City of Bremerton

Stormwater Management Action Planning

March 31, 2022 submittal

City of Bremerton Stormwater Management Action Planning, March 31, 2022 submittal

This is a watershed inventory for the City of Bremerton with a brief description of the relative condition of the receiving waters and the contributing areas.

Table of Contents

Receiving Water Conditions Assessment

S5.C.1.d.i Phase II Permit requirement:

Permittees shall document and assess existing information related to their local receiving waters and contributing area conditions to identify which receiving waters are most likely to benefit from stormwater management planning

By March 31, 2022, Permittees shall submit a watershed inventory and include a brief description of the relative conditions of the receiving waters and the contributing areas. The watershed inventory shall be submitted as a table with each receiving water name, its total watershed area, the percent of the total watershed area that is in the Permittee's jurisdiction, and the findings of the stormwater management influence assessment for each basin. Indicate which receiving waters will be included in the S5.C.1.d.ii prioritization process. Attach a map of the delineated basins with references to the watershed inventory table.

This assessment helps jurisdictions gain an understanding of their receiving waters, the relative impacts of urbanization and land use activities on those receiving waters, and what existing information is most useful to guide their prioritization (S5.C.1.d.ii of the Phase II Permit).

Four steps are included in this overall assessment:

1. *Delineate basins and identify receiving waters*
2. *Assess receiving water conditions*
3. *Assess stormwater management influence*
4. *Assess relative conditions, and contributions.*

Introduction

Since 2010, the major focuses of water quality for Bremerton receiving waters have been fecal coliform contamination and elevated lake phosphorus levels. Urban runoff is known to collect and carry oils, metals, nutrients, bacteria, and various chemicals from daily human activities that degrade receiving water quality. Bremerton is actively addressing these water quality issues through treatment retrofits, enhanced maintenance, public education and outreach, and the use of best management practices (BMPs).

The 2012 Dyes/Sinclair TMDL Implementation Plan directed Bremerton's stormwater program to focus on reducing pathogen levels from shoreline areas by *installing and maintaining pet waste education and collection stations at municipal parks and other Permittee owned and operated lands adjacent to stream and marine shorelines. Focus on locations where people commonly walk their dogs.* This is an active program that has helped improve water quality in shoreline areas around the city.

The 2019 Stormwater Permit requires additional efforts to address bacteria. The new program designates previously unscreened areas discharging via the MS4 to the TMDL area as the highest priority for illicit discharge detection and elimination routine field screening. Screen for bacteria sources when conducting illicit discharge detection and elimination field screening activities in these areas. Implement the schedules and activities identified in S5.C.5 of the Western Washington Phase II Permit for response to any illicit discharges found. This has been implemented in Bremerton's program.

Data, collected by Kitsap Public Health, shows water quality trend is improving in Sinclair and Dyes Inlets. There are areas of concern that the city has focused on that include Ostrich Bay, Oyster Bay, and Ostrich Bay Creek and Kitsap Lake. All have elevated fecal coliform and receive untreated stormwater from urban areas. Oyster and

Ostrich Bays, as well as Kitsap Lake have limited water exchange, so pollutants introduced to them from stormwater tend to stay in these waters.

Oyster and Ostrich Bays are part of Dyes Inlet, which is designated as impaired due to fecal coliform pollution. Pollutants are notably due to failing septic systems along Ostrich creek and elsewhere within the basin. Oyster and Ostrich Bays are closed to shellfishing, and Kitsap Public Health has issued a no contact advisory for Ostrich Bay Creek, both due to pollution. Non-point pollutants including fecal coliform and biotoxins contribute to poor water quality. Water quality in Oyster and Ostrich Bays is impacted by development, stormwater discharge, failing and non-performing septic systems. Algae blooms have occurred in these waters which is indicative of elevated nutrients from anthropogenic sources.

Stormwater Management Action Planning (SMAP) is reviewing water quality and impacts from anthropogenic activities in the watersheds impacted by the city. The following pages identify stormwater basin areas associated with the city in a map format with delineated basins and identified receiving waters, provides water quality impairments listed for each watershed, summarizes receiving water conditions, provides a stormwater management influence rating, and assess relative conditions or the receiving waters.

Existing information related to local receiving waters and contributing area conditions helped to identify receiving waters that will benefit from stormwater management planning. Bremerton owns over 8,700 acres of forest lands and Water Utility protected area of the Union River drainage basin. The head waters of the Union River watershed provide 60% of the drinking water to citizens of the city. Water quality is continuously monitored, and the watershed is protected to preserve its undeveloped natural resources. This area will not be included in the SMAP. Influences from the Port of Bremerton and Puget Sound Industrial Center has some stormwater impact on the Union River, downstream from the protected watershed, so this area will be evaluated.

Puget Sound Naval Shipyard is located adjacent to Bremerton's core city area and is not included in the SMAP effort. Their site is operated under an EPA Phase II Stormwater Permit and their system is separate from the city's with the exception of Montgomery Ave mainline that collects some runoff from the Navy Exchange and residential areas of the base. This portion of Bremerton's system is in the Callow Avenue drainage basin and is being evaluated.

The Marion Avenue basin discharges flow into an infiltration pond and has no direct outlet. SMAP Evaluation is not planned for the initial program, but system maintenance is a high priority to keep the system operating and to protect groundwater. There are no drinking water wells in this area.

Step 1: Delineate Basins and Identify Receiving Waters

Twenty-four stormwater basins have been delineated in the City of Bremerton using ArcMap GIS. (Figure 1) The route of stormwater was determined using surface topography for overland flow until the water enters a stormwater catch basin. Once in the stormwater system, the flow path follows the stormwater pipe system to the outfall. Each stormwater outfall has had its catchment area mapped to create a total of 116 mapped stormwater sub-basins.

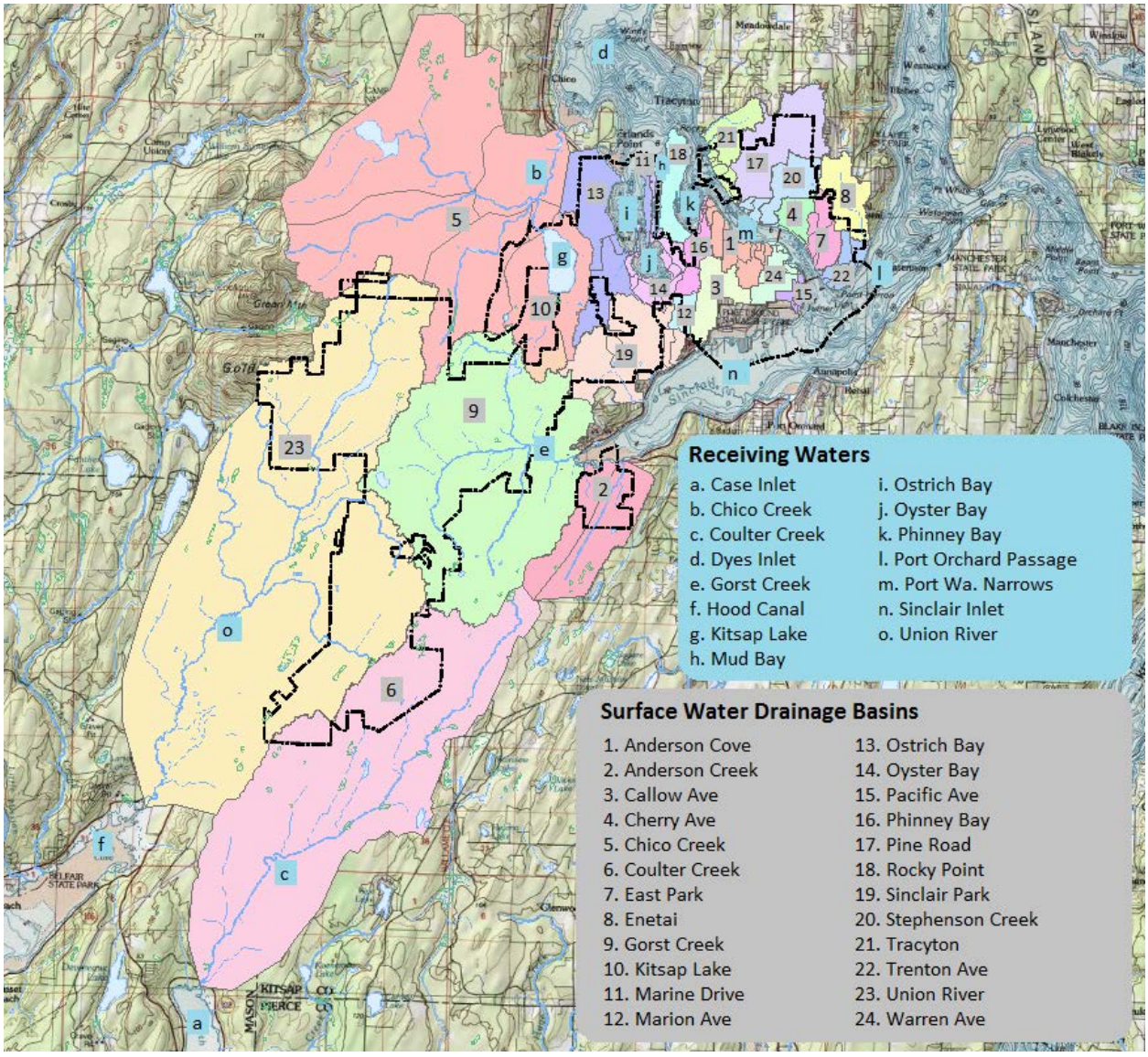

Figure 1. City of Bremerton Stormwater Basins and Receiving Waters Map

The total contributing surface area of each basin, and the contributing areas within City limits have been calculated for each basin using GIS and Excel. (Table 1)

Table 1. Stormwater Basin Areas

Stormwater Drainage Basin	Basin Total Acres	Acres Within Bremerton	Percent of Basin within Bremerton
Anderson Cove	410	410	100%
Anderson Creek	1,450	461	32%
Callow Ave	411	403	98%
Cherry Ave	226	222	98%
Chico Creek	9,873	902	9%
Coulter Creek	8,679	1,127	13%
East Park	277	259	94%
Enetai Creek	456	54	12%
Gorst Creek	6,573	3,737	57%
Kitsap Lake	1,256	820	65%
Marine Drive	61	52	85%
Marion Ave	129	70	54%
Ostrich Bay	1,166	904	78%
Oyster Bay	358	331	92%
Pacific Ave	88	88	100%
Phinney Bay	253	214	85%
Pine Road	963	564	59%
Rocky Point	357	4	1%
Sinclair Park	2,150	2,150	100%
Stephenson Creek	429	407	95%
Tracyton	427	177	41%
Trenton Ave	278	251	90%
Union River	15,259	5,524	36%
Warren Ave	265	265	100%

The basins have been organized by receiving water so the needs of each receiving water can be addressed relative to the contributing area condition and needs. (Table 2) This table can be the foundation for further analysis based on percent impervious surfaces and other land use characteristics.

Table 2. Receiving Waters and Their Contributing Stormwater Basins

Receiving Marine Water	Receiving Fresh Water or Bay	Stormwater Basin	Total Acres	Acres in Bremerton	Percent in Bremerton
Case Inlet	Coulter Creek	Coulter Creek	8679	1127	13%
Dyes Inlet	Chico Creek	Chico Creek	9873	902	9%
	Kitsap Lake	Kitsap Lake	1256	820	65%
	Ostrich Bay	Ostrich Bay	1166	904	78%
	Oyster Bay	Oyster Bay	358	331	92%
	Mud Bay	Marine Drive	61	52	85%
Hood Canal	Union River	Union River	15259	5524	36%
NA	Infiltration Pond	Marion Ave	129	70	54%
Port Orchard Passage	Enetai Creek	Enetai Creek	456	54	12%
Port Washington Narrows	NA	Anderson Cove	410	410	100%
	NA	Cherry Ave	226	222	98%
	NA	East Park	277	259	94%
	NA	Pine Road	963	564	59%
	NA	Rocky Point	357	4	1%
	NA	Tracyton	427	177	41%
	NA	Trenton Ave	278	251	90%
	NA	Warren Ave	265	265	100%
	Stephenson Creek	Stephenson Creek	451	429	95%
	Phinney Bay	Phinney Bay	253	214	85%
Sinclair Inlet	Anderson Creek	Anderson Creek	1450	461	32%
	Gorst Creek	Gorst Creek	6573	3737	57%
	NA	Callow Ave	411	403	98%
	NA	Pacific Ave	88	88	100%
	NA	Sinclair Park	2150	2150	100%

Step 2: Assess Receiving Water Conditions (Receiving Water Assessment)

In this step you will compile and review available information to understand the likely condition of each of the receiving waters to which your MS4 discharges, whether directly or indirectly. This step is intended to be a rapid assessment of what you know about the condition of your receiving waters to help you assess Stormwater Management Influence in Step 3, assess Relative Conditions and Contributions in Step 4, and then prioritize your receiving waters and identify appropriate actions to include in your SMAP for the selected basin.

For direct MS4 discharges to Puget Sound, determine whether the discharge is to a shoreline area where there is likely a net deposition of sediment/solids and therefore stormwater-associated pollutants.

- *All of Puget Sound's urban bays are areas of net deposition of sediment/solids*
- *The Coastal Atlas Map (https://fortress.wa.gov/ecy/coastalatlas/tools/Map.aspx) characterizes the coast of Puget Sound in terms of drift cell types: divergence, left-to-right or right-to-left movement, or no appreciable drift. Use this information to determine whether your outfall is in an active transport zone or if it is at or near the convergence of movement drift cells where sediment accumulates.*

The Washington State Coastal Atlas Map was used to characterize drift cell types and sediment movement direction for each outfall that discharges directly to Puget Sound (Table 3).

Table 3. Stormwater Basin Sediment Movement Zones

Basin Name	Total Acres	Percent of Basin in Bremerton	SW Out-falls	Receiving Water(s)	Outfall(s) Directly to Puget Sound?	Sediment Zone
Anderson Cove	410	100%	11	Port Wa. Narrows	yes	Left to right drift in the north half, no appreciable drift in the southern half.
Anderson Creek	1,450	32%	3	Sinclair Inlet	yes	No appreciable drift.
Callow Ave	411	98%	1	Sinclair Inlet	yes	No appreciable drift.
Cherry Ave	226	98%	2	Port Wa. Narrows	yes	Right to left drift.
Chico Creek	9,873	9%	see KL	Chico Creek to Sinclair Inlet	yes	No appreciable drift.
Coulter Creek	8,679	13%	0	Coulter Creek to Case Inlet	yes	No appreciable drift.
East Park	277	94%	4	Port Wa. Narrows	yes	Right to left drift.
Enetai	456	12%	0	Port Orchard Passage	yes	Left to right drift.
Gorst Creek	6,573	57%	0	Gorst Creek to Sinclair Inlet	yes	No appreciable drift.
Kitsap Lake	1,256	65%	17	Kitsap Lake	no	NA
Marine Drive	61	85%	0	Mud Bay	yes	Right to left drift.
Marion Ave	129	55%	2	Infiltration Pond	no	NA
Ostrich Bay	1166	78%	8	Ostrich Bay & Dyes Inlet	yes	Right to left drift.
Oyster Bay	358	92%	5	Oyster Bay	yes	No appreciable drift.
Pacific Ave	88	100%	4	Sinclair Inlet	yes	Left to right drift.
Phinney Bay	253	75%	6	Phinney Bay	yes	No appreciable drift.
Pine Rd	963	59%	1	Port Wa. Narrows	yes	Right to left drift.
Rocky Point	357	1%	0	Port Wa. Narrows	yes	Left to right on west side, no drift at north end, right to left on east side.
Sinclair Park	1,294	66%	3	Sinclair Inlet	yes	No appreciable drift.
Stephenson Creek	429	95%	8	Port Wa. Narrows	yes	Right to left drift.
Tracyton	395	45%	7	Port Wa. Narrows	yes	Right to left drift.
Trenton Ave	278	90%	7	Port Wa. Narrows	yes	Right to left on west side, left to right on east side.
Union River	15,259	36%	0	Union River	yes	No appreciable drift.
Warren Ave	265	100%	6	Port Wa. Narrows	yes	Left to right drift.

The screen grab below, Figure 2, shows the areas in Sinclair and Dyes Inlets, Port Washington Narrows, Oyster and Ostrich Bays that are represented in the table above.

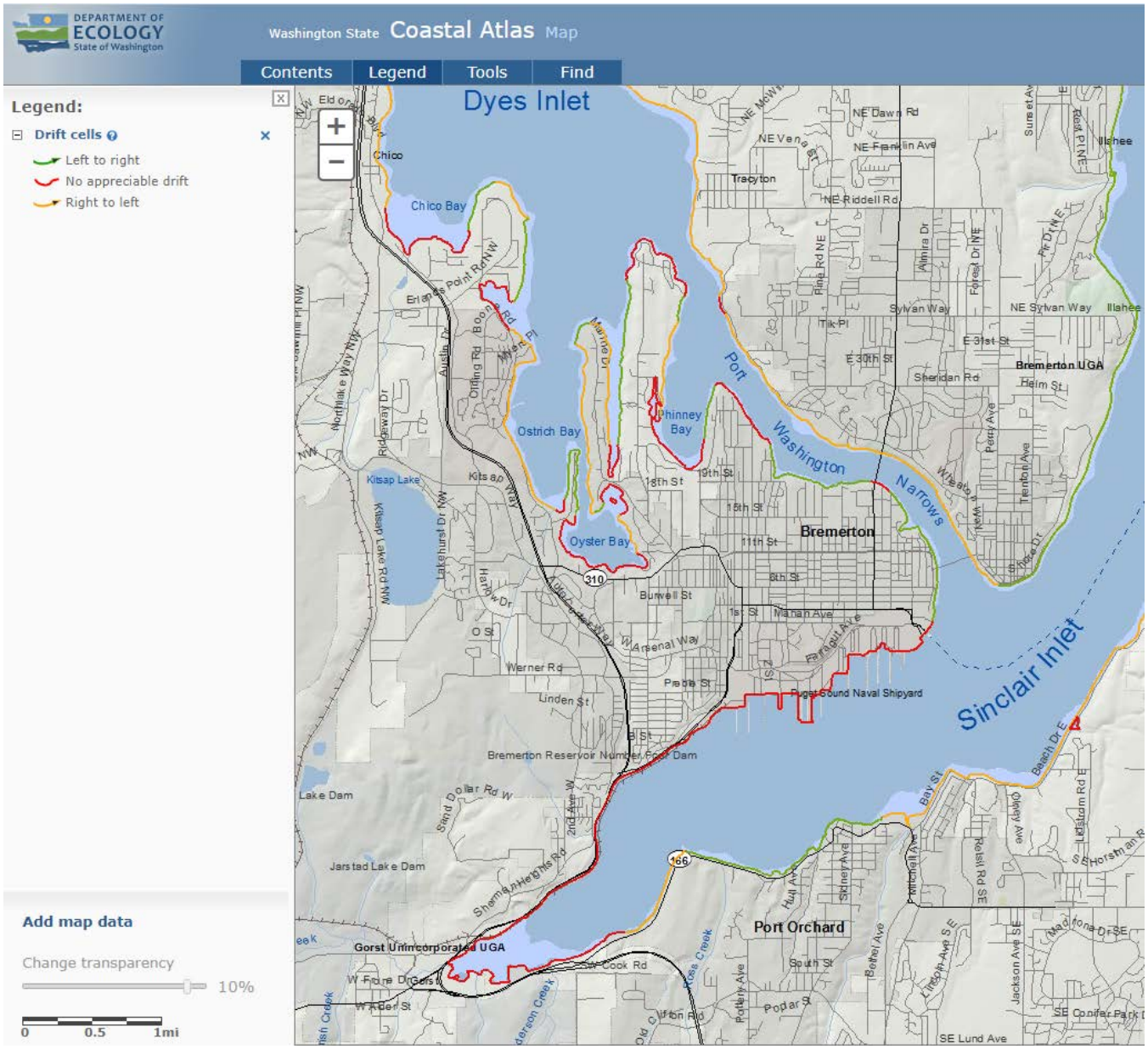

Figure 2. Sediment Movement and Deposition

The table below lists the known condition of each receiving water for Bremerton's stormwater outfalls. Each marine and freshwater receiving water has at least one impairment. The receiving water(s) impairments for the stormwater basins are summarized in Table 4.

Table 4. Receiving Water Impairments of Stormwater Basins

Stormwater Basin	Receiving Fresh Water	Impairments: 303(d) and Washington Category Four and Five	Receiving Marine Water(s)	Impairments: 303(d) and Washington Category Five	Total Impairments
Anderson Cove	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Anderson Creek	Anderson Creek	Category 4C for Fish and Shellfish Habitat	Sinclair Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan.	2
Callow Ave	NA	NA	Sinclair Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan.	1
Cherry Ave	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Chico Creek	Chico Creek	303(d) Bacteria, temperature, and dissolved oxygen. Washington state category 5 for temperature and dissolved oxygen. Category 4A for bacteria.	Dyes Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan. Washington state category 5 for mercury in sediment.	6
Coulter Creek	Coulter Creek	Washington State Category 5 impairment for pH and dissolved oxygen.	Case Inlet	Washington State Category 5 for bacteria.	3
East Park	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Enetai Creek	Enetai Creek	Washington State Category 5 for dissolved oxygen. Kitsap County Bacteria category 4B	Port Orchard Passage	Sinclair and Dyes Inlet Tributaries Bacteria TMDL	3
Gorst Creek	Gorst Creek	Washington State Category 5 for dissolved oxygen.	Sinclair Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan.	2

Kitsap Lake	Kitsap Lake	303(d) impaired for fecal coliform and phosphorus. Sinclair and Dyes Inlets Tributaries Bacteria TMDL. Washington State category 5 for dissolved oxygen and temperature. Category 4 for Bacteria.	Dyes Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan. Washington state category 5 for mercury in sediment.	8
Marine Drive	NA	NA	Mud Bay to Dyes Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan. Washington state category 5 for mercury in sediment.	2
Marion Ave	Infiltration Pond	NA	NA	NA	NA
Ostrich Bay	Ostrich Bay Creek	Washington State Category 5 for dissolved oxygen, Sinclair and Dyes Inlet Tributaries Bacteria TMDL, category 4A for Bacteria	Ostrich Bay to Dyes Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan. Washington state category 5 for mercury in sediment.	5
Oyster Bay	NA	NA	Oyster Bay to Dyes Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan. Washington state category 5 for mercury in sediment.	2
Pacific Ave	NA	NA	Sinclair Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan.	1
Phinney Bay	NA	NA	Phinney Bay to Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Pine Road	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Rocky Point	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2

Sinclair Park	NA	NA	Sinclair Inlet	Sinclair and Dyes Inlets fecal coliform bacteria TMDL and water quality implementation plan.	1
Stephenson Creek	Stephenson Creek	Sinclair and Dyes Inlet Tributaries Bacteria TMDL	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	3
Tracyton	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Trenton Ave	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2
Union River	Union River	Union River Bacteria TMDL, Category 5 for DO and Temperature	Hood Canal	Washington State Category 5 for dissolved oxygen.	3
Warren Ave	NA	NA	Port Washington Narrows	Sinclair and Dyes Inlet Tributaries Bacteria TMDL. Washington State category 5 for mercury in sediment.	2

To see the receiving waters most likely to be impacted by stormwater from the City of Bremerton, stormwater discharge has been organized by marine receiving water. (Table 5)

Table 5. Contributing Areas to Each Receiving Water

Receiving Marine Water	Percent of Total City Area Contributing to Marine Receiving Water	Receiving Fresh Water or Bay	Stormwater Basin	Acres Within Bremerton	Percent of Each Basin Within Bremerton	Percent of Basin Developed	Predominant Development Type(s)
Case Inlet	5.8%	Coulter Creek	Coulter Creek	1127	13.0%	12%	Port of Bremerton Airport, PSIC
Dyes Inlet	15.5%	Chico Creek	Chico Creek	902	9.1%	10%	residential
		Kitsap Lake	Kitsap Lake	820	65.3%	40%	residential, protected
		Ostrich Bay	Ostrich Bay	904	77.5%	80%	residential, commercial
		Oyster Bay	Oyster Bay	331	92.5%	94%	residential, commercial
		Mud Bay	Marine Drive	52	85.2%	85%	residential, commercial
Hood Canal	28.4%	Union River	Union River	5524	36.2%	5%	PSIC Bremerton, watershed, reservoir
None, Infiltration Only	NA	Infiltration Pond	Marion Ave	70	54.3%	65%	residential, commercial, parks
Port Orchard Passage	0.3%	Enetai Creek	Enetai Creek	54	11.8%	70%	residential, commercial, parks
Port Washington Narrows	14.4%	NA	Anderson Cove	410	100.0%	90%	residential, high school, parks
		NA	Cherry Ave	222	98.2%	95%	residential, commercial, parks
		NA	East Park	259	93.5%	90%	residential, commercial, parks
		NA	Pine Road	564	58.6%	80%	residential, commercial, parks
		NA	Rocky Point	4	1.1%	80%	residential
		NA	Tracyton	177	41.5%	50%	residential, park

		NA	Trenton Ave	251	90.3%	80%	residential, commercial
		NA	Warren Ave	265	100.0%	98%	residential, commercial, Olympic College
		Stephenson Creek	Stephenson Creek	429	95.1%	90%	residential, commercial, parks
		Phinney Bay	Phinney Bay	214	84.6%	80%	residential
Sinclair Inlet	35.2%	Anderson Creek	Anderson Creek	461	31.8%	35%	residential
		Gorst Creek	Gorst Creek	3737	56.9%	10%	residential, commercial, PSIC
		NA	Callow Ave	403	98.1%	95%	residential, commercial, parks
		NA	Pacific Ave	88	100.0%	100%	residential, downtown commercial
		NA	Sinclair Park	2150	100.0%	50%	residential, commercial, parks, sensitive area

Bremerton discharges most of its stormwater into Sinclair and Dyes Inlets (65.1%), either directly, or indirectly, after discharging to Oyster and Ostrich Bays or Port Washington narrows, or via Kitsap Lake. Kitsap Lake is part of the Chico Creek watershed, which drains to Dyes Inlet. From the TMDL, "The beneficial uses to be protected by this TMDL are primary contact recreation and shellfish protection. These uses will be protected by decreasing the load of FC bacteria to Sinclair-Dyes water bodies." This finding that the majority of stormwater from Bremerton makes its way to Sinclair and Dyes inlets supports the current focus on reducing fecal coliform pollution in stormwater.

Pollution reduction through treatment retrofit projects, BMP implementation, and MS4 maintenance will benefit many of the drainage basin and work towards meeting the Fecal Coliform TMDL goals.

Step 3: Stormwater Management Influence Assessment

This step will provide the rationale for sorting your receiving waters according to their relative expected benefit from SMAP. The assessment requires you to use your judgment as to the relative influence of your MS4 and potential SMAP actions to protect or improve receiving water conditions, based on the information gathered and compiled in Steps 1 and 2. Use that information and your knowledge of conditions across your jurisdiction's landscape to help determine/judge your MS4's current contribution to the receiving water and your potential stormwater management influence on future conditions in the receiving water.

Each stormwater basin was evaluated for the relative impact of stormwater on receiving water quality, as well as the likely effectiveness of stormwater retrofit projects to improve receiving water cleanliness and health. These were each rated on a scale of one to five, with one being least influential and five having the greatest influence. (Table 6) This allows the City to evaluate which stormwater basins may be the best candidates for SMAP, based on potential benefit and effectiveness in achieving desired receiving water quality and associated beneficial use.

Table 6. Relative Stormwater Management Influence

Basin Name	Total Acres	Acres Within Bremerton	Percent of Basin in Bremerton	Number of Stormwater Outfalls	Receiving Water(s)	Percent Developed	Number of current stormwater treatment systems	Relative influence of stormwater on receiving water condition	Relative effectiveness of stormwater retrofits
Anderson Cove	410	410	100%	11	Port Wa. Narrows	90%	4	2	2
Anderson Creek	1,450	461	32%	3	Sinclair Inlet	35%	0	2	1
Callow Ave	411	403	98%	1	Sinclair Inlet	95%	2	3	3
Cherry Ave	226	222	98%	2	Port Wa. Narrows	95%	10	2	4
Chico Creek	9,873	902	9%	see Kitsap Lake	Chico Creek to Sinclair Inlet	na	0	4	5
Coulter Creek	8,679	1,116	13%	0	Coulter Creek to Case Inlet	12%	0	1	1
East Park	277	259	94%	4	Port Wa. Narrows	90%	3	2	1
Enetai	456	54	12%	0	Port Orchard Passage	70%	1	1	2
Gorst Creek	6,573	3,739	57%	0	Gorst Creek to Sinclair Inlet	10%	0	2	2
Kitsap Lake	1,256	820	65%	17	Kitsap Lake	40%	1	5	5
Marine Drive	61	52	85%	0	Mud Bay	85%	0	3	3
Marion Ave	129	71	55%	2	Infiltration Pond	65%	1	NA	NA
Ostrich Bay	1166	904	78%	8	Ostrich Bay & Dyes Inlet	80%	1	4	4
Oyster Bay	358	331	92%	5	Oyster Bay	94%	5	4	4
Pacific Ave	88	88	100%	4	Sinclair Inlet	100%	4	2	2

Phinney Bay	253	189	75%	6	Phinney Bay	80%	0	2	3
Pine Rd	963	564	59%	1	Port Wa. Narrows	80%	2	3	4
Rocky Point	357	4	1%	0	Port Wa. Narrows	80%	0	1	1
Sinclair Park	1,294	856	66%	3	Sinclair Inlet	50%	4	1	1
Stephenson Creek	429	407	95%	8	Port Wa. Narrows	90%	2	3	4
Tracyton	427	178	42%	7	Port Wa. Narrows	50%	0	1	1
Trenton Ave	278	251	90%	7	Port Wa. Narrows	80%	1	2	2
Union River	15,259	5,514	36%	0	Union River	<5%	1	1	2
Warren Ave	265	265	100%	6	Port Wa. Narrows	98%	1	2	2

Outfall count includes sizes of pipe 8” and greater. And a few streams here and there.

Step 4: Assess Relative Conditions and Contributions

In this step you will narrow the number of receiving waters and basins to a candidate list to include in your Receiving Water Prioritization process. Permittees are not required to prioritize basins that were determined in Step 3 to have relatively low expected Stormwater Management Influence for SMAP.

Document the overall rationale for the final list of basins,

- *the proposed restoration or protection goal(s) for each receiving water,*
- *and some informed ideas about what specific catchment areas or sub-basins should be targeted for additional stormwater investments.*

Also include relevant information about existing plans and planning efforts that might meet or be leveraged to address SMAP needs. You will submit the inventory and map to Ecology according to the Permit Annual Report. As new information becomes available, add it to the inventory at appropriate milestones.

To begin the process of using the data collected to select the priority basin for SMAP, each basin was assessed for one or more disqualifying characteristics. (Table 7) The disqualifying characteristics used at this stage were:

- Area less than 50% City of Bremerton land
- Basin size under 300 acres
- 100% of stormwater discharges to infiltration pond

Table 7. Basins Disqualified from Consideration for Priority Basin

Basin Name	Total Basin Acres	Acres Within Bremerton	Percent of Basin in Bremerton	Percent Developed Estimate	Number of Water Quality Impairments	Eliminated From Priority Basin Candidate	Reason for Exclusion from Priority Basin Consideration
Anderson Cove	410	410	100%	90%	2		
Anderson Creek	1,450	461	32%	35%	2	✓	Less than 50% in Bremerton
Callow Ave	411	403	98%	95%	1		
Cherry Ave	226	222	98%	95%	2	✓	Under 300 acres
Chico Creek	9,873	902	9%	NA	5	✓	Less than 50% in Bremerton
Coulter Creek	8,679	1,116	13%	12%	3	✓	Less than 50% in Bremerton
East Park	277	259	94%	90%	2	✓	Under 300 acres
Enetai	456	54	12%	70%	2	✓	Less than 50% in Bremerton
Gorst Creek	6,573	3,739	57%	10%	2		
Kitsap Lake	1,256	820	65%	40%	8		
Marine Drive	61	52	85%	85%	2	✓	Under 300 acres
Marion Ave	129	71	55%	65%	NA	✓	outfalls to infiltration ponds
Ostrich Bay	1166	904	78%	60%	5		
Oyster Bay	358	331	92%	94%	2		
Pacific Ave	88	88	100%	100%	1		
Phinney Bay	253	189	75%	80%	2	✓	Under 300 acres
Pine Rd	963	564	59%	80%	2		
Rocky Point	357	4	1%		2	✓	Less than 50% in Bremerton
Sinclair Park	1,294	856	66%	50%	1		
Stephenson Creek	429	407	95%	90%	3		
Tracyton	395	178	45%	50%	2	✓	Less than 50% in Bremerton
Trenton Ave	278	251	90%	80%	2	✓	Under 300 acres
Union River	15,259	5,514	36%	<5%	1	✓	Less than 50% in Bremerton
Warren Ave	265	265	100%	98%	2	✓	Under 300 acres

After the preliminary elimination of basins not suited to SMAP, with Oyster and Ostrich Bay basins combined to act as one delineated basin for stormwater planning purposes, the following nine basins will be included in the prioritization process. (Table 8)

Table 8. Stormwater Basins Included in the Prioritization Process

Basin Name	Total Basin Acres	Percent of Basin in Bremerton	Receiving Water, Fresh	Receiving Water, Marine	Number of Water Quality Impairments	Relative influence of stormwater on receiving water condition	Relative effectiveness of stormwater retrofits
Anderson Cove	410	100%	None	Port Washington Narrows	2	2	2
Callow Ave	411	98%	None	Sinclair Inlet	1	3	3
Gorst Creek	6,573	57%	Gorst Creek	Sinclair Inlet	2	2	2
Kitsap Lake	1,256	65%	Kitsap Lake	Dyes Inlet	8	5	5
Oyster and Ostrich Bay Basin	1,524	81%	Ostrich Bay Creek	Dyes Inlet	5	4	4
Pacific Ave	88	100%	None	Sinclair Inlet	1	2	2
Pine Rd	963	59%	None	Port Washington Narrows	2	3	4
Sinclair Park	1,294	66%	None	Sinclair Inlet	1	1	1
Stephenson Creek	429	95%	Stephenson Creek	Sinclair Inlet	3	3	4

Further considerations such as the stormwater management influence assessment, sediment drift and deposition, and receiving water needs can be used to further refine this list.

The majority (65.1%) of surface area in the City of Bremerton contributes stormwater to Sinclair and Dyes Inlets. The stormwater is discharged to Sinclair and Dyes Inlets directly, indirectly after entering Oyster and Ostrich Bays or Port Washington narrows, or via Kitsap Lake. (Table 5) Kitsap Lake is part of the Chico Creek watershed, which drains to Dyes Inlet. From the TMDL, *"The beneficial uses to be protected by this TMDL are primary contact recreation and shellfish protection. These uses will be protected by decreasing the load of FC bacteria to Sinclair-Dyes water bodies."* This finding that the majority of Bremerton stormwater makes its way to a fecal coliform impaired water body supports the current focus on reducing fecal coliform pollution in stormwater.

Although Oyster Bay and Ostrich Bay have been delineated as separate basins for stormwater management purposes at street level scale, for purposes of SMAP it makes the most sense to combine them together as a

single basin. Oyster and Ostrich Bays combined basin (1,235 acres) and Kitsap Lake basin (820 acres) are both at the recommended watershed scale for SMAP of greater than 640 acres, or one square mile.

Because most of surface area in the City of Bremerton contributes stormwater to Sinclair and Dyes Inlets, and the potential for meaningful cultural and economic gains from successful reduction in fecal coliform pollution, the priority basins for City of Bremerton SMAP efforts should discharge to Sinclair and Dyes Inlets.

The highest number of water quality impairments per basin were found in Oyster and Ostrich Bays (5), Chico Creek (6) and Kitsap Lake (8). (Table 7) The stormwater from all three of these basins ends up in Dyes Inlet. Chico Creek is only 9% within the City of Bremerton, with 94% of that city land belonging to the Kitsap Lake basin, so for the purpose of SMAP Kitsap Lake will be considered a candidate for a priority basin rather than Chico Creek.

Kitsap Lake received the maximum score of 5 out of 5 for relative influence of stormwater on receiving water condition and relative effectiveness of stormwater retrofits. Oyster and Ostrich Bays were both given scores of 4 out of 5 for both relative influence of stormwater and relative effectiveness of retrofits on receiving water. Pine Road and Stephenson Creek stormwater basins received the next highest scores for relative influence of stormwater on receiving water condition and relative effectiveness of stormwater retrofits, each receiving scores of 3 and 4, respectively. (Table 6)

The prioritization efforts for the City of Bremerton stormwater basins are summarized in Table 9, below.

Table 9. Candidates for Priority Stormwater Basin for SMAP

Basin Name	Total Basin Acres	Percent of Basin in Bremerton	Percent Developed Estimate	Receiving Waters	Number of Water Quality Impairments	Relative influence of stormwater on receiving water condition	Relative effectiveness of stormwater retrofits
Kitsap Lake	1,256	65%	40%	Kitsap Lake to Kitsap Ck, Chico Ck, Dyes Inlet	8	5	5
Oyster and Ostrich Bays	1,524	81%	80%	Dyes Inlet	5	4	4
Pine Rd	963	59%	80%	Port Wa. Narrows to Sinclair Inlet	2	3	4
Stephenson Creek	429	95%	90%	Port Wa. Narrows to Sinclair Inlet	3	3	4

References

Current Water Quality Assessment Search Tool

- https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx

Washington Administrative Code Chapter 173-201A

- https://apps.leg.wa.gov/wac/default.aspx

Washington Administrative Code Chapter 173-201A Table 612: Use Designations for Marine Waters

- https://app.leg.wa.gov/WAC/default.aspx?cite=173-201A-612

Water Quality Atlas Map of Impaired Waterways at

- https://apps.ecology.wa.gov/waterqualityatlas/wqa/

Watershed Restoration and Enhancement Draft Plan, WRIA 15, Kitsap Watershed, Final Draft for Local Review

- https://www.ezview.wa.gov/Portals/_1962/images/WREC/WRIA15/Final%20Plan/WRIA15FinalDraftREVISED1Mar2021.pdf