance.

Project Status:

Pre-design was completed in 2014, final design will be completed in 2028-29 and construction of Phase 1 scheduled to take place in 2030.

Total Estimated Project Cost: $750,000

Shallow Shore Culvert Relocation
Database ID No. 18-007

Construction Funding Year(s): **2023**

Project Narrative:

The existing cross-culvert located at 326 Shallow Shore Drive discharges onto the western edge of the lakefront parcel. During heavy storm events, discharge from the cross-culvert overwhelms an existing private culvert which conveys stormwater to the lake, resulting in regular flooding and inundation throughout the rainy season.

The County currently has an undeveloped right-of-way (Bass Street) to the lake approximately 300 feet north of the existing outfall along Shallow Shore Drive which could serve as an alternate to the existing outfall. The project will evaluate water quality alternatives that may be installed prior to discharging in Lake Samish.

Project Status:

Design is occurring in 2021-22 and construction scheduled to take place in 2023.

Total Estimated Project Cost: $570,000

Lynden Levee Improvement
Database ID No. 16-003

Construction Funding Year(s): **2021 - 2022**

Project Narrative:

One 24” culvert and one 48” culvert are located less than 50 feet apart providing interior drainage through the Lynden Levee. One of the pipes drains a channel that flows through the City of Lynden’s wastewater treatment plant. The levee has overtopped where the culverts are located, damaging the levee backslope and the small berm that separates the drainage channel from a water treatment settling pond. The conceptual design developed as part of the System-wide Improvement Framework (SWIF) planning process includes relocating the treatment plant drainage channel through a forested area further away from the pond, connecting the two drainages, and replacing the two culverts with a single larger fish-passable culvert with a side-hinge flood gate.

Project Status:

Primary construction of the project was completed during summer of 2021. This project was implemented collaboratively by the FCZD and the USACE. FCZD finished planting and stabilization of the new channel in 2022. Minor project closeout costs are anticipated in 2023. Total project cost includes USACE construction as a direct contribution.

Total Estimated Cost:	$1,934,000
Expenditures to Date:	$1,931,500

Everson Overflow Pipeline Stabilization
Database ID No. 20-002

Construction Funding Year(s): **2024**

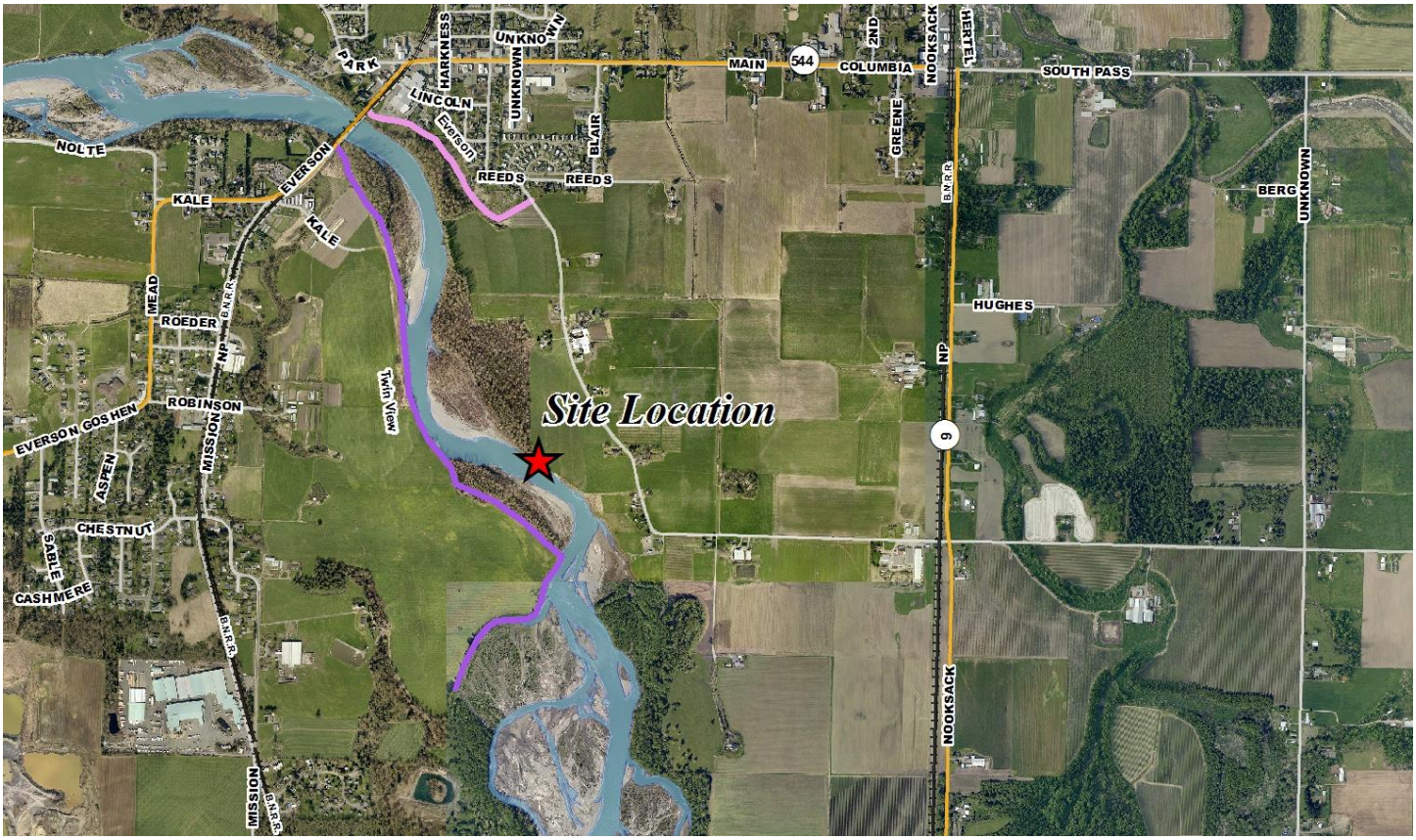
Project Narrative:

A portion of the bank within the Everson overflow corridor was damaged during the 2020 flood season, this erosion was further exacerbated during the November 2021 flood events. The damage site is located near a petroleum pipe crossing the Nooksack River. The FCZD is exploring options to stabilize the bank and protect the high ground divide that controls how much overflow occurs at Everson.

Project Status:

The project is in the design phase. Construction is anticipated for summer of 2024. The FCZD anticipates that FEMA and the State will fund 95% of the project through the Public Disaster Assistance Program.

Total Estimated Cost:	$1,517,125
Expenditures to Date:	$139,000



Marine Drive Levee Repair
Database ID No. 20-001

Construction Funding Year(s): **2024**

Project Narrative:

The Marine Drive Levee provides flood protection during smaller, more frequent floods to the Marietta area and Slater Road. The levee is located on property owned by the Washington Department of Wildlife who is managing the property for wildlife. The levee backslope was damaged in several locations during flooding in 2020 and 2021. The project involves restoring the levee crest and backslope to the original geometry while trying to minimize the impacts to existing vegetation.

Project Status:

The project is in the design phase. Construction is anticipated for summer of 2024. An interim project was completed in 2023 to temporarily stabilize the damage areas prior to flood season. The FCZD is utilizing FEMA funds to partially fund the project.

Total Estimated Cost:	$1,201,000
Expenditures to Date:	$103,000

Truck Road Bank Stabilization
Database ID No. 20-003

Construction Funding Year(s): **2023**

Project Narrative:

The project is located along Truck Road about 0.3 miles easterly from Mt. Baker Highway (SR 542). During high-water events of the 2017/2018 winter, the North Fork Nooksack River eroded the unprotected bank of Truck Road to within 13 feet of the roadway surface. This prompted an emergency project to construct a passive riprap revetment underneath a section of the roadway to provide immediate protection. Flooding during 2020 eroded the remaining bank exposing the recently constructed riprap revetment and destabilizing a portion of the north bound lane. Jersey barriers were placed by county crews to block off this lane to traffic. Additional erosion sustained the November 2021 floods, threatened the road downstream of the previous damage area. The FCZD undertook an emergency project to address the immediate threat to truck road. Additional work is needed to provide environmental mitigation for that action and to repair and realign the damaged section of road.

Project Status:

The FCZD has completed the emergency repair and is currently designing and permitting the associated Phase 2 project that will provide environmental mitigation and road repair. Construction of the Phase 2 project is anticipated to occur in 2023. The FCZD anticipates that FEMA and the State will fund 95% of the project through the Public Disaster Assistance program

Total Estimated Cost:	$4,267,000
Expenditures to Date:	$1,516,000

Jones Creek Debris Flow Risk Reduction
Database ID No. 07-105

Construction Funding Year(s): **2023**

Project Narrative:

This project includes acquisition of residential properties in the high hazard area of the Jones Creek alluvial fan and construction of setback deflection berms to reduce the risk of debris flow damage to the town of Acme. The project includes realignment of Turkington Road at the location where it crosses the proposed berm.

Project Status:

Nearly all required property acquisition for the project is complete; one additional easement will be purchased in 2023. Detailed design is near completion and construction is anticipated in spring 2023. A Department of Ecology Floodplains by Design Grant provided 80% funding for the acquisition of two properties and will also partially fund the construction of the project.

Total Estimated Cost:	$10,675,000
Expenditures to Date:	$5,235,000

Hudson Road Bridge No. 132 Repair
Database ID No. 22-001

Construction Funding Year(s): **2023**

Project Narrative:

The project is located along near the dead end of Hudson Rd in Acme, WA. The FCZD recently purchased the property at the end of this road as a part of the Jones Creek Debris Flow Risk Reduction Project. The approaches to the bridge that serves the property were damaged during the November 2021 flood events. The project will provide for repair to the bridge approaches.

Project Status:

The FCZD has provided FEMA with the damages and cost estimate to repair the project. Design and permitting for the project will be conducted in the winter of 2022/23. Construction is anticipated to occur in 2023. The FCZD anticipates that FEMA and the State will fund 95% of the project through the Public Disaster Assistance program.

Total Estimated Cost:	$135,000
Expenditures to Date:	--

Timon Levee USACE Levee Rehabilitation
Database ID No. 22-002

Construction Funding Year(s): **2023**

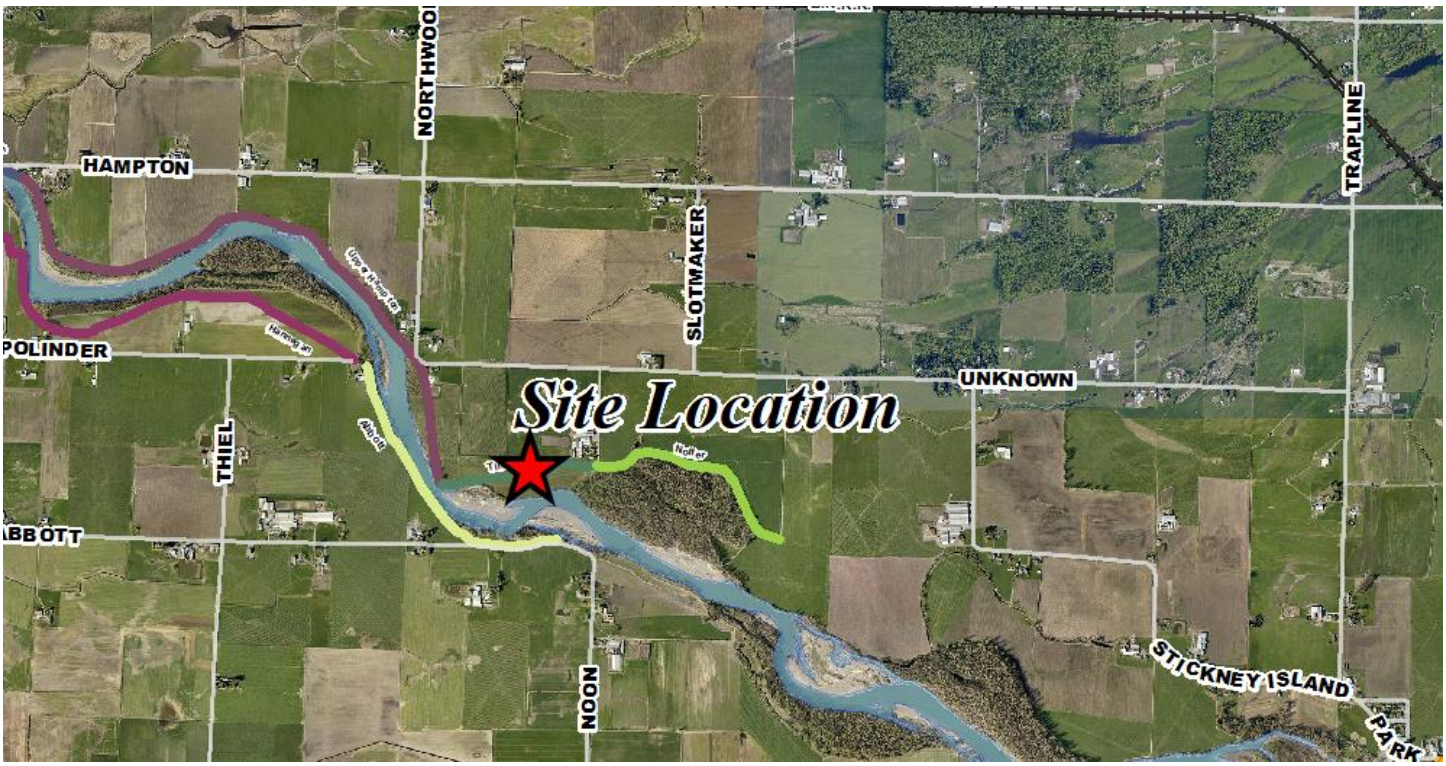
Project Narrative:

The Timon Levee is located near Northwood Rd, southeast of Lynden WA. The levee is eligible for the Public Law (PL) 84-99 Levee Rehabilitation program with the US Army Corps of Engineers (USACE). This program allows for the USACE to repair damages to the levee and requires a 20% local cost-share. The Timon Levee was damaged during the November 2021 flood events. The FCZD worked with the USACE to flood fight the damage during the event, this emergency flood fight was funded 100% by the USACE. This project provides for the USACE to conduct permanent repairs at the site.

Project Status:

USACE anticipates construction of the project in 2023. The FCZD local share of costs is 20%. Total project cost includes USACE construction as a direct contribution.

Total Estimated Cost:	$607,500
Expenditures to Date:	--



Upper Hampton USACE Levee Rehabilitation
Database ID No. 22-004

Construction Funding Year(s): **2023**

Project Narrative:

The Upper Hampton Levee is located near Northwood Rd, southeast of Lynden WA. The levee is eligible for the Public Law (PL) 84-99 Levee Rehabilitation program with the US Army Corps of Engineers (USACE). . This program allows for the USACE to repair damages to the levee and requires a 20% local cost-share. The Upper Hampton Levee was damaged during the November 2021 flood events. This project provides for the USACE to conduct permanent repairs at the site.

Project Status:

USACE anticipates construction of the project in 2023. The FCZD local share of costs is 20%. Total project cost includes USACE construction as a direct contribution.

Total Estimated Cost:	$258,750
Expenditures to Date:	--

Jones Creek Revetment Repair
Database ID No. 22-003

Construction Funding Year(s): **2023**

Project Narrative:

The project is located just upstream of the Turkington Rd Bridge over Jones Creek near Acme WA. The riprap revetment that protects the bridge approaches was damaged during the November 2021 flood events. The project will provide for repair to damaged revetment.

Project Status:

The FCZD has provided FEMA with the damages and cost estimate to repair the project. Design and permitting for the project will be conducted in the winter of 2022/23. Construction is anticipated to occur in 2023. The FCZD anticipates that FEMA and the State will fund 95% of the project through the Public Disaster Assistance program.

Total Estimated Cost:	$120,800
Expenditures to Date:	$10,300

Cougar Creek Early Action / Neevel Levee Bank Stabilization
Database ID No. 16-008

Construction Funding Year(s): **2024**

Project Narrative:

The Neevel Levee provides varying levels of protection to a significant amount of agricultural land. Approximately 250 feet of the levee running along Cougar Creek is over-steepened and experiencing sloughing of the riverward face. A stabilization project incorporating large woody debris at the toe and reducing the slope of the riverward face is proposed in the System-wide Improvement Framework (SWIF) to resolve the deficiency identified by the US Army Corps of Engineers and keep the levee eligible for repair under the Public Law (PL) 84-99 Program. An early action project developed through the Floodplain Integrated Planning (FLIP) process includes replacement of the Cougar Creek flood gate and installation of large woody debris in the channel downstream.

Project Status:

Design of the project has been finalized. Construction is anticipated for 2024 with funding through NRCS's EQIP program and the Department of Ecology Floodplains by Design grant.

Total Estimated Cost:	$2,029,000
Expenditures to Date:	$271,000

Abbott Levee Protection and Improvement Project
Database ID No. 16-007

Construction Funding Years: **2021 and 2025**

Project Narrative:

The project is located along Abbott Road about 1.7 miles east of Hannegan Road. Recent erosion along the Nooksack River has removed a section of riprap that previously protected the land adjacent to the Abbott Levee and Abbott Road. Phase1 of this project addressed the ongoing erosion in this location. The FCZD is also investigating possible road and levee setback options to improve the upstream tie-in of the levee and address a deficiency identified by the US Army Corps of Engineers to maintain the levee's eligibility in the PL 84-99 Levee Rehabilitation Program. This work will be implemented as a second phase of the project.

Project Status:

Construction of Phase 1 was completed during Summer or 2021. The FZCD is developing a scope of work with the project consultant for Phase 2. Phase 2 will include a reach assessment to provide the technical basis for developing alternatives for upstream improvements. The FZCD will utilize this reach scale analysis to develop a capital project for Phase 2. Phase 2 construction is anticipated during 2025.

Total Estimated Cost:	$3,843,000
Expenditures to Date:	$1,318,000

Bertrand Creek Levee Stabilization
Database ID No. 16-005

Construction Funding Year(s): **2025**

Project Narrative:

The Bertrand Creek right and left bank Levees are designed to overtop during larger floods, but provide protection to agricultural land during the growing season. The left bank levee has a 250 foot long section where erosion is threatening the levee prism. The right bank levee face is sloughing at three locations with a total length of approximately 250 feet. The levees will have to be repaired to remain eligible for rehabilitation through the US Army Corps of Engineers Public Law (PL) 84-99 Levee Rehabilitation Program.

Project Status:

A conceptual design has been developed as part of the System-wide Improvement Framework (SWIF) planning process. The project will be designed by the FCZD. Construction is anticipated in the Summer of 2025.

Total Estimated Cost:	$312,000
Expenditures to Date:	$7,000

Devries Levee Improvements
Database ID No. 19-001

Construction Funding Year(s): **2025**

Project Narrative:

This project involves widening the levee crest and backsloping the levee to meet the US Army Corps of Engineers's levee geometry standards for levees in the Public Law (PL) 84-99 Levee Rehabilitation Program (SWIF project).

Project Status:

A conceptual design has been developed as part of the SWIF planning process. Detailed design has not been initiated yet.

Total Estimated Cost:	$235,000
Expenditures to Date:	$0

Ferndale Levee Improvement Project
Database ID No. 07-104

Construction Funding Year(s): **2025 - 2027**

Project Narrative:

Two levee segments, one sponsored by the City of Ferndale and one by the FCZD and Diking District #1 in the US Army Corps of Engineer's Public Law (PL) 84-99 Levee Rehabilitation Program, provide protection to the three treatment facilities along Ferndale Road. The US Army Corps of Engineers has identified several deficiencies along these two levee segments, including a gap in which super sacks filled with sand have been placed. The 1999 Comprehensive Flood Hazard Management Plan recommended improving these levees to provide 100-year protection to the City and the treatment facilities. The System-wide Improvement Framework (SWIF) also includes this project to address the identified levee deficiencies.

Project Status:

This project is currently in the design phase. An preferred alternative for the levee and road alignment has been selected. A 60 percent design level plan of the proposed levee configuration is anticipated Fall of 2022. A 100 Percent design level plan is anticipated in 2024. Grant funding through the State's Floodplain's by Design program has been secured to complete the design. Construction is anticipated to be phased with construction beginning in 2025 and lasting through 2027.

Total Estimated Construction Cost: TBD

Expenditures to Date: $627,000

Glacier-Gallup Creeks Alluvial Fan Restoration
Database ID No. 18-006

Construction Funding Year(s): **2023, 2027**

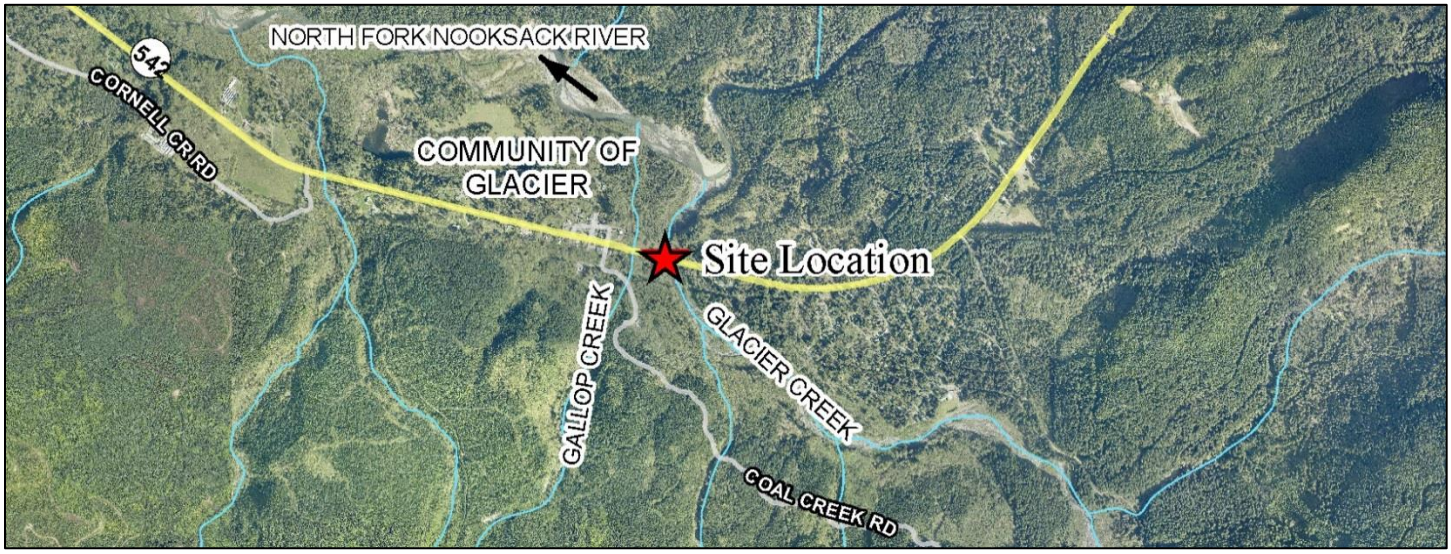
Project Narrative:

The Glacier Creek Levee on the left (west) bank of the creek was constructed in the 1960s to prevent overflows into Gallup Creek and damage to State Route (SR) 542. Since construction, the levee has been subject to ongoing damage. Constriction of the Glacier-Gallup channel migration zone (CMZ) has exacerbated aggradation upstream of SR 542 and severely degraded fish habitat. WSDOT replaced the Gallup Creek bridge and is working to construct a new bridge over Glacier Creek and the alluvial fan between the two creeks. The FCZD is developing a project in coordination with WSDOT and is evaluating the feasibility of full or partial removal of levees blocking natural channel migration on the Glacier and Gallup Creeks alluvial fan and construction of a setback levee on Gallup Creek to protect the Community of Glacier.

Project Status:

A feasibility study and alternatives analysis for evaluating levee removal and setback alternatives was initiated in late 2018. Preliminary design of the preferred alternative will be initiated once the preferred alternative is selected. Construction of an interim project to address levee damage is anticipated in 2023. Construction of the levee removal and setback is anticipated to occur concurrently with the Glacier Creek bridge replacement in 2027.

Total Estimated Project Cost:	TBD
Expenditures to Date:	$721,000



Dahlberg Wetland Mitigation Site
Database ID No. 20-004

Construction Funding Year(s): **2026 - 2028**

Project Narrative:

The FCZD purchased a property northeast of Ferndale as a mitigation site for future projects having wetland or riparian impacts. The property contained a dilapidated farm house.

Project Status:

FCZD purchased the subject property and demolished the farm house in Fall of 2020. The FCZD has installed a groundwater monitoring network on the site to support developing a long-term restoration plan for the site.

Total Estimated Cost:	TBD
Expenditures to Date:	$885,000

Upper Hampton Levee Improvements
Database ID No. 16-006

Construction Funding Year(s): **2027**

Project Narrative:

Several deficiencies were identified by the US Army Corps of Engineers on the Upper Hampton Levee. Improvements to the levee geometry are proposed in two locations and improvement to address seepage is proposed at a third location.

Project Status:

A conceptual design has been developed as part of the System-wide Improvement Framework (SWIF) planning process. Detailed design has not been initiated yet. However, we were able to complete a portion of the levee backsloping work at one site using excess material generated at the 2021 Abbott and Lynden Levee Improvement projects.

Total Estimated Cost:	TBD
Expenditures to Date:	$6,000

Floodplain Acquisition
Database ID No. 07-002

Acquisition Funding Year(s):	**2017- TBD**

Project Narrative:

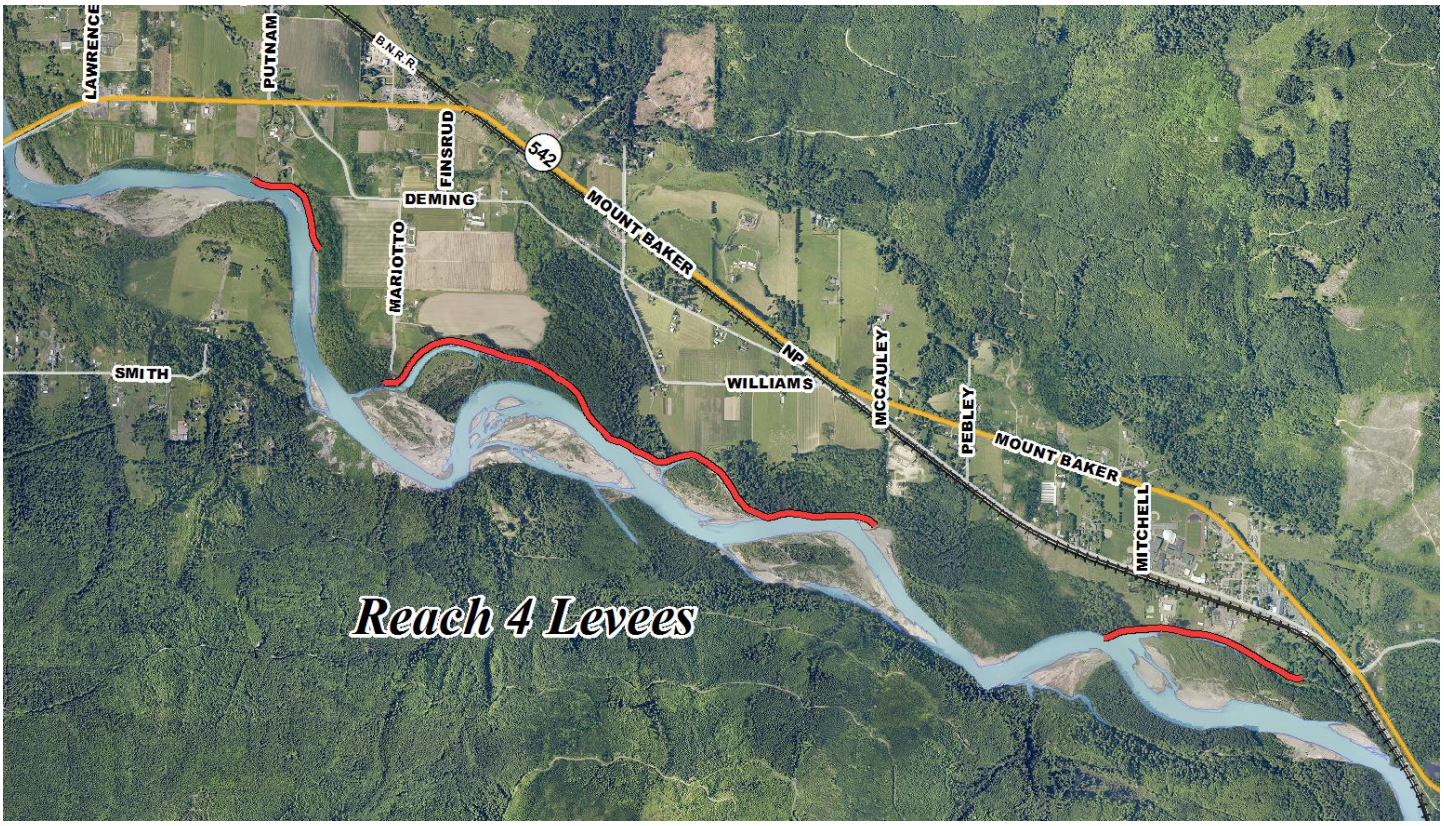
Reach-scale projects to reconfigure flood infrastructure are being evaluated through the integrated planning processes that started with the System-wide Improvement Framework (SWIF) and has transitioned into the Floodplain Integrated Planning (FLIP) process. The goal of this work is to reduce flood risk and expenditures and restore habitat and the processes that form it.

Voluntary acquisition of lands is proposed to enable future levee reconfigurations to reduce flood risk and future levee repairs, while improving habitat.

Project Status:

Acquisition of one property in Reach 4 was completed in 2020. Discussions with additional property owners will occur in 2021 and 2022.

Total Estimated Cost:	TBD
Expenditures to Date:	$1,128,000



Marietta Acquisition
Database ID No. 07-002

Construction Funding Year(s): **2001 - Present**

Project Narrative:

Acquisition of residential properties in the frequently-flooded repetitive flood loss area of Marietta, removal of existing structures and restoration of properties with native vegetation.

Project Status:

Property acquisition began in 2001 and is ongoing. As properties are acquired, structures are removed and native vegetation is planted. All acquisitions are voluntary and the project is ongoing as current property owners decide to sell their properties. Total project cost will need to include funding for cleanup of up to four former gas stations, though the exact nature of the work is still undefined.

Total Estimated Project Cost:	TBD
Expenditures to Date:	$1,852,000

High Creek Sediment Trap
Database ID No. 22-005

Construction Funding Year(s): **Annually**

Project Narrative:

High Creek flooding damaged nearby homes and closed Mount Baker Highway in the mid-1990's. A legal settlement resulting from that event directs Whatcom County to prepare a creek management plan. Sediment management in the watershed including the 3400 feet of County owned right of way east of Kendall Creek is an important plan element along with fish habitat mitigation. State permits for future maintenance dredging are dependent on consistency with the final management plan. A management plan was developed and recommended the construction of two sediment traps, one sited upstream of Mount Baker Highway to trap coarser material and one by the confluence with Kendall Creek to trap finer material. The sediment traps were constructed in 2018. The project provides for the annual clean out of those sediment traps.

Project Status:

The 2022 clean out was be funded at 95% through the FEMA Public Disaster Assistance grant. Future cleanouts are anticipated to be funded by FCZD. Total Estimated Cost is for annual estimated cleanout costs.

Total Estimated Cost:	$135,000
Expenditures to Date:	--

Emergency/New Projects
Database ID No. 08-003

Construction Funding Year(s): **2023 - 2028**

Project Narrative:

This item provides funding to address unanticipated projects resulting from new damage to flood control facilities.

Project Status:

Design and construction to occur as necessary.

Total Estimated Project Cost: $425,000/year

Expenditures to Date: $425,000/year

Due to the nature of this item, no map exists. Board of Supervisors review and prioritization will be sought at the appropriate time.