

#### Water Quality Program

#### Permit Submittal Electronic Certification

Permittee: KIRKLAND CITY

Permit Number: WAR045521

Site Address: 123 5TH AVE Kirkland, WA 98033

#### Submittal Name: MS4 Annual Report Phase II Western

Version: 1

Due Date: 3/31/2023

#### **Questionnaire**

Number	Permit Section	Question	Answer
1	S5.A	Attach a copy of any annexations, incorporations or boundary changes resulting in an increase or decrease in the Permittee's geographic area of permit coverage during the reporting period per S9.D.6.	Not Applicable
2	S5.A	Attach updated annual Stormwater Management Program Plan (SWMP Plan). (S5.A.2)	SWMP2023_FINAL_2_ 03232023140925
3	S5.A	Implemented an ongoing program to gather, track, and maintain information per S5.A.3, including costs or estimated costs of implementing the SWMP.	Yes
4	S5.A.5.b	Coordinated among departments within the jurisdiction to eliminate barriers to permit compliance. (S5.A.5.b)	Yes
5	S5.C.1.	Have you convened an interdisciplinary team to inform and assist in the development, progress, and influence of the comprehensive stormwater planning program? (S.5.c.1). August 1, 2020	Yes
15	S5.C.1.c	Continue to design and implement local development-related codes, rules, standards, or other enforceable documents to minimize impervious surfaces, native vegetation loss, and stormwater runoff, where feasible? See S5.C.1.c.i. (Required annually)	Yes
16	S5.C.1.c	From the assessment described in S5.C.1.c.i (a), did you identify any administrative or regulatory barriers to implementation of LID Principles or LID BMPs? (Required annually)	No
19	S5.C.1.d	Developed a Stormwater Management Action Plan (SMAP) for at least one high priority area? (S.5.C.1.d.iii – Required by March 31, 2023)	Yes
19a	S5.C.1.d	Attach SMAP(s)	Kirkland Stormater Management _19a_03272023084013
20	S5.C.2	Did you choose to adopt one or more elements of a regional program? (S5.C.2)	Yes

20a	S5.C.2	If yes, list the elements, and the regional program.	1. Puget Sound Starts Here (PSSH) bus ads 2. Puget Sound Starts Here (PSSH) digital social media campaign via YouTube, Facebook. Ads presented in English, Spanish, Vietnamese, and Korean. Focused on auto maintenance. 3. Participation on both the Puget Sound Starts Here Steering Committee and the Stormwater Outreach for Regional Municipalities (STORM) Steering Committee. 4. Implementation of the regional dumpster lid behavior change campaign. 5. Participation in the Ecology Pollution Prevention Assistance Statewide Video Committee.
21	S5.C.2	Attach a description of general awareness efforts conducted, including your target audiences and subject areas, per S5.C.2.a.i.	21 - general awareness_21_032720 23084301
26	\$5.C.2	Promoted stewardship opportunities (or partnered with others) to encourage resident participation in activities such as those described in S5.C.2.a.iii.	Yes
26a	S5.C.2	Attach a list of stewardship opportunities provided.	26a - stewardship opportunitie_26a_03232 023141111

27	S5.C.3.	Describe in Comments field the opportunities created for the public, including overburdened communities, to participate in the decision- making processes involving the development, implementation, and updates of the Permittee's SWMP and the SMAP. (S5.C.3.a)	Regular opportunity is provided for public input. Interested parties can provide feedback at any time at Kirkland's online reporting potal, Our Kirkland. Our various plans are posted to Kirkland's website, comments are requested via twitter, Facebook, e-newsletter, and press release. In addition, Kirkland has continued our Surface and Stormwater Utility Master Planning process, thru 2022. This has included attendance at many community events, a survey, a virtual open house, and on-going communication through email list-serv and website updates.
28	S5.C.3.	Posted the updated SWMP Plan and latest annual report on your website no later than May 31. (S5.C.3.b)	Yes
28a	S5.C.3.	List the website address in Comments field.	https://www.kirklandwa. gov/Government/Depart ments/Public-Works- Department/Storm- Surface- Water/Stormwater- Policies-and- Regulations
29	S5.C.4.	Maintained a map of the MS4 including the requirements listed in S5.C.4.a.i-vii?	Yes
30	S5.C.4.	Started mapping outfall size and material in accordance with S5.C.4.b.i? (Required no later than January 1, 2020)	Not Applicable Comment: Mapping commenced according to permit timelines. No changes from prior years submitted outfall list.
31	S5.C.4.	Completed mapping connections to private storm sewers in accordance with S5.C.4.b.ii? (Required no later than August 1, 2023)	Yes
33	S5.C.5	Informed public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste? (S5.C.5.b)	Yes

220		Actions taken to inform public employees	City traina Dalian Eira
338	55.0.5	Actions taken to inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste.	City trains Police, Fire, Parks, and Planning (including Code Enforcement), Construction Inspectors, and all utility staff. Online training was created for all staff and audience specific training for Fire and Police. City implements a Pollution Prevention Assistance program and spill kit program to educate businesses. City provides information to general public through BMP info cards, Facebook posts, utility inserts, postcards, and trainings. Staff also presented to the Juanita and Highlands Neighborhood Association's Meetings. City trucks are wrapped with spill messaging and hotline advertisement.
34	S5.C.5	Implemented an ordinance or other regulatory mechanism to effectively prohibit non- stormwater, illicit discharges as described in S5.C.5.c.	Yes
35	S5.C.5	Implemented procedures for conducting illicit discharge investigations in accordance with S5.C.5.d.i.	Yes
35a	S5.C.5	Cite field screening methodology in Comments field.	Kirkland's methodology is based on the permit referenced manual, the 2020 IDDE Field Screening & Source Training Manual, locally adapted to Kirkland.
36	S5.C.5	Percentage of MS4 coverage area screened in the reporting year per S5.C.5.d.i. (Required to screen 12% on average each year.)	57.1

36a	S5.C.5	Cite field screening techniques used to determine percent of MS4 screened.	City of Kirkland Stormwater staff screen the MS4 through catch basin inspections. All catch basins in the city are inspected every two years. These inspections are tracked in our asset management system. During each inspection, the staff are observing the structural integrity of the structure and adjoining pipes, sediment accumulation levels, and if there is any unusual flow, odor, color, or other visual indicators that would suggest a pollutant is present. If there is a water quality concern, the staff will then report a spill through the spill hotline and create a spill response work order. This will trigger notification to the Water Quality Team for investigation and follow up and the Storm Maintenance Crew to clean the storm catch basin, as well as other storm structures that have been affected
37	S5.C.5	Percentage of total MS4 screened from permit effective date through the end of the reporting year. (S5.C.5.d.i.)	100
38	S5.C.5	Describe how you publicized a hotline telephone number for public reporting of spills and other illicit discharges in the Comments field. (S5.C.5.d.ii)	Kirkland publicizes their spills hotline in a variety of ways, including: surface water web pages, presentations and educational events to public and staff, stickers that are handed out at the counter and at public events, on some staff business cards and email signatures, during discharge response education, annual winter preparedness utility bill insert, BMP rack cards, business pollution prevention guide, Kirkland's Erosion and Sedimentation Control Plans and notes, and Kirkland's public facing service request portal.

39	S5.C.5	Implemented an ongoing illicit discharge training program for all municipal field staff per S5.C.5.d.iii.	Yes
40	S5.C.5	Implemented an ongoing program to characterize, trace, and eliminate illicit discharges into the MS4 per S5.C.5.e.	Yes
41	S5.C.5	Municipal illicit discharge detection staff are trained to conduct illicit discharge detection and elimination activities as described in S5.C.5.f.	Yes
42	S5.C.5	Attach a report with data describing the actions taken to characterize, trace, and eliminate each illicit discharge reported to, or investigated by, the Permittee as described in S5.C.5.g. The submittal must include all of the applicable information and must follow the instructions, timelines, and format described in Appendix 12.	WAR045521-2022- ImportedIDDEs_ 03272023085906 Comment: Kirkland has submitted information to the WQWebIDDE portal.
43	S5.C.6.	Implemented an ordinance or other enforceable mechanism to effectively address runoff from new development, redevelopment, and construction sites per the requirements of S5.C.6.b.i-iii.	Yes
44	S5.C.6.	Revised ordinance or other enforceable mechanism to effectively address runoff from new development, redevelopment, and construction sites per the requirements of S5.C.6.b.i-iii. (Required no later than June 30, 2022)	Yes
44a	S5.C.6.	Cite code reference in Comments field.	KMC 15.04 and KMC 15.52
45	S5.C.6.	Number of adjustments granted to the minimum requirements in Appendix 1. (S5.C.6.b.i. and Section 5 of Appendix 1)	7
46	S5.C.6.	Number of exceptions/variances granted to the minimum requirements in Appendix 1. (S5.C.6.b.i., and Section 6 of Appendix 1)	0
47	S5.C.6.	Reviewed Stormwater Site Plans for all proposed development activities that meet the thresholds adopted pursuant to S5.C.6.b.i. (S5.C.6.c.i)	Yes
47a	S5.C.6.	Number of site plans reviewed during the reporting period.	783
48	S5.C.6.	Inspected, prior to clearing and construction, permitted development sites per S5.C.6.c.ii, that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7 – Determining Construction Site Sediment Damage Potential?	No
48a	S5.C.6.	If no, inspected, prior to clearing and construction, all construction sites meeting the minimum thresholds (S5.C.6.c.ii)?	Yes
49	S5.C.6.	Inspected permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls per S5.C.6.c.iii.	Yes
49a	S5.C.6.	Number of construction sites inspected per S5.C.6.c.iii.	537

49b	S5.C.6.	Inspected stormwater treatment and flow control BMPs/facilities and catch basins in new residential developments every 6 months per S5.C.6.c.iv?	Yes
50	S5.C.6.	Inspected all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities. (S5.C.6.c.v)	Yes
51	S5.C.6.	Verified a maintenance plan is completed and responsibility for maintenance is assigned for projects prior to final approval and occupancy being granted. (S5.C.6.c.v)	Yes
52	S5.C.6.	Number of enforcement actions taken during the reporting period (based on construction phase inspections at new development and redevelopment projects). (S5.C.6.c.ii-iv) (S5.C.7.c.viii)	18
53	S5.C.6.	Achieved at least 80% of scheduled construction-related inspections. (S5.C.6.c.vi)	Yes
54	S5.C.6.	Made Ecology's Notice of Intent for Construction Activity and Notice of Intent for Industrial Activity available to representatives of proposed new development and redevelopment? (S5.C.6.d)	Yes
55	S5.C.6.	All staff whose primary job duties are implementing the program to control stormwater runoff from new development, redevelopment, and construction sites including permitting, plan review, construction site inspections, and enforcement are trained to conduct these activities? (S5.C.6.e)	Yes
56	S5.C.7.	Implemented maintenance standards that are as protective, or more protective, of facility function than those specified in the Stormwater Management Manual for Western Washington or a Phase I program approved by Ecology per S5.C.7.a.?	Yes
57	S5.C.7.	Updated maintenance standards specified in Stormwater Management Manual for Western Washington per S5.C.7.a? (Required no later than June 30, 2022)	Yes
58	S5.C.7.	Applied a maintenance standard for a facility or facilities which do not have maintenance standards specified in the Stormwater Management Manual for Western Washington? If so, note in the Comments field what kinds of facilities are covered by this alternative standard. (S5.C.7.a)	Yes
58a	S5.C.7.	Note what kinds of facilities are covered by this alternative standard. (S5.C.7.a)	Contech Filterra, Biopod
59	S5.C.7.	Verified that maintenance was performed per the schedule in S5.C.7.a.ii when an inspection identified an exceedance of the maintenance standard.	Yes
59a	S5.C.7.	Attach documentation of maintenance time frame exceedances that were beyond the Permittee's control.	Not Applicable

60	S5.C.7.	Implemented an ordinance or other enforceable mechanisms to verify long-term operation and maintenance of stormwater treatment and flow control BMPs/facilities regulated by the permittee per (S5.C.7.b.i (a))?	Yes
61	S5.C.7.	Annually inspected stormwater treatment and flow control BMPs/facilities regulated by the Permittee per S5.C.7.b.i(b)	Yes
61a	S5.C.7.	If using reduced inspection frequency for the first time during this permit cycle, attach documentation per S5.C.7.b.i (b)	Not Applicable
62	S5.C.7.	Achieved at least 80% of scheduled inspections to verify adequate long-term O&M. (S5.C.7.b.ii)	Yes
63	S5.C.7.	Annually inspected all municipally owned or operated permanent stormwater treatment and flow control BMPs/facilities. (S5.C.7.c.i)	Yes
63a	S5.C.7.	Number of known municipally owned or operated stormwater treatment and flow control BMPs/facilities. (S5.C.7.c.i)	757
63b	S5.C.7.	Number of facilities inspected during the reporting period.	757
63c	S5.C.7.	Number of facilities for which maintenance was performed during the reporting period.	182
64	S5.C.7.	If using reduced inspection frequency for the first time during this permit cycle, attach documentation per S5.C.7.c.i.	Not Applicable
65	S5.C.7.	Conducted spot checks and inspections (if necessary) of potentially damaged stormwater facilities after major storms as per S5.C.7.c.ii.	Not Applicable
66	S5.C.7.	Inspected municipally owned or operated catch basins and inlets every two years or used an alternative approach? Cleaned as needed? (S.5.C.7.c.iii)	Yes
66a	S5.C.7.	Number of known catch basins?	16397
66b	S5.C.7.	Number of catch basins inspected during the reporting period?	9363
66c	S5.C.7.	Number of catch basins cleaned during the reporting period?	2222
67	S5.C.7.	Attach documentation of alternative catch basin cleaning approach, if used. (S5.C.7.c.iii.(a)-(c))	Not Applicable
68	S5.C.7.	Implemented practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (S5.C.7.d)	Yes
69	S5.C.7.	Documented practices, policies, and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (S5.C.7.d – Required by December 31, 2022)	Yes
69a	S5.C.7.	Cite documentation in Comments.	"Kirkland Stormwater Pollution Prevention for City Activities"

70	S5.C.7.	Implemented an ongoing training program for Permittee employees whose primary construction, operations or maintenance job functions may impact stormwater quality. (S5.C.7.e)	Yes
71	S5.C.7.	Implemented a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit that are not required to have coverage under an NPDES permit that covers stormwater discharges associated with the activity. (S5.C.7.f)	Yes
72	S5.C.7.	Updated, if needed, SWPPPs according to S5.C.7.f no later than December 31, 2022.	Yes
73	S5.C.8	Adopted ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities per S.5.C.8.b.i. (Required by August 1, 2022)	Yes
73a	S5.C.8	Cite ordinance. (Required by August 1, 2022)	Kirkland Municipal Code 15.52.100 Source Control Best Management Practices. https://www.codepublish ing.com/WA/Kirkland/
74	S5.C.8	Established an inventory per S5.C.8.b.ii. (Required by August 1, 2022.)	Yes
74a	S5.C.8	Number of total sites identified for the inventory.	847
75	S5.C.8	Implemented an inspection program S5.C.8.b.iii (Required by January 1, 2023).	Yes
76	S5.C.8	Implemented a progressive enforcement policy per S5.C.8.b.iv (Required by January 1, 2023).	Yes
77	S5.C.8	Attach a summary of actions taken to implement the source control program per S5.C.8.b.iii and S5.C.8.b.iv.	77- Summary of Actions for Sou_77_032320231440 42
78	S5.C.8	Attach a list of inspections, per S5.C.8.b.iii, organized by the business category, noting the amount of times each business was inspected, and if enforcement actions were taken.	Not Applicable
79	S5.C.8	Implemented an ongoing source control training program per S5.C.8.b.v?	Yes
80	S7	Complied with the Total Maximum Daily Load (TMDL)-specific requirements identified in Appendix 2. (S7.A)	Not Applicable
81	S7	For TMDLs listed in Appendix 2: Attach a summary of relevant SWMP and Appendix 2 activities to address the applicable TMDL parameter(s). (S7.A)	Not Applicable
82	S8	Submitted payment for cost-sharing for Stormwater Action Monitoring (SAM) status and trends monitoring no later than December 1, 2019 (S8.A.1); and no later than August 15 of each subsequent year? (S8.A.2.a.)	Yes

84	S8	Submitted payment for cost-sharing for SAM effectiveness and source identification studies no later than December 1, 2019 (S8.B.1); and no later than August 15 of each subsequent year (S8.B.2.a or S8.B.2.c)?	Yes
87	S8	If conducting stormwater discharge monitoring in accordance with S8.C.1, attach a data and analysis report per S8.C.1. and Appendix 9. (Due annually beginning March 31, 2021.)	Not Applicable
88	G3	Notified Ecology in accordance with G3 of any discharge into or from the Permittees MS4 which could constitute a threat to human health, welfare or the environment. (G3)	Yes
89	G3	Took appropriate action to correct or minimize the threat to human health, welfare, and/or the environment per G3.A.	Yes
90	Compliance with standards	Notified Ecology within 30 days of becoming aware that a discharge from the Permittee's MS4 caused or contributed to a known or likely violation of water quality standards in the receiving water. (S4.F.1)	Yes
91	Compliance with standards	If requested, submitted an Adaptive Management Response report in accordance with S4.F.3.a.	Not Applicable
92	Compliance with standards	Attach a summary of the status of implementation of any actions taken pursuant to S4.F.3 and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d)	Not Applicable
93	G20	Notified Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20)	Not Applicable
94	G20	Number of non-compliance notifications (G20) provided in reporting year. List permit conditions described in non-compliance notification(s) in Comments field.	Not Applicable

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Beth Goldberg

3/28/2023 3:28:58 PM

Signature

Date



# Stormwater Management Action Plan Totem Lake Catchment



## **City of Kirkland Local Land Acknowledgment**

"We acknowledge that the Southern Salish Sea region lies on the unceded and ancestral land of the Coast Salish peoples, the Duwamish, Muckleshoot, Puyallup, Skykomish, Snoqualmie, Snohomish, Suquamish and Tulalip tribes and other tribes of the Puget Sound Salish people, and that present-day City of Kirkland is in the traditional heartland of the Lake People and the River People. We honor with gratitude the land itself, the First People — who have reserved treaty rights and continue to live here since time immemorial — and their ancestral heritage."

Visit www.kirklandwa.gov/LandAcknowledgement for more information

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*Figure 3. Location of Wetlands, Streams, Parks, and Open Spaces in Totem Lake Catchment* 

Figure 4. Locations Showing Development in Last 10 Years (in black)

Figure 5. Locations of Sites Considered for Potential Retrofit and Retrofit Capital Projects Advanced to Implementation Phase (in purple). In some cases multiple facilities were considered at a particular site.

Figure 6. Location of Strategic Stormwater Retrofits

Figure 7. Locations of Existing City Stormwater Facilities for Potential Retrofit or Replacement, and Locations where Retrofit has been Completed

*Figure 8. Public and Private Stormwater Facility Locations, Showing Gaps where New Retrofit could be Potentially Located (in blue squares)* 

#### List of Attachments

Attachment A. Receiving Water Characterization

Attachment B. Retrofit Project Summary Sheets

This plan is submitted to Washington State Department of Ecology in fulfillment of Condition S5.C.1.d of the 2019-2024 Western Washington Phase II National Pollutant Discharge Elimination System (NP-DES) Stormwater Permit issued by the Washington State Department of Ecology (Ecology, 2019a).

## **Executive Summary**

This Stormwater Management Action Plan (SMAP) details the actions the City of Kirkland plans to take to improve water quality in the creeks, lake, and wetlands of the Totem Lake Catchment within the Juanita Watershed. The SMAP includes both short-term and long-term planning actions.

#### Why is this plan necessary?

The City is required to conduct this planning as part of compliance with our state regulated National Pollutant Discharge Elimination System (NPDES) Permit for our stormwater system. This plan is a result of those requirements and advances the City's on-going goal to improve water quality.

#### How was the Totem Lake Catchment selected?

Kirkland's 15 watersheds were prioritized and ranked based on a combination of state and local priorities, public and stakeholder input, water quality goals, environmental justice goals, and stormwater management priorities. This process identified the Juanita Creek watershed as the top priority. A similar process was then applied to the catchments within Juanita Creek and identified the Totem Lake catchment as the highest priority area based on factors identified on Page 6.

#### What does this plan include?

This plan details actions selected to support cleaner water. These actions include:

- Planning, designing, and constructing new or enhanced stormwater infrastructure
- Inspecting and cleaning stormwater pipes
- Providing technical assistance and support to prevent pollution at businesses
- Reducing pollution from dumpsters by implementing the regional "Shut the Lid" Behavior Change Campaign
- Continuing various stormwater programs that support pollution reduction





## **Introduction and Background**

This Stormwater Management Action Plan (SMAP) was prepared by the City of Kirkland as required by Condition S5.C.1.d of the 2019-2024 Western Washington Phase II National Pollutant Discharge Elimination System (NPDES) Stormwater Permit issued by the Washington State Department of Ecology (Ecology, 2019a).

Kirkland has ongoing programs and projects to address holistic surface water management goals including to improve habitat, improve water quality, reduce impacts from flooding and maintain infrastructure. Retrofit planning has been a city-wide priority in Kirkland for the last decade. The 2014 Surface Water Master Plan Update (Kirkland 2014) recommended, and the City ultimately funded and advanced several watershed specific stormwater retrofit actions. Stormwater retrofit is still a priority and the City continues to conduct watershed-specific retrofit planning. The 2023 Surface Water Master Plan Update (Kirkland 2023a) recommends additional retrofit programming focused on aging infrastructure, as well as partnering with other departments and the community on retrofit opportunities.

The primary focus of Ecology's stormwater management planning requirement is to address impacts from existing and/or planned development on water quality in the selected priority receiving water. In pursuit of this goal, this SMAP works to identify actions to help protect and improve receiving water quality. For more information on the City's overall storm and surface water management program, please see the following documents:

- 2023 Surface Water Master Plan Update (Kirkland 2023a)
- Stormwater Management Plan (Kirkland 2023b)

To prepare for the development of this SMAP, the City conducted a Receiving Water Assessment and Receiving Water Prioritization. Those processes resulted in the City selecting the Totem Lake Catchment of the Juanita Creek Watershed as its high priority catchment for stormwater action planning. Figure 1 shows the location of the Juanita Creek Watershed and the Totem Lake Catchment within Juanita Creek.

A summary of the preliminary analysis conducted prior to development of this SMAP and the results that informed development of the projects and strategies is contained in this document.





Figure 1. Vicinity Map



Permit section S5.C.1.d.iii lists the following required components of the SMAP:

- (a) A description of the stormwater facility retrofits needed for the area, including the BMP types and preferred locations.
- (b) Land management/development strategies and/or actions identified for water quality management.
- (c) Targeted, enhanced, or customized implementation of stormwater management actions related to permit sections within S5, including:
  - IDDE field screening,
  - Prioritization of Source Control inspections,
  - O&M inspections or enhanced maintenance, or
  - Public Education and Outreach behavior change programs.
  - Identified actions shall support other specifically identified stormwater management strategies and actions for the basin overall, or the catchment area.
- (d) If applicable, identification of changes needed to local long-range plans, to address SMAP priorities.
- (e) A proposed implementation schedule and budget sources for:
  - Short-term actions (i.e. actions to be accomplished within six years), and
  - Long-term actions (i.e., actions to be accomplished within seven to 20 years).
- (f) A process and schedule to provide future assessment and feedback to improve the planning process and implementation of procedures or projects.

This SMAP follows the same order as listed in the Permit and where actions are not appropriate for the Totem Lake Catchment, it is noted.



3

# **Summary of Watershed Assessment and Prioritization**

The City conducted a receiving water inventory and assessment pursuant to NPDES Permit Requirement S5.C.1.d.i in March 2022 and submitted the results to Ecology (City of Kirkland, 2022a). Following the watershed inventory and assessment of receiving water conditions, the City completed its prioritization process (Permit section S.5.C.1.d.ii) in June 2022 (City of Kirkland, 2022b).

### **Receiving Water Conditions**

Receiving water conditions were assessed for the City's 15 watersheds, including the following characteristics:

- Total size
- Size within the City
- Basin size within the city
- Impervious Area
- Forested percentage
- Primary land use and percentage
- Secondary land use and percentage
- Salmon use
- Current 303(d) listings
- B-IBI scores
- Water Quality Index Results
- Stormwater Management Influence

Based on the results of the initial receiving water characterization, and stormwater management influence, the city decided to include all of its watersheds in the prioritization process and not eliminate any from further consideration as a candidate for Stormwater Management Action Planning. Attachment A includes the receiving water characterization summary table.



#### Watershed Prioritization

Kirkland's 15 watersheds were prioritized and ranked (Table 1) based on several factors including:

- Ecology's Stormwater Management Action Planning Guidance (Ecology, 2019b)
- Public feedback
- Stakeholder input
- City priorities

Criteria considered in the watershed prioritization included questions from the following five categories:

- 1. Fish presence, including salmonids.
- 2. Water quality issues and presence or absence of stormwater facilities.
- 3. Stormwater management influence and flow control.
- 4. Environmental justice and overburdened communities.
- 5. City influence and priorities.

Basin Name	Rank
Juanita Creek	1
Forbes Creek	2
Champagne Creek	3
Denny Creek	4
Moss Bay	5
South Juanita Slope	6
Lower Sammamish River Valley	7
To Redmond	8
Carillon Creek	9
Houghton Slope A	10
Houghton Slope B	11
Yarrow Creek	12
Holmes Point	13
Kirkland Slope	14
Kingsgate Slope	15





#### **Catchment Selection Process**

A similar process to the watershed prioritization was used to prioritize one of five tributary catchments in the Juanita Creek watershed for Stormwater Management Action Planning. Questions were developed to refine and rank the highest priority catchments to reflect the range of issues the City expects to influence and address in the Stormwater Management Action Plan including habitat and salmon use, water quality, environmental justice, and city influence and priorities.

Two catchments rose to the top in the catchment ranking process, Totem Lake and the North Mainstem. Ultimately, staff decided on the Totem Lake Catchment based on the following considerations which include but are not limited to:

- Totem Lake has more achievable and impactful short-term actions.
- Totem Lake is a Regional Growth Center. The City has seen and expects continued redevelopment and associated capital investments to support this growth.
- High density of light industrial and commercial activity occurs in this area.
- Opportunity for public/private partnerships for stormwater management.
- On State's 303d list for fecal coliform bacteria, dissolved oxygen, and temperature
- Contains the Totem Lake tributary to Juanita Creek, which supports salmon species, including Chinook salmon.
- Downstream owners have concerns about high flows and erosion.
- Equity criteria based on EPA Environmental Justice Screening tool

## **Overview of the Catchment**

The Totem Lake Catchment is one of four major tributaries to Juanita Creek. Land use in the catchment includes a mix of single- and multi-family residential development, commercial and light industrial businesses, a mall, a regional hospital, and a college campus. Major north-south (Interstate 405) and east-west (NE 124<sup>th</sup> Street) transportation corridors bisect the catchment. A portion of the catchment has been designated as a <u>Regional Growth Center</u> and will continue to see increased density of development. Figure 2 shows the zoning designations in the vicinity of the catchment.





Figure 2. Zoning Designations in Vicinity of Totem Lake Catchment



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Figure 3. Location of Wetlands, Streams, Parks, and Open Spaces in Totem Lake Catchment



Totem Lake itself, large wetland complexes surrounding the lake, and the Juanita Creek stream corridor are the primary open spaces in the catchment. Figure 3 shows the open spaces, wetlands, and streams.

# **Catchment Planning History**

The Totem Lake Catchment upstream of I-405 has previously been evaluated by the City in an Ecology-grant funded project, Totem Lake/Juanita Creek Basin Stormwater Retrofit Conceptual Design. Twenty-nine candidate projects, some of which were in the same location, were identified for potential retrofits and were evaluated for project feasibility.

Of the twenty-nine projects, six were selected for development of stormwater retrofit concepts. After additional project review and discussion with a panel of technical assistance experts, two projects, 132<sup>nd</sup> Square Park and NE 120<sup>th</sup> Street Right-of-Way Water Quality Treatment, were advanced to the implementation phase. These projects are discussed under Strategic Stormwater Retrofits. In addition to these two city-sponsored retrofit projects, water quality treatment and in some cases flow control has been provided as existing highly impervious properties have redeveloped. Figure 4 below shows locations where properties have developed since 2000 (in black). These sites were built to modern stormwater regulations, slowing and cleaning stormwater before it discharges into Totem Lake and Juanita Creek. Figure 5 shows locations of the retrofit sites that were considered and sites where facilities were advanced to construction.





Figure 4. Locations Showing Development since 2000 (in black).





Figure 5. Locations of Sites Considered for Potential Retrofit and Retrofit Capital Projects Advanced to Implementation Phase (in purple). In some cases multiple facilities were considered at a particular site.



#### Identification and Prioritization of Actions

Stormwater management actions were identified for the Totem Lake Catchment through review of previous retrofit planning (City of Kirkland, 2015), during development of the City's Surface Water Master Plan Update, which is expected to be adopted in April 2023 (City of Kirkland, 2023a), and through this planning process. The duration, schedule, and costs of capital and non-capital (programmatic) stormwater management actions were identified in the Surface Water Master Planning process and incorporated City Council and Staff priorities. A subset of these actions are tailored/customized for use in the Totem Lake Catchment. Several short-term non-capital stormwater actions will likely result in further refinement of a list of capital projects to be constructed over the lifetime of this Stormwater Management Action Plan.

## Strategic Stormwater Retrofits

Implementation of stormwater retrofits in the Totem Lake Catchment is on-going. The City is committed to improving water quality and flows in this catchment as part of an overall effort to improve fish and wildlife habitat in the Juanita Creek watershed. The economic vitality of this urban center is supported and enhanced by these stormwater efforts, as Kirkland residents have a strong connection to the natural environment and interest in maintaining healthy open spaces that support wildlife. In addition, retrofits reduce flooding which has in the past impacted Totem Lake businesses.

The City's largest retrofit undertaking to date is in the Totem Lake Catchment – 132<sup>nd</sup> Square Park Regional Detention. Additional strategic retrofit actions to make progress on improving flows and water quality in this catchment are listed in Table 2. These actions were identified via the City's Surface Water Master Planning process and will be focused and tailored to the needs of the Totem Lake Catchment. A more detailed description of the retrofits follows Table 2.



#### Table 2. List of Strategic Stormwater Retrofits

Project	Description	Sch	edule	Best Management Practice		
		Short-term	Long-term	Туре		
		(2023-2030)	(2030 or later)			
132 <sup>nd</sup> Square Park Re- gional Detention	Construct water quality and flow control treatment facility for 50 acres of up- stream receiving area. Monitor stormwa- ter infiltration facility to determine design accuracy and facility impact.	Complete construc- tion, which is in progress. Conduct Monitoring	N/A	Stormwater Retrofit using propri- etary water quality treatment and infiltration thru bottomless vault.	132"	
NE 120 <sup>th</sup> Street Right- of-Way Water Quality Treatment	Implementation of water quality treat- ment for about 4 acres of upstream area, including a high-traffic roadway.	Project Completed.	N/A	Stormwater Retrofit using Stormfil- ter cartridges, proprietary treatment devices, placed in 6 catch basins within the right of way.	NE 1	
Totem Square Regional Detention and Water Quality Treatment	Design and construct water quality and flow control treatment facility to capture flow in the vicinity of intersection of 124 <sup>th</sup> Ave NE and NE 124 <sup>th</sup> Street.		Design and Con- struct Project	Stormwater Retrofit using vault and/ or bioretention.	NE 1 quir	
Lake Washington In- stitute of Technology (LWIT) Water Quality Treatment and Deten- tion	Design and construct a stormwater facility to provide flow control and water quality treatment from 23.4 acres of the LWIT campus.		Design and Con- struct Project	Stormwater Retrofit using vaults and/or infiltration.	Lake Req	
Retrofit Aging Storm- water Facilities	Develop plan to replace, upgrade, repair, or repurpose City's aging stormwater facilities	Develop Plan and Prioritized Project List	Design and Con- struct Projects	Existing Facility Retrofit	Who Pote pans tion	
Retrofit and Replace Aging and Failing Pipes	Develop plan to replace and repair aging and failing pipes based on condition and risk.	Develop Plan and Prioritized Project List	Design and Con- struct Projects	System upgrade and retrofit	Guid Pote ure, natio ects	
Identify Opportunities for Retrofit along Cross Kirkland Corridor	Review CKC Master Plan for surface wa- ter projects and needs related to surface water	Prioritized Project List	Design and Con- struct Projects	New Retrofit Facilities – BMPs to be determined, as appropriate.	Cros Pote co-t mitig	
Evaluate and prioritize preferred locations for New Stormwater Retro- fit on west side of I-405	Review facility heat map to identify loca- tions that are lacking stormwater treat- ment.	Develop Plan and Prioritized Project List	Design and Con- struct Projects	New Retrofit Facilities – BMPs to be determined as appropriate.	Wes Pote perr stre feas ter i	



13

Square Park and stormwater pipes in vicinity

120<sup>th</sup> Street.

124<sup>th</sup> Street and 124<sup>th</sup> Ave NE and vicinity. Rees coordination with private developers.

e Washington Institute of Technology Campus. uires coordination with private institution.

ole Totem Lake Catchment.

ential prioritization criteria: potential for exsion or repurposing, type of facility, coordinawith other city projects

ded by CCTV Condition Assessment

ential prioritization criteria: likelihood of fail-, consequences of failure, potential for coordion of repair/replacement with other city proj-

ss Kirkland Corridor

ential prioritization criteria: potential for penefits, potential for coordination with CKC gation needs, potential for infiltration

st Side of I-405

ential prioritization criteria: property ownership, mitting, absence of existing treatment, upam land use, infiltration potential, construction sibility, and coordination with existing stormwainfrastructure and other city projects

Figure 6 shows location-specific stormwater retrofits that are in-progress, constructed, or recommended for design. Additional stormwater retrofits are planned for the catchment in general. Preferred locations are where needs have been identified, as listed in Table 2 and described below.



Figure 6. Location of Strategic Stormwater Retrofits



### 132nd Square Park Regional Detention

The 132<sup>nd</sup> Square Park achieves multiple city objectives in one location. The park was identified through analysis to be a good location to treat and infiltrate nearly 50 acres of contributing area. At the same time, park amenities were improved through the installation of a year-round accessible turf field, bathroom and recreational facilities, and parking. The resulting stormwater treatment and infiltration vault will manage the stormwater from ~5% of the catchment area. The project was partially funded via an Ecology Stormwater Financial Assistance Program grant. This project is in the final stages of construction and will be completed in 2023.

After the project has been completed, hydraulic monitoring will be conducted at the site to evaluate predicted vs actual stormwater infiltration, and to measure the actual downstream flow reduction. The data will be used to guide future operation and maintenance of the facility. The information will also inform the design and sizing of future infiltration facilities. Stormwater infiltration is a high priority because it provides both water quality treatment and flow reduction (as opposed to merely flow control), and because it supports groundwater flow to streams and lakes during summer low-flow periods, which is crucial for fish populations.

#### The NE 120<sup>th</sup> Street Right-of-Way Water Quality Treatment

This project has been constructed. It provides water quality treatment for about 4 acres of upstream area, including a high-traffic roadway. Treatment consists of Stormfilter cartridges, proprietary treatment devices, placed in 6 catch basins within the right of way. The project was partially funded via an Ecology Stormwater Financial Assistance Program grant.

#### **Totem Square Retrofit**

The Totem Square Retrofit is a regional stormwater facility that would provide flow control and water quality treatment in the vicinity of 124<sup>th</sup> Avenue NE. This project would significantly reduce stormwater flooding in the vicinity of 124<sup>th</sup> Ave NE and NE 124<sup>th</sup> Street, a major intersection. This project would require coordination with the owners of this property. A project summary sheet is provided in Attachment B.

#### Lake Washington Institute of Technology Retrofit

The Lake Washington Institute of Technology Retrofit project would construct a stormwater facility to provide flow control and water quality treatment of 23.4 acres from the LWIT campus. Two alternatives are in consideration and would be re-evaluated during design for a vault with water quality treatment, or a vault with pre-treatment and infiltration. This project would require coordination with the LWIT campus. Project summary sheets for both alternatives are provided in Attachment B.



#### **Retrofit Aging Stormwater Facilities**

Figure 7 shows the location of existing City stormwater facilities with potential for future retrofit. Older stormwater facilities consist largely of corrugated metal detention pipes, detention ponds, and grass-lined swales. The City is filling data gaps in its inventory of stormwater facilities through review of as-builts and other information so that there is a more complete record of stormwater facility ages and expected lifecycles. Upon completion of the data gap exercise, older stormwater facilities in the Totem Lake Catchment will be grouped into two age categories: pre-1980 and 1980 – 2000.

A lifecycle cost analysis of the pre-1980 facilities will be conducted to estimate cost of replacement in present day dollars. Stormwater facilities will be prioritized for replacement based on lifecycle cost, age, and condition (current functionality). Stormwater facilities constructed between 1980 and 2000 that are most likely to need upgrades, repairs, or repurposing will be evaluated for:

- Opportunities for re-purposing (i.e., conversion of ponds to vaults so that surface area of property can be used for something else) to achieve multiple city goals, such as pocket parks.
- Opportunity to consolidate multiple facilities in the same vicinity into a larger, more effective facility.
- Opportunities to improve infiltration of stormwater where non-infiltrative stormwater management techniques are currently used.
- Opportunities to consolidate with other projects that are focused on retrofitting untreated areas.
- Opportunities to remove facilities such as corrugated metal pipes used for flow control that are likely to fail and/or that are hard to maintain and to replace them with larger and easier to maintain facilities.

A long-term schedule and prioritized list of potential actions to improve aging stormwater facilities (pre-2000) in the Totem Lake Catchment will be developed.





Figure 7. Locations of Existing City Stormwater Facilities for Potential Retrofit or Replacement, and Locations where Retrofit has been Completed



### **Retrofit and Replace Aging and Failing Pipes**

Pipes in the Totem Lake Catchment will be prioritized for repair and or replacement following condition assessment and risk characterization in the City's pipe evaluation tool. Repairing or replacing broken pipes can support water quality improvements by reducing sediment and debris that enters the stormwater system and decreasing the likelihood of infrastructure collapse, which could transport pollutants.

Kirkland is committed to assessing pipes in the Totem Lake Catchment with closed-circuit television (CCTV) equipment and standard pipe condition assessment rating protocols, as described below in Enhanced Stormwater Management Actions. The data collected during the CCTV inspections will be used to identify pipes that are in poor condition and in areas where risk of failure would result in a negative consequence. A long-term plan will be developed for repair and replacement of pipes in the Totem Lake Catchment based on risk.

#### Identify Opportunities for Retrofit along Cross Kirkland Corridor

The Cross Kirkland Corridor (CKC) will be developed over time. A section of the CKC bisects the Totem Lake Catchment on its southeast side. The CKC intercepts and routes quite a bit of stormwater, allowing for potential opportunities and partnerships resulting in stormwater improvements as the development of the CKC takes place. This project involves reviewing the CKC Master Plan for potential surface water opportunities in the catchment, including:

- Shared open spaces for potential retrofit, habitat benefits, or stormwater parks
- Locations for construction of new retrofit facilities (incorporating water quality design work completed as part of NPDES capacity grant)
- Educational opportunities (i.e., signage, kiosks)

This action will involve coordination with the transportation division and City Manager on potential CKC ideas, projects, and funding. Viable projects may not be identified in the catchment upon review. This work will contribute to improved awareness of stormwater issues and to efficient use of city funds if locations are identified and used for new retrofit facilities.

#### New Stormwater Retrofit Locations

The Totem Lake/Juanita Creek Basin Stormwater Retrofit Conceptual Design (City of Kirkland, 2015) focused on the catchment east of I-405, as shown in the potential retrofit locations identified in Figure 5. Figure 8 shows locations of all stormwater facilities, public and private in the Totem Lake





Figure 8. Public and Private Stormwater Facility Locations, Showing Gaps where New Retrofit could be Potentially Located (in blue squares)

2023 Stormwater Management Action Plan

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Catchment, as well as the priority locations for possible BMPs where retrofits could be targeted for identification on the west side of I-405. While all stormwater management BMPs are considered, priority is given to projects that can treat and infiltrate stormwater in areas with substandard stormwater management on lands owned or operated by the City. A similar process to that which was completed in 2015 will be implemented to identify retrofits in areas that are potentially feasible. These projects will be combined with the projects on the east side of I-405 and prioritized for design and construction.

#### Land Management Actions/Development Strategies

Land management actions and development strategies were briefly considered for the Totem Lake Catchment, but determined to be less effective for meeting water quality and flow control objectives because of the following characteristics:

- The Totem Lake Catchment is built out.
- Remaining large scale development is already in-progress with permits and development standards negotiated, such that it would be difficult to suggest alternative stormwater standards or incentives.
- Existing Critical Areas Code (Kirkland Zoning Code (KZC)- Chapter 90) protects sensitive areas including streams and their buffers, wetlands and their buffers, lakes and their buffers, and steep slopes.

No land management actions or development strategies are proposed.

## Water Quality Actions

Additional actions to support water quality improvements were evaluated for the Totem Lake Catchment. Two opportunities were identified and are summarized in Table 3. Detailed descriptions of the actions follow after Table 3.

#### Table 3. Summary of Recommended Water Quality Opportunities

Project	Description	Schedule	Best Management Practice
CCTV Pipe Inspection	Four hundred hours crew time dedicated to cleaning and inspection of pipes in Totem Lake Catchment.	Short-term	Pollution prevention
Street Sweeping	Sweep public roads 4 times per year.	Short-term	Pollution Prevention



#### **CCTV** Pipe Inspection

There are tens of miles of stormwater pipes that have not been recently inspected in the Totem Lake Catchment, and many of those are constructed of corrugated metal (CMP), which has been problematic in some areas. CMP pipes will be targeted for cleaning and inspection and follow-up repair (i.e., aging pipe plan). Up to 400 crew hours will be committed to cleaning and inspection in the Totem Lake Catchment in the short-term.

#### **Street Sweeping**

The City will sweep public roads in this catchment about 4 times per year. This activity helps keep pollutants and debris out of the stormwater system. Kirkland's <u>street sweeping map</u> shows streets where sweeping was recently completed.

#### **Enhanced Stormwater Management Programs**

Two enhanced maintenance and operation activities are identified for the Totem Lake Catchment. Table 4 summarizes the stormwater management actions. Detailed descriptions of the actions follow after Table 4.

Project	Description	Schedule	Best Management Practice
Source Control Inspections	Inspect all businesses identified in the source control inventory in the Totem Lake Catchment.	Short-term	Pollution prevention
Dumpster Man- agement Behavior Change Program	Provide behavior change program to at least 50% of the containers in To- tem Lake.	Short-term	Pollution Prevention, Behavior Change

#### Table 4. Summary of Targeted or Enhanced Stormwater Management Programs

#### **Source Control Inspections**

The City will target inspections through the Source Control program in the Totem Lake catchment area. All businesses identified in the catchment will receive an inspection. There are currently 225 businesses in this catchment on the inventory. These inspections focus on ways businesses can reduce or prevent pollution from entering the private and public stormwater system. They also provide information to businesses on how to respond if pollution does occur to reduce impact to the environment.



#### **Dumpster Management Behavior**

Through a social marketing driven behavior change campaign, Kirkland helps commercial businesses keep dumpster lids shut to prevent pollution in our creeks and lakes. Kirkland will enhance implementation of this program in Totem Lake to reach the managers of more than 50% of the containers in the catchment.

# **On-Going City-wide Stormwater Management Actions**

Kirkland implements many city-wide programs that extend to the Totem Lake Catchment but are not exclusive to the Totem Lake Catchment. These stormwater programs and actions are on-going and expected to continue, but the City is not proposing targeted implementation in the SMAP. Rather, they are described below because of the water quality benefits these programs and actions provide to the watersheds in Kirkland, including Totem Lake Catchment.

Table 5 summarizes on-going City-wide strategies that are expected to continue and benefit water quality in the Totem Lake Catchment. Detailed description of the actions follow after Table 5.

Project	Description	Schedule	Best Management Practice
IDDE	Continue funding City's spill response and ed- ucation and outreach program to reduce inci- dents.	On-going	Pollution prevention
Private Drainage Facility Inspections	Continue conducting inspections of private drainage facilities, in- cluding those not re- quired by NPDES.	On-going	Operations and maintenance
Identification of public/ private retrofit opportunities	Continue flagging areas of potential mutual interest for stormwater retrofit opportunities with private redevelopment.	On-going	Retrofit

Table 5. Summary of On-going City-wide Stormwater Management Actions



Project	Description	Schedule	Best Management Practice	
On-line resources and postcards for private rainwater management facili- ties.	Educational resources for maintenance and repair of private facil- ities, and City contact information for technical assistance.	On-going	LID maintenance	
Yard Smart Rain Rewards	Disconnect downspouts from stormwater drain- age systems.	On-going	Retrofit	
Tree Planting Re- bates	Rebates for planting new trees (not replacement) on private property.	On-going	Urban forestry	
Pet Waste Cam- paign	Pet waste sponsorship program and pet waste dispensers in the Totem Lake Catchment	On-going	Education and out- reach	
Flooding Outreach	Distribution of flood-pre- paredness materials to properties experiencing drainage and flooding issues.	On-going	Education and out- reach	
Green Kirkland Partnership	Coordination with com- munity volunteers to conduct forest and na- tive plant restoration in parks and green spaces, including Totem Lake Park and Heronfield wet- lands.	On-going	Urban forestry	

#### Stormwater Management Programs

• Illicit discharge detection and elimination (IDDE) program activities

Kirkland holds a high standard for spill response that includes a public education and outreach component that provides spill kits to businesses, car-wash kits, and follows up with businesses and individuals that have spills and require spill response so that future incidents can be prevented. When unidentified spills occur, the City follows up with postcards to neighborhoods and businesses where the spill occurred to make them aware. Educational postcards are sent to all properties within 1/2 mile of spills and illicit discharges where the source is unknown. Several of these mailings have been sent within the Totem Lake Catchment. This program is City-wide and will continue.



• Private drainage facility inspections

The City inspects all NPDES required private stormwater facilities annually, and private facilities that don't require NPDES inspection every 3 years. This is a Citywide program and will continue.

• Identification of public/private retrofit opportunities

The city, as feasible, flags areas not of public ownership with high potential for stormwater retrofit, so that early coordination and potential partnerships can be negotiated with planned developments for mutual benefits. Areas of interest or specific parcels of interest for stormwater retrofit can be identified for use by City planners during the development application process, prior to a pre-application meeting.

#### **Education and Outreach Programs**

• Rainwater Management Features

Kirkland has a robust education and outreach program that includes an on-line interactive map of rainwater management features on private property in Kirkland. Information includes the locations of private facilities, fact sheets for how to maintain, and drainage maintenance contractor lists.

• Yard Smart Rain Rewards

Kirkland provides technical assistance and rebates to residents that disconnect their downspouts from the city stormwater system and install rain gardens, native landscaping, or cisterns.

• Tree Planting Rebates

The City provides rebates for planting trees on private property, with more than 360 trees planted in the last two years, including some in the Totem Lake Catchment. The online <u>interactive map and dashboard</u> shows the numbers of participants, trees planted and locations.

• Pet Waste Campaign

Kirkland implements a multi-faceted <u>pet waste campaign</u> to encourage pet owners to clean up after their animals and dispose of pet waste properly. The pet waste station sponsorship program has installed several pet waste bag dispensers in the Totem Lake Catchment.

• Flooding Outreach





Kirkland sends flood preparedness and prevention outreach materials to all properties near recent drainage/flooding issues. This outreach includes proper BMPs for disposal of yard waste and extra leaves. Some of these outreach materials were delivered in the Totem Lake Catchment.

• Green Kirkland Partnership

The Green Kirkland Partnership Program trains and coordinates community volunteers and conducts forest and native plant restoration activities in parkland and open space areas throughout the city, including Totem Lake Park and Heronfield Wetlands Park in the Totem Lake Catchment.

## Long Range Plans

No specific changes were identified to existing long-range plans as necessary to implement SMAP priorities. However, the City will continue to coordinate with long-range planning efforts during the implementation of the identified SMAP such as Kirkland's 2044 Comprehensive Plan Update, Capital Facilities Plans, Surface Water Master Plan, Other Utility Plans (Sewer, Water, etc.) and Transportation Planning efforts.

# **Budget and Schedule**

The budget sources and general schedule for the actions identified in this plan are summarized in Table 6.

These projects and/or actions are expected to be funded by the Kirkland Surface Water Utility's Stormwater Fund and as feasible, supplemented by grants. However, sources of funds and the allocation of funding will be determined for individual projects upon identification and prioritization among other City surface water priorities.



## Table 6. Summary of budget sources and schedule of actions

Project	Funding Source	Schedule (with- in these time- frames)	Best Management Practice				
132 <sup>nd</sup> Square Park Re- gional Detention	Stormwater Fund	2023 - 2030	Monitoring/Storm- water Retrofit				
Aging Stormwater Facilities	Stormwater fund	2023 - 2030	Facility Retrofit				
Aging Pipe Plan	Stormwater fund	2023 - 2030	System upgrade and retrofit				
Identify New Storm- water Retrofit Loca- tions	Stormwater fund	2023 - 2030	Stormwater Retrofit				
Source Control In- spections	Ecology's Pollution Prevention As- sistance Program supplemented by Stormwater fund	2023- 2030	Pollution prevention				
Cross Kirkland Corri- dor (CKC) Review	Stormwater fund	2023 - 2030	Stormwater Retrofit				
<b>CCTV</b> Pipe Inspection	Stormwater fund	2023- 2030	Pollution prevention				
Retrofit or repair ag- ing stormwater facili- ties (to be identified)	Stormwater fund supplemented by grants	After 2030	Stormwater retrofit				
Repair or replace ag- ing stormwater pipes (to be identified)	Stormwater fund supplemented by grants	After 2030	Stormwater retrofit				
Street Sweeping	Stormwater fund	2023 - 2030	<b>Pollution Prevention</b>				
Dumpster Behavior Change Management	Stormwater fund	2023 - 2030	Pollution prevention, Behavior change				

## **Adaptive Management**

This Stormwater Management Action Plan will be reviewed periodically to determine progress made toward completion of actions. New projects and actions identified will be added or removed from the plan as necessary as priorities change.



## References

City of Kirkland, 2015. Totem Lake/Juanita Creek Basin Stormwater Retrofit Conceptual Design, Final Project Report for Ecology Grant G1400024, July 15, 2015.

City of Kirkland, 2022a. Stormwater Management Action Plan Receiving Water Characterization.

City of Kirkland, 2022b. Stormwater Management Action Plan Watershed Prioritization.

- City of Kirkland, 2023a. Surface Water Master Plan Update.
- City of Kirkland, 2023b. Stormwater Management Plan.

Ecology, 2019a. Western Washington Phase II Municipal Stormwater Permit, Effective August 1, 2019.

Ecology, 2019b. 2019 Stormwater Management Manual for Western Washington (SWMMWW).



# Attachment A Receiving Water Characterization

# City of Kirkland- Receiving Water Assessment

#### NPDES Permit Requirement S5.C.1.d.i. March 2022

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Decision of the second		Carillon Creek/ Lake						Low Density		Density							
Concentration         Concentr	Carillon Creek	Washington	0.17	0.17	100%	41%	34%	Residential	50.1%	Residential	21%	no data	NA	no data	84 (Good)	moderate	Yes
changencime         more		Champagne Creek/ Lake						Low Density		Park/Open							
Non-Yorki         Non-Yorki <t< td=""><td>Champagne Creek</td><td>Washington</td><td>0.97</td><td>0.97</td><td>100%</td><td>32%</td><td>45%</td><td>, Residential</td><td>88.0%</td><td>Space</td><td>9%</td><td>Yes</td><td>NA</td><td>no data</td><td>78 (Moderate)</td><td>moderate</td><td>Yes</td></t<>	Champagne Creek	Washington	0.97	0.97	100%	32%	45%	, Residential	88.0%	Space	9%	Yes	NA	no data	78 (Moderate)	moderate	Yes
Sciency Coole         Waterpool         1,20         1,20         1,20         2,20         5,200         7,210         7,200		Denny Creek/ Lake						Low Density		Park/Open			Bioassessment (BIBI				
Non-Section         Normal Part Part Part Part Part Part Part Part	Denny Creek	Washington	1.26	1.27	100%	25%	53%	Residential	65.6%	Space	32%	Yes	score)	Poor	83 (Good)	moderate	Yes
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Index Leter Law         2.87         2.87         2.09         1.000         2.00													bioassessment, and				
Onlogen Control         Openand Credit Visit         Zoo         Data         Data         Description         Data         Production	Forbes Crook	Forbes Creek/ Lake	2 97	2.00	1000/	20%	200/	Low Density	60.0%	Park/Open	100/	Vec	bacteria; Forbes Lake:	Deer	74 (Madarata)	waadawata biab	Vac
noime Point         vacantagrom         2.90         0.71         3.3%         2.3%         6.0%         Referent         5.3%         0.0%         no.dra         N.M         0.62%         27.0%         no.derate         Y.M.           Lingerton Signe A         Congertores         N.M         0.5%         2.0%         4.0%         2.0%         4.0%         2.0%         Non-time         Y.M.		Unnamed Creeks/Lake	2.07	2.89	100%	39%	39%		69.0%	Space Park/Onen	10%	res	phosphorus	P001	74 (Wouerate)	moderate-nign	Tes
Mathematic Conduction         Mathematiconductin         Mathematic Conductin <th< td=""><td>Holmes Point</td><td>Washington</td><td>2.30</td><td>0.71</td><td>31%</td><td>23%</td><td>60%</td><td>Residential</td><td>85.0%</td><td>Space</td><td>10%</td><td>no data</td><td>NA</td><td>no data</td><td>67 (Moderate)</td><td>moderate</td><td>Yes</td></th<>	Holmes Point	Washington	2.30	0.71	31%	23%	60%	Residential	85.0%	Space	10%	no data	NA	no data	67 (Moderate)	moderate	Yes
Solution Monitorial Moniterial Moniterial Monitorial Monitorial Monitorial Monitorial M		Lakeview Creek and NW		0171	01/0	2070	00/0		001070	00000	20/0					moderate	
Image in the intermedial interm		College Creek								Medium							
Hongborn Sopp A         Washington         O.50         V.50         V.50         Reident         S.70         Reident		(unnamed)/ Lake						Low Density		Density							
Honghon Sope R         Hong Sope R	Houghton Slope A	Washington	0.59	0.59	100%	49%	26%	Residential	56.2%	Residential	21%	no data	NA	no data	78 (Moderate)	moderate	Yes
$ \begin{array}{                                    $										Medium							
Hongenton Solpe 6         Washington         L.21         0.21         0.02         43%         43%         Associated         77.7%         Residential         10%         no data         NA         no data         100 data		Unnamed Creek/ Lake						Low Density		Density							
Rear, Bity, Totem       Rear, Bity, Totem, Bity,	Houghton Slope B	Washington	0.21	0.21	100%	43%	33%	Residential	77.7%	Residential	10%	no data	NA	no data	89 (Good)	Low	Yes
Code, Billy, Tetem bit, Kingset Corp.         Code, Billy, Tetem (thibtraries of Jusanta)         Code, Kingset Corp.         Code, Billy, Kingset (thibtraries of Jusanta)         Code, Billy, Kingset (thibtraries of Jusant																	
Lake, fings are det         Image of the lake, fings are det <td></td> <td>Cedar, Billy, Totem</td> <td></td> <td>Dissolved oxygen,</td> <td></td> <td></td> <td></td> <td></td>		Cedar, Billy, Totem											Dissolved oxygen,				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Lake, Kingsgate creek											temperature, and				
Jamina Jeck         Cleby Lake Vashington         7.03         5.24         6.34         6.35%         Neshelitä         62.0%         Commercial         6.35%         Fess         Commercial         7.05         7.00 <th< td=""><td>luanita Crook</td><td>tributaries of Juanita</td><td>7 02</td><td>E 01</td><td>020/</td><td>429/</td><td>259/</td><td>Low Density</td><td>62.6%</td><td>Commorcial</td><td>00/</td><td>Voc</td><td>dissolved ovygon</td><td>Boor</td><td>75 (Modorato)</td><td>modorato high</td><td>Voc</td></th<>	luanita Crook	tributaries of Juanita	7 02	E 01	020/	429/	259/	Low Density	62.6%	Commorcial	00/	Voc	dissolved ovygon	Boor	75 (Modorato)	modorato high	Voc
kinggate Slope       junamed creek/s       1.257       0.70       6%       34%       31%       kesidentia       1.47.4%       industria       1.9%       1.9%       1.9%       ibassessment and bioassessment		Creeky Lake Washington	7.05	5.81	83%	43%	35%	Residential	02.0%	Commercial	8%	res	Dissolved oxygen	P001	75 (Wouerate)	moderate-nign	Tes
Kingage Slope         Unamed creeks/ Samamish River         12.57         0.70         6%         34%         38%         Residential Residential         47.4%         Industrial         19%         Ves         bioassesment backer         56 (Moder)         moderate         Yes           Kirkland Stope         Lake Washington         0.33         0.33         0.03         100%         41%         Sama         56, Sace         13%         Residential         56, Sace         13%         No dat         No dat         No dat         No dat         No dat         No dat         Low         Yes           Low Samamish River         Lake Washington         12.57         0.50         0.05         10%         Xes         Xes         Kes         Neguin         Disolved savgen, temperature, bioassesment and temperature, temperature, bioassesment and temperature,													temperature.				
Kinggate Slope       Sammains River       12.57       0.70       6%       34%       18%       Reidential       47.4%       Industrial       19%       Yes       Industrial       61 (Moderate)       Modarate       Yes         Kirkland Slope       Lew Sahington       0.33       0.33       100%       41%       31%       Residential       61.6%       50.80       0.048       Notati       <		Unnamed creeks/						Low Density					bioassessment and				
Kirkland Stope       Lake Washington       0.33       0.33       0.10%       41%       31%       Residential       86.1%       Space       13%       no data	Kingsgate Slope	Sammamish River	12.57	0.70	6%	34%	38%	Residential	47.4%	Industrial	19%	Yes	bacteria	no data	63 (Moderate)	moderate	Yes
Image: series of the series	Kirkland Slope	Lake Washington	0.33	0.33	100%	41%	31%	Residential	86.1%	Space	13%	no data	NA	no data	No Data	Low	Yes
Lower Sammains River       Sammains River       12.57       0.05       0.04       4.8%       4.3%       Low Density Residential       Medium Residential       Medium Residential       2.7%       Medium Residential       Medium Residential       Medium Residential       Medium Residential       Medium Residential       Medium Residential       Medium Residential       Medium Residential													Dissolved oxygen,				
Lower Sammains Niever Valle     Sammains Niever     12.57     0.05     0.05     0.04     48%     43%     Residential     73.5%     Residential     27%     bioassessment and bioassessment and server Streek     no data     63 (Moderate     moderate     Yees       Lower Sammains Niever     Lower Sammains Niever     Lower Sammains Niever     Lower Sammains Niever     Valuer Sammains Niever     Lower Sammains Niever     73.5%     Residential     578.5%     Residential     578.5%     Residential     578.5%     Medium     Density     Medium     Density     No     No     No     No     Add (Moderate     Yees     Moderate     Yees       Moss Bay     Unnamed creek Julk     Lower Sammain Niever     Low Density     No     Residential     59.2%     Residential     59.2%     Residential     9%     No data     NA     No     No data     84 (Good)     moderate     Yees       South Juanti Slope     Unnamed creek Julk     1.00%     1.00%     Residential     65.9%     Commercial     61.6%     No     No     No     82.60000     moderate     Yees       To Redmond     Low Density     Low Density     Low Density     Low Density     Low Density     No     No     No     No     No     82.60000     Moderate										Medium			temperature,				
Lower Sammamish River Valley       Sammamish River       12.57       0.05       0.4%       44%       43%       Residential       73.5%       Residential       27%       Ves       bacterial       no data       63 (Moderate)       moderate       Wes         Lower Sammamish River Valley       Everest Creek and Unamed Creek/Lake       Image: Sammamish River       Image: Samma								Low Density		Density			bioassessment and				
Everest Creek and Unnamed Creek/Lake         File	Lower Sammamish River Valley	Sammamish River	12.57	0.05	0.4%	48%	43%	Residential	73.5%	Residential	27%	Yes	bacteria	no data	63 (Moderate)	moderate	Yes
Index Creek Lake Moss Bay     Unamed Creek Lake Washington     2.32     2.32     1000     48%     30%     Residential Low Density     Density     Gene to the state     NA		Everest Creek and								Medium							
Modes Bay       Washington       2.32       100%       48%       30%       Residential       59.2%       Residential       9%       No data       NA       No data       84 (600)       Moderate       Yees         South Juanita Slope       Unamed creeks/ Lake Washington       0.45       0.45       100%       45%       33%       Low Density Residential       65.9%       Commercial       12%       no data       NA       NA       82 (God)       moderate       Yees         South Juanita Slope       Washington       0.45       0.45       100%       45%       33%       Residential       65.9%       Commercial       12%       no data       NA       no data       82 (God)       moderate       Yees         Unnamed creeks/ Unnamed creeks/       0.45       0.47       4%       40%       28%       Residential       85.6%       Commercial       6%       Yees       Dissolved oxygen, temperature, pH, bioassessment and bioassessment and poincate       no data       71 (Moderate)       moderate       Yees         To Redmond       12.62       0.47       4%       40%       28%       Residential       85.6%       Commercial       6%       Yees       bacterial       no data       71 (Moderate)       moderate       Yees <td>Maran Davi</td> <td>Unnamed Creek/ Lake</td> <td>2 22</td> <td>2.22</td> <td>1000/</td> <td>400/</td> <td>200/</td> <td>Low Density</td> <td>50.00/</td> <td>Density</td> <td>00/</td> <td>na data</td> <td>N10</td> <td>na data</td> <td></td> <td></td> <td>Vac</td>	Maran Davi	Unnamed Creek/ Lake	2 22	2.22	1000/	400/	200/	Low Density	50.00/	Density	00/	na data	N10	na data			Vac
South Juanied Creeks/ Lake       Outh amed creeks/ Lake       <	Moss Bay	wasnington	2.32	2.32	100%	48%	30%	Residential	59.2%	Residential	9%	no data	NA	no data	84 (Good)	moderate	Yes
South Juanta Slope       Washington       0.45       0.45       100%       45%       33%       Residential       65.9%       Commercial       12%       no data       NA       no data       82 (Good)       moderate       Yes         South Juanita Slope       A       <		Unnamed creeks/ Lake						Low Density									
And Second Se	South Juanita Slope	Washington	0.45	0.45	100%	45%	33%	Residential	65.9%	Commercial	12%	no data	NA	no data	82 (Good)	moderate	Yes
Image: Second													Dissolved oxygen,				
To Redmond     Sammanish River     12.62     0.47     4%     40%     28%     Residential     85.6%     Commercial     6%     Yes     basterial     no data     71 (Moderate)     moderate     Yes       Yarrow Creek     Lake Washington     8.25     0.90     11%     28%     50%     Festional     6%     Yes     basterial     no data     71 (Moderate)     moderate     Yes		Linnamod crooks/						Low Donsity					temperature, pH,				
Yarrow Creek and Cochran Springs Creek/       R.25       0.47       476       476       2876       Residential       85.0%       Conniential       0.60       Residential       0.60       Residentia       0.60       Residential       0.	To Redmond	Sammamish River	12 62	0 47	10/	10%	28%	Residential	85 G0/	Commercial	6%	Voc	bioassessment and	no data	71 (Moderate)	moderato	Vec
Varrow Creek       Kake Washington       8.25       0.90       11%       28%       50%       Kake Washington       Yarrow Creek       Mathematication       Ma		Yarrow Creek and	12.02	0.47	470	4070	2070	Residential	05.0%	Commercial	070	163				mouerate	103
Yarrow Creek       Lake Washington       8.25       0.90       11%       28%       50%       Residential       55.1%       Space       31%       Yes       bacteria       Poor       85 (Good)       moderate       Yes		Cochran Springs Creek/						Low Densitv		Park/Open			Dissolved oxvgen,				
	Yarrow Creek	Lake Washington	8.25	0.90	11%	28%	50%	Residential	55.1%	Space	31%	Yes	bacteria	Poor	85 (Good)	moderate	Yes

\*Kirkland has selected to include all basins in the prioritization process







# Attachment B Retrofit Project Summary Sheets

#### **PROJECT SUMMARY SHEET**

Project Title:	Totem Square Regional Detention and Water Quality Treatment
Project Description:	Construct regional stormwater facility that would provide flow control and water quality treatment. Stormwater would be captured from two locations along the west side of 124 <sup>th</sup> Ave, and one location from the private property to the south (same as existing drainage). <u>Vault:</u> • 24,000 square feet top area • 16.5 feet deep total storage • 12.5 feet deep live storage • 4 feet deep dead storage for water quality <u>Bioretention (Optional) for Enhanced Water Quality:</u> • 9,400 square feet top area • 9 in. deep (3 in. ponding + 6 in. freeboard) • 3H:1V side slopes • Lined, no infiltration • Flow control compliance assumes outflow directed to vault
Major Site Impacts and Challenges:	<ul> <li>Restriction of other utility locations within right of way.</li> <li>East half of parcel has soils with "high dispersed" infiltration capacity. Further study and/or a modified site layout would be required to take advantage of these soils.</li> <li>Utility covers/grates within bike path.</li> <li>Bioretention siting is challenging due to the ability to convey pollution-generating impervious surface to the bioretention cell. Also, steep slopes between parcel and CKC (to west) will likely restrict the cell's ability to infiltrate and instead require the cell to be lined.</li> </ul>
Stormwater Compliance:	Meets flow duration control standard and basic water quality standard for 20.3 acres. Option to meet enhanced water quality for 3.5 acres. Does not meet LID standard.
Other Project Benefits:	Would significantly reduce stormwater flooding in the vicinity of 124 <sup>th</sup> and 124 <sup>th</sup> , which is a major intersection.
Estimated Project Costs:	\$6,400,000 for Vault and Basic Water Quality (\$140,000 additional for Enhanced Water Quality)
Associated Projects/Analysis:	Potential geotechnical review of site soil infiltration and adjacent slope stability.





#### **PROJECT SUMMARY SHEET**

Project Title:	LWIT Water Quality and Detention Vault
Project Description:	<ul> <li>Construct stormwater facility that would provide flow control and water quality treatment. Stormwater would be captured from 23.4 acres of the LWIT campus.</li> <li><u>Vault</u>:</li> <li>25,000 square feet top area</li> <li>4 feet deep dead storage</li> <li>6 feet deep live storage</li> </ul>
Major Site Impacts and Challenges:	Preserves parking on top of vault.
Stormwater Compliance:	Meets basic water quality standard, provides significant flow control but does not meet flow control standard for 23.4-acre contributing area.
Other Project Benefits:	None.
Estimated Project Costs:	\$5,300,000
Associated Projects/Analysis:	Coordination with LWIT required.





#### **PROJECT SUMMARY SHEET**

Project Title:	LWIT Infiltration Vault
Project Description:	Construct stormwater facility that would provide infiltration, flow control and water quality treatment. Stormwater would be captured from 23.4 acres of the LWIT campus. <u>Pre-Treatment Vault</u> : • 5,000 square feet top area • 6 feet deep <u>Infiltration Vault</u> : • 15,000 square feet top area • 10.5 feet deep live storage • Assumed 2" per hour infiltration rate
Major Site Impacts and Challenges:	Preserves parking on top of vault.
Stormwater Compliance:	Meets flow duration control standard and water quality standard for 23.4 acres. Meets LID standard.
Other Project Benefits:	Infiltration would reduce downstream flow volumes to Totem Lake.
Estimated Project Costs:	\$2,500,000
Associated Projects/Analysis:	Coordination with LWIT required.





City of Kirkland Stormwater	Management Program		Kirkland Educatio	on and Outreach Su	ummary	for 2022				
NPDES Phase II	Permit Citation S5.C.2	a.i	i.(a)	a.i.(b)				a.i		
		Target Audience Subject Areas								
		General Public (including school age children)	Businesses, including home-based and mobile businesses	Engineers, contractors, developers and land use planners		General Impacts of stormwater on surface waters	Impacts from impervious surfaces	Low Impact Development (LID) principles and LID BMPs	Technical standards for stormwater site and erosion control plans	Stormwater treatment and flow control BMPs/facilities
Program Name	Program Description		. <u>.</u>	4						4
School Outreach and Education (K- 12)	General stormwater & BMP education via in-school programming, virtual programs, and online curriculum. (83 programs, 1801 students).	х				х	х	x		
Flood Prevention and Leaf Management	Outreach to Kirkland residents regarding keeping storm drains clear of leaves to protect neighborhoods from flooding. Program provides stormwater education to the general public.	x	x			x	x			
Puget Sound Starts Here (regional)	Kirkland participates in regional advertising (including PSSH month and regional bus ads), media, and web projects with other stormwater permittees and ECONet organizations to advertise and inform the public of best practices and behaviors.	x	x			x				
Pet Waste Outreach	City staff provide education on disposal of pet waste at various events, signage and plastic bag stations at parks and other open spaces, mailers, etc.	х				х				
General Outreach	City uses newsletters, utility inserts, Twitter, Facebook, direct mailers, multiple City web pages to increase awareness of stormwater impacts on surface water, including seasonal tips and topics. City also attends farmers markets and community events.	x	x			x	x	x		
STORM (Stormwater Outreach for Regional Municipalities) (regional)	Kirkland is an active participant of the STORM steering committee. The committee assists members in planning, regional grant applications, outreach campaigns, development of BMPs and capacity building.	x				x	x			
Private Drainage System Inspections and Technical Assistance Program	City staff contact property owners, inspect private storm drainage systems (beyond those required by the permit), and provide technical assistance with stormwater facility maintenance, dumpster and trash compactor maintenance, and prevention of illicit discharges.	x	x			x	x	x	x	
Pollution Prevention Assistance Technical Assistance and Hazardous Waste Management and Reduction	Provides hands-on technical assistance and outreach to small businesses to develop practical methods for proper use and storage of automotive chemicals, cleaning supplies, other hazardous materials, equipment maintenance, and prevention of illicit discharges.		x			x	x			

City of Kirkland Stormwater	Management Program		<b>Kirkland Educatio</b>	on and Outreach Su	ummary	for 2022				
NPDES Phase II	Permit Citation S5.C.2	a.i.(a) a.i.(b)			a.i					
		Target Audience				Subject Areas				
		General Public (including school age children)	Businesses, including home-based and mobile businesses	Engineers, contractors, developers and land use planners		General Impacts of stormwater on surface waters	Impacts from impervious surfaces	Low Impact Development (LID) principles and LID BMPs	Technical standards for stormwater site and erosion control plans	Stormwater treatment and flow control BMPs/facilities
Program Name	Program Description		•				-			-
Best Management Practices Information Cards	Provides brief, updated BMP information cards for specific audiences (e.g. residents, business owners, construction, mobile businesses, etc.)	x	x	x		x				
Cascade Gardener Classes	Kirkland promotes Cascade Water Alliance-sponsorec online trainings on sustainable garden design and edible landscapes. Advertises other landscape- focused classes hosted by partner organizations (King County, King Conservation District).	x				x				
Paint Disposal Outreach	Kirkland works with local paint supply stores to distribute educational messaging about proper paint disposal to customers via stickers on paint cans and paint stir sticks with printed messaging. Kirkland also promotes the new PaintCare program and the Solid Waste division hosts paint take-back events.	x	x			x				
Yard Smart Rain Rewards	Kirkland provides free technical assistance and rebates to property owners to install stormwater retrofit projects like rain gardens, native landscaping, and cisterns on their property.	x	x			x	x	x		x
Developers Forum	Kirkland Developers forum is used to increase awareness of technical standards for stormwater site and erosion control plans, LID principles and techniques, stormwater treatment and flow control BMPs/facilities, and stormwater training opportunities.			x				x	x	x
IDDE Training	Kirkland provides online IDDE training for City of Kirkland staff. In 2021, Kirkland launched a new virtual video training for all Kirkland staff.	x				x	x			
IDDE Postcards	Kirkland sends postcards to properties near the site of spills/pollutants entering the stormwater system. The cards focus on raising awareness regarding the impacts of pollution.	x	x			x	x			
Tree Planting Rebate	Kirkland provides rebates to property owners to plan trees on their property to help reduce stormwater runoff in neighborhoods.	t X				x	x	x		
Online interactive map of LID facilities in Kirkland	Kirkland provides an online map for property owners to identify and locate LID faciliites built on their properties and to access maintenance guides and resources.	x						x		x
Stream Health Water Quality Report Cards	Kirkland developed educational watershed report cards sharing and highlighting the results of our water quality monitoring program and describing actions community members can take to protect water quality.	x				x	x	x		

City of Kirkland Stormwater Management Program			Kirkland Education and Outreach Summary for 2022							
NPDES Phase II	Permit Citation S5.C.2	a.i	.(a)	a.i.(b)				a.i		
		Target Audience				Subject Areas				
		General Public (including school age children)	Businesses, including home-based and mobile businesses	Engineers, contractors, developers and land use planners		General Impacts of stormwater on surface waters	Impacts from impervious surfaces	Low Impact Development (LID) principles and LID BMPs	Technical standards for stormwater site and erosion control plans	Stormwater treatment and flow control BMPs/facilities
Program Name	Program Description							•	*	
Surface Water Master Plan Update Public Involvement	Kirkland staff educated and engaged community members to provide input on the Surface Water Master Plan Update. Efforts included outreach booths, direct mailers, social media, web page, a four part video series, and a citywide survey.	x				x	x	x		x
Stormwater Retrofit Facilities Public Involvement	Kirkland engaged residents in the Cedar Creek watershed about designs for stormwater retrofit facilities. Efforts included direct mailers, community meetings, web page, surveys, and an email listserv.	x				x	x	x		x

#### City of Kirkland Annual Report Question 26a.



#### Attach a list of Stewardship Opportunities

- **Green Kirkland Partnership Stewardship Events**: The Green Kirkland Partnership is an alliance between the City of Kirkland, nonprofit partners, businesses and the community to restore and maintain more than 500 acres of natural area parkland in the City. The Green Kirkland mission is to restore and maintain healthy forested and natural parklands by building a supportive community that works together to protect Kirkland's valuable natural resources for current and future generations. Much of this restoration work is completed by dedicated volunteers. Achieving this involves training volunteers in restoration activities and providing support from restoration partners, contractors, and skilled natural areas staff. The Partnership's activities include community-based restoration efforts like replanting areas with native trees and invasive plant removal, as well as education, outreach and engagement with our community. Opportunities for volunteer stewardship events are offered multiple times per month.
- **Cross Kirkland Corridor Adopt-a-Trail**: Local volunteers have adopted quarter-mile segments of the corridor and pledged to remove litter twice per year. They also have the option of doing a yearly invasive plants removal project in their section. All 23 segments are currently adopted. Adopters include Kirkland neighborhood associations, businesses, individuals, families and community service groups.
- <u>Park Pet Waste Steward Volunteer Program</u>: Volunteers help monitor and count the frequency of un-scooped dog waste in local parks to help identify problem areas and establish baseline data for future outreach efforts.
- **Water Watchers**: Water Watchers is a community-based water monitoring program operated by the Sno-King Watershed Council. Water Watcher volunteers in Kirkland monitor physical and chemical indicators of stream health on local creeks. Data collected by the volunteers helps inform the community regarding watershed health and supplement water quality data collected by City staff.

#### City of Kirkland: Source Control Program Highlight



Summary of actions taken to implement the source control program per S5.C.8.b.iii and S5.C.8.b.iv.

#### <u> 55.C.8.b.iii</u>

Permit language shown in italics. Kirkland's actions not italicized

No later than January 1, 2023, Permittees shall implement an inspection program for sites identified pursuant to S5.C.8.b.ii, above.

(a) All identified sites with a business address shall be provided information about activities that may generate pollutants and the source control requirements applicable to those activities. This information shall be provided by mail, telephone, electronic communications, or in person. This information may be provided all at one time or spread out over the permit term to allow for tailoring and distribution of the information during site inspections.

Kirkland has provided communication via mailed postcard to identified sites with business addresses in the Totem Lake catchment area late 2022. Approximately 25% of the city-wide inventory is within this area and was contacted. This is where inspections will be conducted in 2023. Additional communication to the remainder of identified sites will be spread out over the permit term. Information on preventing pollution at your business can be found on this city website: <u>https://www.kirklandwa.gov/Government/Departments/Public-Works-</u> <u>Department/Storm-Surface-Water/What-You-Can-Do-For-Clean-Water/Business-Pollution-</u> <u>Prevention</u>

(b) The Permittee shall annually complete the number of inspections equal to 20% of the businesses and/or sites listed in their source control inventory to assess BMP effectiveness and compliance with source control requirements. The Permittee may count follow-up compliance inspections at the same site toward the 20% inspection rate. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.

Site visits will commence January 2023 in the Totem Lake area of the Juanita Creek Watershed. We expect to achieve the 20% inspection rate from inspections in this area in 2023. The number of site visits per year will be at minimum 170 inspections (20% of 847).

(c) Each Permittee shall inspect 100% of sites identified through credible complaints.

Sites identified through credible complaints will be inspected. Credible complaints can be received through a variety of sources (spill hotline, staff referral, agency referral, OurKirkland Customer Service portal, email or phone call). Complaints are referred to program coordinator and delegated to inspectors.

(d) Permittees may count inspections conducted based on complaints, or when the property owner denies entry, to the 20% inspection rate.

Kirkland will track inspections conducted based on complaints and when the property owner denies entry (which is very rare).

#### <u>S5.C.8.b.iv.</u>

No later than January 1, 2023, each Permittee shall implement a progressive enforcement policy that requires sites to comply with stormwater requirements within a reasonable time period as specified below:

(a) If the Permittee determines, through inspections or otherwise, that a site has failed to adequately implement required BMPs, the Permittee shall take appropriate follow-up action(s), which may include phone calls, reminder letters, emails, or follow-up inspections.

Kirkland will provide follow up to all sites that have BMPs identified as required to implement. Most often, sites are provided an initial 30-day window to implement BMPs. This window can be extended as needed. As appropriate, follow-up technical assistance and support includes followup includes letters, phone calls, emails, and/or follow-up inspections.

(b) When a Permittee determines that a site has failed to adequately implement BMPs after a follow-up inspection(s), the Permittee shall take enforcement action as established through authority in its municipal codes or ordinances, or through the judicial system.

Kirkland Municipal Code 15.52.100 "Source Control Best Management Practices" requires the implementation of BMPs to prevent pollution from properties and activities within Kirkland. Failure to implement such practices constitutes a violation of that chapter and enforcement action can be pursued. Kirkland's program coordinator will support code enforcement action for the program, as necessary.

(c) Each Permittee shall maintain records, including documentation of each site visit, inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating an effort to bring sites into compliance. Each Permittee shall also maintain records of sites that are not inspected because the property owner denies entry.

Kirkland developed a Source Control database within their existing assessment management system, Lucity. This database will contain all required records and is updated regularly with ongoing site inspection and follow up information.

(d) A Permittee may refer non-emergency violations of local ordinances to Ecology, provided, the
Permittee also makes a documented effort of progressive enforcement. At a minimum, a Permittee's
enforcement effort shall include documentation of inspections and warning letters or notices of violation.
Kirkland has developed relationships with the Department of Ecology and may refer certain
cases or request support through joint inspections. Kirkland inspectors shall conduct
appropriate technical assistance and enforcement effort before referring to the Department of
Ecology.