2023

City of Bellingham
Stormwater Management Program

Attachment A to the NPDES Phase II Permit Annual Report

City of Bellingham

Public Works Department

Storm and Surface Water Utility

Bellingham, WA

March 31, 2023

FOREWORD

This document serves as an attachment to the City of Bellingham's annual report submittal to the Department of Ecology to meet the requirements of the Western Washington Phase II Municipal Stormwater Permit (WAR04-5550) under the National Pollutant Discharge Elimination System (NPDES) program. This Stormwater Management Plan (SWMP) is prepared to demonstrate the City's understanding of and commitment to fully meeting the regulatory requirements of this permit. The SWMP is a dynamic document that will be updated on an annual basis and will be integral to our permit compliance.

This report will address work completed in the calendar year 2022, which documents and informs the public of the City of Bellingham's implementation of its municipal stormwater permit. The Permit was issued on August 1, 2019 and will expire in 2024. The formatting of this report was updated this year to meet the new requirements of the 2019 municipal stormwater permit. Some permit requirements changed, and section headers were amended and renumbered.

A major change applicable to the City under our current permit is the requirement for a coordinated response to restoration of Lake Whatcom. Specific requirements are found in Appendix 2 of the 2019-2024 Permit. The City's efforts related to this requirement are found in the Lake Whatcom TMDL Implementation Plan Annual Report, attached as an Appendix to this report.

It should be noted that our annual capital programing has been added to the document. This portion of the report, outlining need-driven water quality protection projects and fish passage improvements, is not a requirement of the applicable NPDES permits. The information is included in this report to provide the citizens of Bellingham a more comprehensive view of stormwater efforts that are funded through our rates and fees but aren't part of the City's formal NPDES-required SWMP. Similarly, many sections of this report are significantly more detailed than required by permit reporting obligations, to demonstrate the City of Bellingham's dedication to serving our community above and beyond minimum performance measures and regulatory thresholds.

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INTRODUCTION

Stormwater runoff from streets, parking lots, construction sites, industrial properties, and residential areas is recognized as one of the leading sources of pollution to our streams, lakes, wetlands, and Puget Sound. The City of Bellingham's (City) is committed to regional goals for keystone species protection, including endangered salmon species and resident Orca, which requires preservation of water quality in freshwater streams, lakes, and wetlands. The City recognizes the need to protect nearshore marine water quality to prevent bioaccumulation of pollutants in that same food chain. Significant effort is also put toward preserving and restoring the quality of water in Lake Whatcom, the source of drinking water for over 120,000 city and county residents.

In 1969, the Cuyahoga River near Cleveland, Ohio, caught fire. Unregulated chemical pollutants accumulated to such a dangerous concentration that the surface of the water ignited. The imagery of a river on fire captivated the Nation and inspired the U.S. Congress of 1972 to strengthen existing environmental law to create the United States' current and marquis water quality protection law: The Clean Water Act. Congress, through the Clean Water Act, intended to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (CWA Section 101(a)). Around this same time, the Environmental Protection Agency (EPA) was created. One of EPA's first responsibilities was to administer the Clean Water Act. With this new authority, EPA established the National Pollutant Discharge and Elimination System (NPDES) to regulate industrial and municipal stormwater runoff, and wastewater from publicly owned treatment works. EPA delegates authority to states to assist with the administration of the NPDES program. Washington State is approved by EPA to administer the NPDES program. Washington meets this responsibility through Washington State Department of Ecology (Ecology). Ecology and EPA require that municipalities, such as the City of Bellingham, meet the requirements of the Clean Water Act.

To address stormwater pollution at the local level, the City established a Storm and Surface Water Utility in 1990. In 2007, the City expanded its existing stormwater protection into a formal Stormwater Management Program (SWMP) when it was approved for permit coverage by Ecology. This permit is known as the Western Washington Phase II Municipal Stormwater Permit (Permit). The City continues to refine its stormwater program to meet the terms and conditions of the Permit, including the current requirements of the fourth version (third issuance) of the Permit, effective August 2019 through July 2024.

The Permit allows municipalities to discharge stormwater from municipal systems into "waters of the state" such as streams, lakes, and Puget Sound, as long as there are programs in place to reduce pollutants in stormwater to the "maximum extent practicable". Stormwater runoff from the City of Bellingham discharges to four main waterbodies: Lake Whatcom, Lake Padden, Bellingham Bay, and Chuckanut Bay. Improving habitat and water quality in these waterbodies were identified as top priorities in the City's Legacies and Strategic Commitments to its residents. The City administers programs to meet these commitments such as the Lake Whatcom Management Program, Bellingham Water Quality Improvement

Plans, Restoration Program, and the Downtown Renovation and Waterfront Restoration Programs. Requirements under the Permit provide the City additional opportunities to restore water quality in the City's neighboring streams, lakes, and bays.

STORMWATER MANAGEMENT PROGRAM DEVELOPMENT (S5.A and S5.B)

Permit Requirements

Sections S5.A and S5.B of the 2019-2024 Permit require the City to:

- Develop and implement a Stormwater Management Program (SWMP) within City limits, as determined in section S1.A of the Permit.
- Prepare and maintain a SWMP Plan which is to be submitted to Ecology with annual compliance reports.
- Manage an ongoing program for gathering, tracking, maintaining, and using information to evaluate the SWMP development, implementation and permit compliance and set priorities. Examples of data collected include:
    - The cost of the development and implementation of the SWMP.
    - The number of inspections, follow-up actions, and official enforcement actions
    - The types of public education activities as required by each respective SWMP program requirement.
- Coordinate with other NPDES permittees and partners in the region on stormwater related policies, programs, and projects.
- Coordinate internally among City Departments.

Notable Accomplishments

Prior to Permit implementation, the City of Bellingham proactively managed the quality of stormwater for 17 years using a variety of approaches designed to control runoff, treat runoff, reduce pollutant sources, and employ adaptive management. Over the course of four Permit terms spanning from 2007 to the current 2019-2024 permit, the City built a strong stormwater program adding depth to existing programs and increasing staff as needed. Through education and the use of incentive programs, the City continues to engage a variety of audiences in stormwater issues; from classroom children and rain garden planting volunteers, to focus groups targeting restoration options and survey respondents documenting behavioral changes. Stormwater control and treatment was accomplished by implementing Best Management Practices (BMPs) and development standards, designing, and building capital projects for new treatment facilities and retrofitting older public facilities. The City worked with businesses to control sources of pollution as well as individual homeowners to reduce runoff and pollution from their properties. These strategies worked in unison to form a multifaceted program that addresses stormwater quality and meets the six Phase II permit elements in the 2012-2018 Permit: education and outreach, public involvement, illicit discharge detection and elimination, runoff control from new development and redevelopment, good housekeeping in municipal operations, and water quality monitoring. The current 2019-2024 Permit

expands upon three previously generalized requirements—for stormwater planning, mapping of the City's stormwater system, and source control for existing businesses—bringing the formal number of program elements to nine. In addition, the 2019-2024 Permit includes specific requirements applicable to the Lake Whatcom Total Maximum Daily Load (TMDL) Implementation Plan. The City's stormwater code was revised five times (1990, 1995, 2006, 2009, and 2017), with the most recent revision incorporating new Low Impact Development (LID) principles for development codes and standards.

2020 Surface and Stormwater Comprehensive Plan Update and Stormwater Rate Increase

In 2020, the City updated the Surface and Stormwater Comprehensive Plan. This effort was informed by a detailed analysis of the City's topography, land use, and existing infrastructure and included a planning-level cost estimates for priority projects. The purpose of this Comprehensive Plan is to provide goals, policies, guidance, and planned program activities required to manage regulator, capital improvement, development, and maintenance requirements associated with the Stormwater Management Program. This Comprehensive plan informs a six-year Capital Improvement Plan (CIP), which is designed to address some of the largest challenges for water quality, fish passage, and flood protection within city limits. The City used a predictive tool that helped identify areas that are best suited for new infrastructure or retrofits. This capital improvement prioritization exercise identified an additional ten years of priority projects that are now programmed into the CIP and/or selected for grant applications for voluntary retrofit projects. A stormwater rate increase was passed by the City Council this year to allow the completion of these identified capital improvements, as well as other Surface and Stormwater Utility needs.

Inter-Jurisdictional Collaboration in the Lake Whatcom Watershed

The City works very closely with other local jurisdictions to coordinate stormwater efforts citywide and in the Lake Whatcom watershed. One example is the City's participation in the Lake Whatcom Management Program. This program is a joint effort of the City of Bellingham, Whatcom County, and Lake Whatcom Water and Sewer District to protect Lake Whatcom as a source of drinking water. The goal is to reduce or eliminate pollutant load and the amount of stormwater entering the lake. The pollutants that are typically within urban stormwater, including suspended solids, metals, and hydrocarbons, phosphorus, and fecal coliform bacteria, are the foremost pollutants of concern to Lake Whatcom's health. Since 1992, the City has been documenting reductions in phosphorus (P) achieved by capital infrastructure improvements. Starting in 2011, the City began documenting reductions in P achieved through private property retrofits, land use regulations, and enhanced operations and maintenance procedures. In 2022, the City received general use level designation (GULD) on an ambitious project to identify and refine a new, enhanced treatment media. The City's Phosphorus Optimized Stormwater Treatment (POST) system is now available as an open-source media to other municipalities, and has been shown to provide phosphorus treatment

exceeding the levels currently available using widely available best management practices. Further efforts to protect Lake Whatcom include the land preservation program, which aims to reduce water quality impacts by preserving land within the Lake Whatcom Watershed that might otherwise be made available for development, and ongoing water quality facility retrofits.

Capital Improvement Projects

The City's Storm and Surface Water Utility is constantly evaluating, retrofitting, and improving Bellingham's stormwater system and has completed many projects to date. The City operates six regional detention facilities and continues to be a leader in integrating low impact development (LID) techniques into infrastructure. Several projects were developed or completed during 2022 to upgrade existing infrastructure and install or enhance treatment to remove common pollutants. The City substantially completed construction on the Park Place Water Quality Facility, the largest piece of infrastructure that collects and treats runoff draining to Lake Whatcom. The Park Place rebuild project will be the City's largest investment to date in the Lake Whatcom watershed, treating more runoff from more developed area than any other facility in the basin. As outlined in the Lake Whatcom TMDL Implementation Plan, the city has continued to seek and secure funding to upgrade all stormwater facilities that treat runoff to the lake.

Planning for future improvements city-wide took a significant leap in 2022. Design of the first phase of a multi-year project to install water quality improvements in the Birchwood neighborhood, where untreated runoff enters Bellingham Bay through Little Squalicum Creek and its estuary, began in earnest with preliminary designs for projects on Eldridge Avenue and Nome Street. Funding was secured for phase two of this project, which is identified in the City's Storm and Surface Water Capital Improvement Plan (CIP). Other CIP-described projects were moved forward into the pre-design stage and submitted for design funding from state sources in October.

The City's 2022 capital construction included three habitat projects to address non-point source activity. The West Cemetery Creek Water Quality Improvements project constructed natural bed and bank features and facilitates stormwater dispersion along the creek to improve water quality and restore natural processes in West Cemetery Creek. This project improves water quality by addressing stream velocities and erosion that cause excessive sediment migration in West Cemetery Creek. The Padden Creek 24th to 30th Streets Restoration Project is a multi-phase project to improve water quality and aquatic habitat. Phase 1 was constructed in 2022 and included reconnecting floodplain, restoring riparian buffer with native vegetation, enhancing the stream channel with pools and side channels, and installing large wood features. The City also initiated construction of the Little Squalicum Estuary restoration project to expand estuarine habitat for juvenile salmon, improve water quality, and enhance forage fish spawning habitat. Construction will continue through early 2024.

Additional Highlights

The City completed the self-guided Stormwater Discovery Tour program to further inform the community of on-the-ground solutions in place to restore water quality throughout the City. The Pollution Prevention

Program provided pollution prevention technical assistance to businesses and the Wash Right campaign continued to promote proper outdoor washing practices. The Bellingham Water School Program reached 28 5th grade elementary school classes in 12 schools, totaling 700 students. City Stormwater Inspectors conducted 5293 construction site inspections and 188 private facility inspections. The detailed sections that follow will describe these efforts and their impacts on water quality protection for our residents, Bellingham's many visitors, and the local and regional environment.

City Organizational Responsibilities for the Stormwater Management Program (S5.B.5.b)

The City's Storm and Surface Water Utility (SSWU) Section in the Natural Resources Division of the Public Works Department holds the primary responsibility for developing and implementing the stormwater program and tracking Phase II Permit requirements. Within the Public Works Department, the Engineering and Operations divisions also hold integral roles in implementing the components of the stormwater program. The program is also supported by Planning & Community Development, Fire, Police, and Parks and Recreation (see Table 1). Internal coordination between these city departments occurs regularly as issues arise (e.g. handoff between construction inspectors and the private facility inspector, incident response and follow-up actions to stormwater violations) and more formally through stormwater committee meetings and Operations and Engineering coordination meetings.

Plans for Program Activities in 2020-2024 Permit Cycle

- Maintain an interdepartmental team to assess stormwater planning efforts including watershed and basin prioritization.
- Documenting illicit discharge tracking and cross-connection screening for the City's existing infrastructure.
- Updating mapping requirements to include all known outfalls.
- Launching a required Source Control Program for existing businesses.
- Implementing regulations on industrial discharges directed to sanitary sewer that could affect water quality discharged from the City's wastewater treatment plant.
- Addressing Lake Whatcom Total Maximum Daily Load Implementation Plan requirements detailed in Appendix 2 of the Permit.
- Updating all Stormwater Pollution Prevention Plans (SWPPP) for lands controlled by the City to meet new Permit requirements.

Table 1: City Organizational Responsibilities for the NPDES program (S5.B.5.b)

City Department	Description of NPDES Stormwater Responsibilities
Public Works - Natural Resources Storm & Surface Water Utility Section	Administers and develops the SWMP and coordinates with other divisions within the City (and other NPDES jurisdictions) to address Permit elements including: • Stormwater system planning • Education and outreach • Public involvement • Illicit Discharge Detection and Elimination (IDDE) program • Stormwater incident response • Private facility inspections • Municipal staff training • Pollution prevention practices • Annual Reporting • Business inspections for source control of pollutants
Public Works - Engineering	• Design of capital projects (new stormwater facilities and retrofits) • Oversight of construction contractor and other professionals and experts • Inspection of construction sites to ensure they meet stormwater requirements for water quality protection before, during, and after construction.

Public Works - Engineering Development Section	• Site plan review for stormwater permits in partnership with Planning and Community Development Department
Public Works - Operations Surface and Stormwater Division	• Inspection, operation, and maintenance of public stormwater facilities • Stormwater incident response • Tracing and screening infrastructure for illicit discharges
Public Works Laboratory at Post Point	• Water quality sample analysis for illicit discharge characterization and source tracing • Field monitoring of water quality in streams, lakes, and marine waters • Evaluation of stormwater facility performance
Planning & Community Development	• Permit Center provides first contact for residents proposing new or redevelopment projects needing stormwater permits • Distributes Notice of Intent for projects meeting thresholds
Police Department	• First responder to stormwater incident if called • Code enforcement for stormwater violations
Fire Department	• First responder to stormwater incident if called

1.0 STORMWATER PLANNING (Permit Section S5.C.1)

1.1 Summary of Permit Requirements

The Stormwater Planning program is intended to inform and assist in the development of policies and strategies as water quality management tools to protect receiving waters.

The Stormwater Planning Permit conditions require the City to:

- Convene an interdisciplinary team of subject experts to inform and assist in the development, progress, and influence of the Stormwater Planning program.
- Coordinate with long range plan updates, such as the newly updated City of Bellingham 2020 Surface and Stormwater Comprehensive Plan. Specific requirements are as follows:
    - Describe in the SWMP how stormwater management needs and protection/improvement of receiving water health are, or are not, informing the planning update processes and influencing policies and implementation strategies in the City jurisdiction.
    - Describe in the SWMP the water quality and watershed protection policies, strategies, codes, and other measures intended to protect and improve local receiving water health through planning or consider stormwater management needs or limitations.
- Implement planning codes to require Low Impact Development (LID), which shall be designed to minimize impervious surfaces, native vegetation loss, and stormwater runoff. The City shall enforce these LID principles though ordinances and annually identify and remove barriers to compliance.
- Develop a Stormwater Management Action Planning (SMAP) program. Specific requirements are as follows:
    - Document and assess existing information pertaining to local receiving waters and their watersheds to aid in the identification of waters most likely to benefit from stormwater management planning.
    - Develop a watershed inventory which describes relative conditions of receiving waters and their watersheds.
    - Develop and implement a prioritization method and process to determine which receiving waters will receive the most benefit from SMAP actions.
- No later than March 31, 2023, develop a Stormwater Management Action Plan (SMAP) for at least one priority watershed as identified in the above prioritization process. The SMAP shall include the following:
    - A description of needed stormwater facility retrofits.
    - Land management and development actions to improve water quality.
    - Targeted and enhanced elements of the City SWMP program.

- Changes needed to long range plans to meet SMAP priorities.
- A proposed implementation schedule and budget for short-term and long-term actions.
- A process and schedule to assess and improve the SMAP.

1.2 Program Overview

A NPDES Permit Coordinator position, which will be responsible for the City's Permit compliance, has been filled as of 2022. The City operates multiple programs that combine to provide ad-hoc stormwater planning across departments. As of 2022, the City plans for stormwater impacts through its Watershed Plans and its newly updated 2020 Surface and Stormwater Comprehensive Plan.

Land use planning within the City also aims to address future development impacts to water quality by formalizing Low Impact Development (LID) as the standard for land development. LID includes site development elements, such as clustering subdivisions and limiting street width, and specific engineered best management practices such as rain gardens, permeable pavement, green roofs, and low-impact foundations. LID requirements may only be waived if the project proponents demonstrate that using LID is not feasible.

1.3 Accomplishments in 2022

In 2022, the City continued the watershed and basin planning process outlined in the 2019-2024 Permit. An expert team of City staff and hired consultants were brought together to investigate the ways that City departments incorporate water quality improvements and other environmental protections in their work practices. This effort culminated in a multi-disciplinary stakeholder meeting amongst city staff who have a nexus with watershed protection, planning, and permit-required Stormwater Management Action Planning (SMAP).

In addition to the Capital Improvement Plan and Stormwater Comprehensive Plan goals, the City is actively assessing its infrastructure network to determine the most appropriate places for future water quality improvements or retrofits. In-field monitoring data was collected to inform the soon-to-be finalized Water Quality Estimator Tool (WQET) which will help determine where in the city's MS4 retrofits or new infrastructure is most needed. The WQET calculator includes inputs regarding land use, pollutant measurements, and other environmental conditions that may influence the way runoff is treated or managed before entering downstream waterways.

1.4 Plans for Program Area in 2023

The basin prioritization and infrastructure study projects will continue. Based on the initial outputs of the WQET calculator described above, the city will determine how to proceed in each of the priority watershed identified in the SMAP process. This information will help the City plan for the next round of improvements, known as Stormwater Management Actions (SMAs) for implementation from 2023-2028.

2.0 PUBLIC EDUCATION AND OUTREACH (Permit Section S5.C.2)

2.1 Summary of Permit Requirements

Section S5.C.2 Permit requires the City to address the following public education and outreach elements:

- Develop a program that targets specific audiences including general public, businesses, homeowners, landscapers, property managers, engineers, contractors, developers, and City employees including review staff and land use planners.
- Develop a program that aims to create general awareness, promote positive behavior change and create public stewardship opportunities. Elements of this program include:
    - Selecting a new topic annually for general outreach and behavior change, based on target audiences for high-priority pollutants or behaviors.
    - Evaluating an existing behavior change program implemented in the previous permit.
    - Updating the evaluated behavior change effort based on the results of the evaluation.
    - Measure improvements in the target audience's understanding of the problem and what they can do to solve it. Use this information to improve the education program.
    - Track and maintain records of public education and outreach activities.

2.2 Program Overview

The City of Bellingham implements a comprehensive stormwater education and outreach program with two main goals; to increase awareness of stormwater pollution issues and to provide tools, assistance, and incentives to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts. City staff emphasize the importance of environmental education and technical assistance in daily interactions with the Bellingham community.

Through both broad-based educational efforts aimed at the general public, and targeted resources for residents, specific businesses, contractors, stormwater facility owners, and/or municipal staff, the City compiled a library of resources ready for scheduled presentations or available on hand as outreach opportunities arise. Pollution prevention factsheets and brochures are routinely distributed to specific audiences and many of the resources are available on the City's website.

City educators are active in STORM, the Stormwater Outreach for Regional Municipalities group, participating in meetings, roundtable discussions, hosting community work parties, and giving presentations. The City's outreach team also works with local partners to coordinate stormwater outreach opportunities for the community, such as workshops on LID techniques, and stormwater facility maintenance. Local stewards and restoration groups are also a priority for City educators as they support groups such as the Washington Native Plant Society, Nooksack Salmon Enhancement Association and RE

Sources for Sustainable Communities. Specific educational efforts that reach the youth in our community include the Bellingham Water School program.

Through the Homeowner Incentive Program (HIP), the City provides technical and financial assistance to residents living in the Lake Whatcom watershed. Outreach services provided through HIP include online workshops, one-on-one site assessments, project design resources, and permitting assistance. HIP-eligible projects protect water quality by reducing sources of phosphorus, improving stormwater treatment, encouraging infiltration, or a combination of best management practices for phosphorus control. Project examples include native planting areas, phosphorus-limiting rain gardens, infiltration trenches, media filter drains, and dispersion systems.

Through experiences, lessons learned, and public feedback, the City continues to improve the outreach program. In particular, the use of audience surveys, both pre- and post-contact, have helped measure improvements in the target audience's understanding of the problem and document behavioral changes.

2.3 Accomplishments in 2022

The City of Bellingham undertook many outreach activities that brought stormwater information to a variety of audiences. Highlights include further enhancing the Manage Weeds Naturally webpage and outreach materials, continuing support of the Homeowner Incentive Program, the We Scoop campaign, and the Bellingham Water School program which resumed tours of the Water Treatment Plant which was previously a virtual tour due to COVID-19. In addition, the City has partnered with RE Sources to carry out joint public education and outreach activities. Table 3 summarizes City education and outreach activities during 2022 and the following paragraphs highlight a few of the efforts.

Stormwater Discovery Tours

This is series of self-guided web-based tours of stormwater features (stormwater.cob.org) which provide context, historical information, technical details, and interpretive messaging to members of the public who interact with the tours.

Stormwater Discovery Tours can be found in five areas around Bellingham; two focus on the more urbanized areas of the city (Downtown, Fairhaven), two are located at public parks (Bloedel-Donovan Park on Lake Whatcom and Squalicum Creek Park), and one focuses on a segment of the popular Railroad Trail. Together, these tours highlight stormwater infrastructure – water quality and flow control structures – by guiding users to highly-visible systems like rain gardens and detention ponds and nearly invisible facilities such as filter vaults and infiltration trenches. These tours are accessible to and can be used by students, teachers, professors, non-profit partners, and curious citizens.

In 2022, tours were promoted through the Parks Fall Playbook by using A-frame signs at each site September 8 through September 19 and listed as a self-guided event during Whatcom Water Week.

Lake Whatcom Watershed Outreach

The Lake Whatcom Homeowner Incentive Program (HIP) is a coordinated City of Bellingham and Whatcom County program that reduces phosphorus pollution in Lake Whatcom. HIP provides free technical assistance and financial reimbursement for voluntary water quality improvement projects on properties within the Lake Whatcom watershed.

The Lake Whatcom Lowdown, a new quarterly e-newsletter that provides updates about Lake Whatcom protection efforts and stewardship actions was launched in January 2021. It currently reaches approximately 400 subscribers. Stormwater topics covered in the e-newsletter include:

- Homeowner Incentive Program (HIP)
- Storm drain clearing
- Yard waste disposal best practices
- Volunteer opportunities, including monitoring and reporting stormwater problems
- Pet waste campaigns, contests, and events to encourage dog owners to scoop the poop
- Private Stormwater System maintenance workshops and support
- Stormwater Capital Project information
- Watershed regulations, including details about the watershed work window
- Septic system maintenance program information

Pet Waste Management

The City's We Scoop campaign promotes proper pet waste disposal on both public and residential properties.

The pledge program is promoted via an annual dog photo contest and prize drawing. The City partners with Whatcom County to increase our reach, both promoting the contests with Facebook ads, posts on the City's We Scoop Bellingham Facebook page and the County's Public Works page, participation in the Whatcom Humane Society's Dog Days of Summer event, and promoted at Bellingham SeaFeast. Participation in the contests directs dog owners to the We Scoop pledge ("to scoop at home at least once a week, bag it and put it in the trash").

Pledgers are then sent two We Scoop stickers to adhere to either side of their curbside trash toter. We Scoop stickers serve four purposes: (1) to make the dog owner's pledge publicly visible and durable thereby encouraging the dog owner to follow through with their pledge, (2) to serve as a prompt to the dog owner to remind them to scoop the poop as often as they take out their trash, (3) to make the social norm of scooping visible to people walking or driving by on trash day, and (4) to inform people that the trash is the appropriate place to dispose of dog poop.

Pledgers are also offered their choice of a dog bag dispenser for their leash, a small flashlight for their leash, and/or a clip for their leash to carry full poop bags hands-free. Prize drawing winners chose from two options (all about a $50 value): a year's supply of refill rolls for their leash bag dispenser, or a home long-handled rake-and-bin scooper.

The City's Public Works Department works closely with the Parks and Recreation Department to coordinate scoop the poop messaging in Parks and along trails. Parks held 6 poop cleanup events this year. These outreach events provided dog waste education, games, prizes, candy, dog bags, dog treats, and a space to discuss the local poop problem with the public. During the events, a total of 270 people were engaged, and 216 piles of dog poop were picked up weighing 24.5 pounds. Parks maintains 79 dog stations with signs and bag dispensers and distributed about 514,000 bags in 2022. Parks also provides 203 trash cans, some of which are part of the dog bag dispenser station and many of which are very nearby the bag stations, plus 20 dog waste-specific trash cans. 53 of their stations are maintained by staff and 17 are maintained by "Bark Stewards," the volunteer park stewards interested in dog issues. This enhanced partnership between Public Works and Parks leverages the skills of the complimentary programs (stormwater education and park maintenance) to better protect water quality for the environment and park/trail users.

School Programs

City educators offer a water education program, "Bellingham Water School", for 5th grade students centered on watersheds, the Lake Whatcom Watershed, the drinking water and wastewater treatment processes, water conservation and stormwater pollution prevention. Bellingham Water School was conducted at 13 classes in 8 schools, reaching 425 students in spring of 2022; the entirety of the program was school-based due to COVID-19. In Fall of 2022 Bellingham Water School offered full-day field trips to Lake Whatcom and the Water Treatment Plant again, reaching 11 classes in 5 schools to 275 students.

The program involves a tour of water treatment facility, in-class hands-on activities about watersheds, and a school yard mapping exercise where students learn which surfaces of their school's campus create stormwater and which surfaces allow for infiltration.

The City contracted with RE Sources for Sustainable Communities' Sustainable Schools program to offer action projects post Water School. All classes have the option of doing a litter cleanup, storm drain marking, creating art about water conservation and stormwater pollution prevention, or a project of their own design.

Neighborhood Meetings and Capital Project Outreach

Public Works staff provided stormwater education to residents and answered questions via neighborhood meetings, city council meetings, the askpw@cob.org email, pre-construction mailers, capital project web pages, and EngageBellingham.org.

Habitat Restoration

Public Works staff incorporate educational stormwater messaging into outreach events and materials that support the City's Restoration Program. In 2022, there were 413 participants at three volunteer work parties who received stormwater education from displays and printed materials. About 675individuals are subscribed to the City's Habitat News, a quarterly newsletter with updates from the Restoration Program, received four newsletters about events and capital projects that include stormwater benefits.

Business Sector Education / Pollution Prevention Assistance Program (See also**:** S5.C.8 in 2019-2024 permit "Source Control for Existing Businesses")

The City operates a voluntary pollution control and reduction program known as the Pollution Prevention Program Assistance Program (PPA). The program is funding by the Washington Department of Ecology and presents an opportunity for the City to engage the local business community in a non- regulatory and technical assistance focused manner.

Pollution Prevention staff conducted 52 site visits to local businesses providing technical assistance on pollution prevention practices.

Business owners receive one-on-one education on good housekeeping practices specific to their business sector. Technical assistance covered topics such as the proper storage and disposal of chemicals and hazardous waste, stormwater facility maintenance, storage of materials outside, spill prevention and clean-up, and sanitary sewer regulation. In 2022, the primary target sectors were auto repair and restaurants.

2.4 Plans for Program Activities in 2023

The City plans to continue work on stormwater education and outreach at a level commensurate with 2022 efforts building on established systems and procedures.

To build general awareness about low impact development principles and LID BMPs (S5.C.2.a.i), the City will run ad campaigns about our self-guided Stormwater Discovery Tours, about what stormwater is (This Drains Here), about how to report spills (Spills Happen), as well as participating in regional Puget Sound Starts Here advertising campaigns.

To effect behavior change, the City will continue our We Scoop pet waste campaign, the Lake Whatcom Homeowner Incentive Program (HIP), and the Natural Yard Care program. The We Scoop program will continue to engage dog owners through the annual photo contest and prize drawing to promote regular scooping and proper disposal with a pledge and trash tote sticker. We will continue to strategically increase dog stations and volunteer opportunities in parks. In 2023, HIP will continue to engage new and existing homeowners to actively steward Lake Whatcom and its surrounding watershed. The City will continue to implement our Natural Yard Care program by creating and distributing how-to resources for managing weeds naturally.

As part of the City's Pollution Prevention Program, our pollution prevention specialists will continue to work with businesses to reduce or eliminate pollution from entering the storm sewer or surrounding waterways. Specialists will also assist businesses with general housekeeping, preventing pollution from entering the sanitary sewer, and transitioning away from harmful chemicals to more healthful and less toxic alternatives. More information about the Pollution Prevention Program is found in section 8.0 of this report. In 2023, specialists will be reaching out to businesses in the follow sectors for additional pollution prevention assistance:

- Automotive maintenance and repair
- Gymnastic and other athletic centers.
- Alcoholic beverage breweries
- Restaurants

To provide stewardship opportunities, the City will continue our partnership with Parks to engage citizens in habitat restoration work parties, as well as dog-related volunteers in parks, the Bark Stewards. The City plans to continue our partnership with the Washington Native Plant Society by co-hosting our third Native Plant Stewardship Class. As in past years, participants will receive instruction on watershed and restoration ecology. Participants will then complete a minimum of 30 hours of service. Most participants are expected to complete their service hours by restoring City watersheds.

Table 2: Education and Outreach Activities Undertaken in 2022

Education/ Outreach Activity	Description	Targeted Audiences
Stormwater Discovery Tours	• A web-based self-guided stormwater tour (http://stormwater.cob.org) highlighting 5 areas in town with 31 tour stops that include multiple facility types (rain gardens, gravel filters, bioswales, ponds, bioretention basins, etc.) • *Promotion:* posted A-frame/sandwich board signs at each tour during Whatcom Water Week, ad in Bellingham Parks Playbook, ad at Pickford Film Center • *Website users:* The website was transferred over to WordPress at the beginning of September 2022. In the last quarter of the year roughly 100 people per month were using the self-guided tours.	• General public • College students and professors

We Scoop **pet waste campaign**	• *Pledge:* 213 dog owners pledged to scoop the poop at home at least weekly, bag it and put it in the trash in 2022, for a total of 1,400 pledgers since 2014. (SurveyMonkey.com/r/WeScoop) • *Pledge/Prompt:* over 1,000 We Scoop stickers for trash cans distributed (in tool kits and at events). • *Tools:* 622 poop scooping toolkits were distributed, 162 of those to pledgers, 460 to new dog owners (humane society adopters and puppy class participants). Toolkits include We Scoop stickers, info flyer, photo contest flyer, and their choice of a bag dispenser (460), a bag carrying clip (602), and/or a leash flashlight (478). • *Promotion:* Attendance at dog event, Dog Days of Summer • *Promotion:* Attended Bellingham SeaFeast • *Promotion:* Held 8 Bark Steward events, engaging 197 people and scooping 83 piles of dog poop weighing 15.2 pounds.	• Dog owners at home • Dog walkers in public places

	• *Promotion:* Scooping Stars photo contest (84 dogs entered), promoted the contest via Facebook posts (WeScoopBellingham, and Whatcom County Public Works), Parks Playbook, and Whatcom Water Weeks. *Promotion:* Ads profiling local Scooping Stars with messaging about regular scooping and proper disposal in the Bellingham Parks Playbook. • *Stations:* At City parks, maintained 79 dog bag stations (17 of which were adopted by volunteers), distributed about 514,000 bags, maintained 203 trash cans (20 of which were dog waste-specific)..	
Bellingham Water School Program	• 28 5th grade classes in 12 schools (700 students). Curriculum includes concepts of watersheds, stormwater, pollution prevention, water and wastewater treatment, and water conservation.	• Elementary school students (mostly 5th grade) • Teachers, parents/guardians

Lake Whatcom Homeowner Incentive Program (HIP) – **A coordinated program between City of Bellingham and Whatcom County**	• Outreach to engage 35 new HIP participants included a spring social media campaign (six boosted Facebook posts and three Nextdoor posts) and targeted outreach to new city homeowners, the county basin three wait list, and homeowners already engaged in HIP from previous years who haven't completed a project. • Seven HIP projects were completed, including native landscaping projects and other water quality improvements (BMPs offered included infiltration trenches, media filter drains, rain gardens, and native landscaping).	• DIY program: all Lake Whatcom watershed homeowners not eligible for Target program (City and County) Target program: Lake Whatcom watershed shoreline, creekside, and large lawn homeowners (City and County)

Outdoor washing campaign	• Pressure wash and car wash kits and technical assistance were offered on loan to assist residents and small businesses in proper wash water management. • Drivers were encouraged to wash cars at a commercial car wash through an ad on an electronic billboard ad near car dealerships that directed people to more info on the City's website, cob.org/cleanwater.	• Residents • Businesses
Local Source Control Program	• Provided pollution prevention technical assistance to 52 businesses, including landscapers, restaurants, and property managers.	• Businesses • Industries
Restoration Program outreach	• 423 participants at three work parties received education about stormwater from tour leaders, displays, and printed materials. • Approximately 675 Habitat News subscribers received four newsletters about habitat restoration projects that included stormwater benefits. • 708 volunteer hours completed on City managed restoration sites.	• General Public • People interested in restoration
Water Use Efficiency outreach	• Online pledge for residential outdoor watering, promoted via social media and available on our webpage (www.cob.org/conserve) and received 32 pledges. Pledge participants is received 76	• Utility customers

	Water-saving devices (hose timers (16), moisture meters (9), rain gauges (27), hose repair kits (12), or hose nozzles (12)). • In-person pledges for residential customers, promoted at farmer's markets. 29 people pledged and received 52 water-saving devices (hose timers (12), moisture meters (5), rain gauges (18), hose repair kits (7), hose nozzle (9), or coupon for native plants (1)).	• Utility customers
Don't Drip and Drive vehicle leak campaign	• Drivers were encouraged to check for and fix car leaks through an ad on an electronic billboard ad near car dealerships that promoted the regional website, FixCarLeaks.org.	• Automobile owners
Resident, Neighborhood & Capital Project outreach	• Public Works staff provided stormwater education to residents and answered questions via phone, email, neighborhood meetings, city council meetings, the askpw@cob.org email, pre-construction mailers, capital project web pages, and on EngageBellingham.org.	• General public • Residents impacted by construction
This Drains Here stormwater awareness campaign	• Ads raising awareness about stormwater on Whatcom Transportation Authority buses and at Pickford Film Center. • Promoted program in Bellingham Water, Sewer, Surface and Stormwater utility bill insert – goes out to roughly 25,000 homes.	• General public
Spills Happen stormwater hotline campaign	• Ads promoting stormwater hotline on Whatcom Transportation Authority buses and at Pickford Film Center. "Spills happen. Help us find them." cob.org/StormwaterHotline • Promoted program in Bellingham Water, Sewer, Surface and Stormwater utility bill insert – goes out to roughly 25,000 homes.	• General public
Puget Sound Starts Here stormwater awareness campaign	• Participated in regional group ad campaign, "Puget Sound Starts with Car Care," which included 30-second video ads in Whatcom County in English and Spanish across multiple platforms including Facebook, Instagram, YouTube, Google, and BTV10. The video directed people to	• Car owners

	the PSSH website where there is a short quiz to test people's knowledge on vehicle maintenance and give them ideas for next steps. Paid advertisement ran September 1 – October 31, in Bellingham the video was watched 20,473 times.	
Video Outreach	• City website includes stormwater resources and videos, including "What's the Scoop About Healthy Streams?" and "Stormwater University". • City television station, BTV10, aired programs about Public Works' utility services including a specific video about what our stormwater utility does. • City YouTube channel has all videos listed above and Puget Sound Starts Here ads for "Certain Things Don't Mix" and "Puget Sound Starts with Car Care"	• Dog owners • Business owners • General public
Natural Yard Care	• Developed Maintained Manage Weeds Naturally campaign web page (cob.org/weeds). • Promoted Weeds Webpage via counter cards distributed at 3 8 local garden centers. • Conducted qualitative interviews with 20 local garden center staff, regional landscapers and horticulture educators, and regional natural yard care program coordinators to assess needs and gaps in existing information about managing weeds naturally. • Worked with horticulture consultant to develop materials identified in gap analysis and expert interviews.	• People who maintain their own yards • Garden center staff (at nurseries, grocery stores, and hardware stores)

3.0 PUBLIC INVOLVEMENT AND PARTICIPATION (Permit Section S5.C.3)

3.1 Summary of Permit Requirements

Section S5.C.3 of the Permit requires the City to address the following public involvement and participation elements:

- Provide ongoing opportunities for public involvement in the SWMP and SMAP process through committees/commissions and updating the SWMP to reflect input.
- Make the SWMP and Annual Compliance Report available to the public, including posting it on the City's website.

3.2 Program Overview

The Bellingham public is invited to participate in stormwater decision-making. Opportunities include the City Council meetings, Community meetings, public hearings, neighborhood association meetings, focus groups, community surveys, and webpage commu[Page 23] The City also solicits public comment through press releases specific to projects and code updates, and leisure guide advertisements. Status reports on the Stormwater Management Program were presented at the monthly Public Works Committee meetings. In addition, the current SWMP and Annual Compliance Report were made available to the public by posting downloadable versions on the City's website[1] and a copy is available for public review at City Hall.

3.3 Accomplishments in 2022

Public involvement opportunities to comment on the stormwater program in 2022 are summarized in Table 4.

Table 3: Public Involvement Opportunities Completed in 2022

Public Involvement Opportunity	Description of Opportunity
City Council Meetings	City Council holds meetings that are open to the public, generally two each month. In 2022, major stormwater items discussed at Council meetings included interlocal agreements with local partners,

[1] https://cob.org/services/planning/environmental/stormwater-program

	contracts with regional agencies, and project-specific awards (bids, consultant agreements) for ongoing work.
City Council Public Works Committee	This oversight committee meets monthly to consider changes to Public Works policies, procedures, budgets, and operations. This committee meets in Council Chambers and meetings are open to the public, who can submit written comment.
Public Works Advisory Board	Annual review of Stormwater Management Program
Lake Whatcom Management Program public meetings	The LWMP maintains two venues for public input and engagement: • Three Joint Policy Group meetings, attended by City of Bellingham City Council and Whatcom County Council representatives, along with partners from the Lake Whatcom Water and Sewer District and Sudden Valley (a 2,500-home private development in the watershed) were held. These meetings invite private citizens to attend and ask questions of policymakers. • Annually, the full membership of each of these bodies meets for a review of program activities. This meeting has a public comment period.

Website posting of SWMP and Annual Report	Downloadable versions of the current stormwater management documents are on the City website

3.4 Plans for Program Activities in 2023

The City plans to offer public involvement opportunities similar to those offered in 2022. The City Council will be briefed on the operation and function of the Stormwater Utility as well as information about upcoming stormwater plans for restoration. Work conducted in support of the Lake Whatcom Management Program will be presented to the public at the Annual Joint Councils and Commissions Meeting for Lake Whatcom on March 23, 2022.

4.0 MUNICIPAL SEPARATED STORM SEWER SYSTEM (MS4) MAPPING AND DOCUMENTATION (Permit Section S5.C.4)

4.1 Summary of Permit Requirements

The Permit requires the City to implement the following related to mapping and documentation:

- Continue ongoing mapping projects begun under previous permits, including the documentation of the location of all outfalls, discharge points, receiving waters, water quality and flow control BMPs, conveyances (pipes/ditches) to all outfalls larger than 24" diameter, and certain connections to the MS4.
- Develop new mapping projects that identify and display:
    - All outfalls, including those smaller than 24" which were exempt from past permit requirements.
    - All known connections to the City's MS4 from privately-owned stormwater systems from any date.
    - The ability to display of all data in an electronic mapping format that follows well-defined standards and uses industry-standard software.
    - The ability to share all created maps with Ecology, recognized Tribes, and other municipalities and NPDES permit holders.

4.2 Program Overview

The City of Bellingham Public Works Department includes a workgroup of Geographic Information System (GIS) mapping specialists who continually update maps and their data sources to ensure an accurate electronic mapping system is available for use by City staff and the public. This mapping tool,

known as City IQ[2], includes layers dedicated to stormwater infrastructure, including BMPs and the areas for which they provide treatment. Our mapping includes most private facilities, especially those in our inspection program, and all public facilities that are operated and maintained by Public Works Operations Crews. Through this program, outfalls are mapped as they are identified by field staff, infrastructure details such as sump depth of catch basins are field-verified, and new/retrofit water quality and flow control BMPs are integrated into the treatment network upon completion.

While many features are available in the City IQ and GIS system, the City also has developed a customized application of the Western Washington Hydrology Model version 3 (WWHM3) to evaluate the hydrology and hydraulics of the City's stormwater system components. The updated model will include characterization of marine outfalls and their capacity and feasibility for capital improvements in their upstream conveyances.

4.3 Accomplishments in 2022

The city has implemented these permit requirements and continues to refine its mapping system.

4.4 Plans for Program Activities in 2023

The City plans to continue the mapping tasks new to the Permit in 2023, including launching a new mapping effort to capture outfalls less than 24" in diameter and historical known connections to the MS4, added to our City IQ system as those connections are field-verified.

5.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION (Permit Section S5.C.5)

5.1 Summary of Permit Requirements

The Permit requires the following related to illicit discharge detection and elimination (IDDE):

- Develop an ongoing program to detect and remove illicit discharges, connections, and improper disposal, including any spills into the municipal separate storm sewers owned or operated by the City.
- Inform public employees, businesses, and the general public of the hazards associated with illicit discharges to the storm sewer system.
- Implement an ordinance that prohibits illicit discharges.

[2] https://www.cob.org/services/maps/online-mapping,

- Implement a program to detect and address illicit discharges and connections. The following are specific elements of this program:
    - Procedures for conducting investigations.
    - Publicize a hotline or other local telephone number for public reporting of spills and other illicit discharges.
    - Maintain an ongoing training program for staff pertaining to proper IDDE spill identification, investigation, clean-up and response procedures.
    - Procedures for characterizing the nature of, and responding to, any potential public or environmental threat posed by illicit discharges.
    - Procedures for tracing the source of an illicit discharge.
    - Procedures for eliminating illicit discharges including inspections, technical assistance, and compliance and enforcement measures.
- Track all spills, illicit discharges and connections reported to the City and response actions taken, including enforcement actions.
- Screen the MS4 system for illicit connections at a rate of at least 12% of the system each year, for a total of at least 60% at the completion of the five-year permit cycle.

5.2 Program Overview

The City implements a program to detect and remove illicit discharges and connections into the City's Municipal Separate Storm Sewer System (MS4).

Bellingham Municipal Code 15.42.050.C prohibits non-stormwater illegal discharges, and/or dumping into the City's MS4. The enforcement of all stormwater code provisions including illicit discharges is provided for in BMC 15.42, subsections 070-110. Illicit discharges were prohibited in the 1995 adopted code; this language was refined in the 2009 ordinance update to fully reflect the NPDES permit language. The City is active in the enforcement City code to prevent and respond to illicit discharges.

The City engages in interdepartmental coordination to report and respond to illicit discharges. City staff utilize many methods to discover and trace illicit discharges and IDDE problems including visual observation and chemical analysis, dye testing, internal pipe video inspection, observations during pipe cleaning, stormwater outfall monitoring/dry weather monitoring, and source control inspections. The City also uses customer information to identify and resolve stormwater issues.

A stormwater hotline number (360-778-7979) is posted on the City's website and publicized on storm drain markers throughout the City. SSWU staff are ready to record and respond to all calls regarding illicit discharges or spills that are received on the hotline. All reports that are found to represent illicit discharges

or connections are followed up as necessary to resolve the issue. Follow-up actions are tracked, and feedback is given to the reporting party as well as Ecology, as necessary. The City both receives and sends information through the Ecology-administered Environmental Response Tracking System (ERTS) and responds similarly, providing closure information back to Ecology. When accidental discharges occur as part of the City's provision of services (for example, during water main breaks or as a result of contractor inaction on City capital projects) the City self-reports these incidents to ERTS if they have reached our MS4. In the cases where City staff observes a potential illicit discharge as part of their daily work duties, these staff contact the stormwater hotline and/or ERTS as appropriate for the event.

SSWU staff respond to most stormwater incidents to assess the situation and plan follow-up actions to resolve them. For discharges that reach the MS4, SSWU staff work with the Storm Operations crew and a vacuum truck (or other appropriate tools and equipment) is used if needed. Fire and Police are often the first responder; however, if it is not a hazardous materials situation, they are trained to call SSWU responders and the Storm Operations crew. All Public Works Operations vehicles have spill kits for containment and cleanup of small spills. The Storm Operations crew receives training on spill response and addresses any additional questions or concerns through the stormwater committee. The City of Bellingham Emergency Response Plan for Public Works Operations: Water, Wastewater, Stormwater: Chapter 8 Water Quality Contamination, and Checklists 10 and 11 Hazardous Materials Spill to Streets or Storm Water System cover procedures for spill response.

In addition to responding to illicit discharge incidents, the City is proactive in tracing the source of illicit discharges. The City started utilizing system video inspection in 2003 to both discover illicit discharges and trace the sources as well as to detect maintenance issues. The crew is trained to look for signs of non-stormwater discharges from private piping entering our system. Signs of staining, foam, and/or discolored discharges are all indications that would be part of the condition report of the piping system. This information is provided to the supervisor and is also logged into system reports for future referral. In recent years, the City reviewed 100% of our total 28 square miles of stormwater network, including about 284 miles of storm mains, and is beginning to review the system a second time, with approximately 22% completed. The initial effort covered older infrastructure in the Central Business District and known problem areas. Crews have since proceeded by quarter-sections starting in the northwest moving east and then south. This system review has located many problems including misconnections and suspicious flows.

The City requires IDDE training for all municipal field staff, including the Surface and Storm, Street, Water, Wastewater, and Traffic crews, and the Police and Fire Departments. Public Works inspectors and supervisors have also been trained on illicit discharge identification and procedures. The City has 62 Certified Erosion and Sediment Control Lead (CESCL) trained personnel on staff, in addition to requirements for on-site CESCLs on private development or capital projects (e.g. new parks) greater than one acre in size.

5.3 Accomplishments for 2022

Staff responded to 219 stormwater pollution complaints

The City operated a successful program to identify and eliminate illicit discharges in 2022. Knowledge of City infrastructure improves as the City's comprehensive map of its MS4 continues to be updated. In 2022, the City received 82 hotline calls and online submittals, as well as an additional 137 notifications from direct calls, emails, staff complaints, and ERTS referrals. All incidents reported were responded to in some manner. Some inquiries were discussed with the caller and did not require further action while others were forwarded on to a different department as appropriate. Most inquiries were addressed by SSWU staff and follow-up responses were tracked in the Bellingham Environmental Response Tracking System (BERTS) database.

The IDDE training was completed by 28 new and seasonal field staff. This training will be renewed by all field staff in the Police, Fire, Parks and Public Works departments in 2022 SSWU Staff also participated in:

- Monthly conference call presentations and quarterly in-person trainings with regional Local Source Control Specialists on topics such as Community Based Social Marketing, the Product Replacement Program, Pollution Prevention in Golf Courses, and the Paint Stewardship Program.
- National Stormwater Center - CSI Network Monthly Webinars
- EPA Webinar Series: Strategies for Small POTWs Handling High Strength Influent (Pretreatment/non-domestic sewage, establishing local limits, examples regarding dairies and breweries)
- Certified Erosion & Sediment Control Lead (CESCL) certification renewal
- WA State GIS Conference

5.4 Plans for Program Activities in 2023

The City plans to continue responding to illicit discharges at a commensurate level of effort as in 2022. Additionally, SSWU Staff intend to provide refresher training opportunities for field crews, first responders, inspectors, and supervisors/management.

Mobile RV Pump Out Program - In recent years, the City has observed that the number of residents living in recreational vehicles (RVs) on City right-of-way is on the rise. While this presents an obvious housing and human services outreach challenge, it also creates impacts to water quality. Evidence of RV residents dumping the contents of their full grey and blackwater tanks onto City right of way has been observed by City work crews. Human waste present in the right-of-way is then flushed into the municipal storm sewer with the next storm event. In anticipation of a TMDL for fecal coliform bacteria on Whatcom Creek, the Public Works Department is proactively pursuing solutions. Long term, the City is considering the installation of permanent public RV dump stations in areas to increase accessibility across the City. Until this permanent solution is implemented, and perhaps after completion, the City is implementing a program to provide free septic pump

outs to members of the public living in RVs in the right-of-way. In late 2022, the City retained a septic servicer under contract to provide free recreational vehicle (RV) septic tank pump outs. The City also partnered with the Opportunity Council to provide RV pump out program outreach and other assistance to RV residents. In early 2023, the City will begin implementing the program as a pilot. Continued funding will depend on program participation, program efficacy, and community need.

6.0 CONTROLLING RUNOFF FROM NEW DEVELOPMENT, REDEVELOPMENT AND CONSTRUCTION SITES (Permit Section S5.C.6)

6.1 Summary of Permit Requirements

The Permit requires the following elements regarding controlling runoff from new development, redevelopment and construction sites:

- Develop, implement, and enforce a program to reduce pollutants in stormwater runoff discharging to the municipal separate storm sewer system from new development, redevelopment, and construction site activities.
- Adopt an ordinance to address runoff from new development, redevelopment, and construction activities from both public and private sites that meets requirements within Appendix 1 of the permit. (See also Stormwater Planning requirements under section S5.C.1 of the Permit).
- Adopt local requirements to apply stormwater controls on construction sites. The City's local requirements are more stringent than those required within the Permit.
- Maintain the legal authority to inspect and enforce maintenance standards for privately owned stormwater facilities which discharge to the City storm sewer.
- Implement a permitting process for public and private projects which includes site plan review, inspection, and enforcement capability to meet Permit standards.

- Provide copies of the Notice of Intent (NOI) for construction or industrial activities to representatives of the proposed new development and redevelopment and post a link to the online electronic version of the NOI.
- The program shall enforce local stormwater control ordinances controlling runoff from sites that are also covered by Ecology-issued stormwater permits.
- Provide training to staff that implement the program to control stormwater runoff from new development, redevelopment, and construction sites.
- Develop a process to record and maintain all inspections and enforcement actions by staff.

6.2 Program Overview

The City implements and enforces a program to control runoff from new development, redevelopment, and construction sites. In 2006 and 2009, the City updated its stormwater code to address construction runoff control from both public and private sites using language consistent with the "Minimum Technical Requirements" in Appendix 1 of the Permit. However, since the adoption of the City's initial stormwater ordinance in 1995, a permitting, inspection, and enforcement program has been in place that is more restrictive than the Appendix 1 thresholds. The City requires some form of erosion control on all projects that exceed 120 square feet of impervious surfaces or disturb more than 500 square feet of soil. These local requirements have been retained as the City continues to regulate stormwater from smaller sites or at lower thresholds than required pursuant to section S5.C.4 of the Permit. Sites that trigger the Appendix 1 thresholds receive more detailed reporting, increased inspection frequencies, and additional compliance items as necessary to meet the Permit requirements.

The City previously followed the planning process and BMP selection and design criteria outlined in the 2005 Stormwater Management Manual for Western Washington (the Manual). The 2012 and 2019 Manuals were adopted by the City automatically at the time they were adopted by Ecology. Our permitting process includes site plan review, inspection, and enforcement capability. Copies of the Notice of Intent for construction or industrial activities are provided to project proponents. City databases are used to record permit activity and maintain a record of all inspections and enforcement actions taken by staff.

All permitted development sites are inspected by qualified Public Works Department Inspectors for proper erosion and sediment controls and appropriate enforcement actions are taken as necessary to ensure compliance. The City's inspection program includes site visits before, during, and after construction. Verbal warnings are often given during inspections and corrections are made when the inspector is present. When necessary, stormwater permit correction notices are issued listing the items that do not comply with City codes along with required corrective actions. Stop-work orders are issued in cases where non-compliance persists, and they remain in effect until additional inspections show compliance. All permitted development sites are inspected upon completion and prior to final approval or occupancy to ensure proper installation of permanent stormwater controls and to verify that a maintenance plan is in place. The City uses an escalating enforcement strategy of corrective warnings, monetary ticketing, and if necessary, the case is transferred to the City's legal staff.

Site plan reviewers, inspectors, city engineers and SSWU staff have had stormwater code training, Ecology Manual training, and have attended permit overview workshops.

6.3 Accomplishments in 2022

The Public Works Development Section reviewed 363 site plans in 2022. These plans were distributed as follows into the four permit levels:

- 202 level 1 permits for projects containing more than 300 square feet and less than or equal to 1,000 square feet of new or replaced impervious surface or containing more than 500 square feet and less than or equal to 5,000 square feet or clearing or grading.
- 127 level 2 permits for projects containing more than 1,000 square feet and less than or equal to 5,000 square feet of new or replaced impervious surface or containing more than 5,000 square feet and less than or equal to 30,000 square feet or clearing or grading.
- 27 level 3 permits for projects containing more than 5,000 square feet and less than or equal to one acre of new or replaced impervious surface or containing more than 30,000 square feet of clearing or grading.

- 7 level 4 permits for projects containing more than one acre of impervious surface.

The City will continue to regulate stormwater from smaller sites or at lower thresholds than required pursuant to the current Permit using local ordinances that were in place prior to the first issuance of the Permit.

City Stormwater Inspectors made 5293 stormwater inspections related to active construction during 2022. These inspections occurred on over 986 different sites, including both private and public projects, of which 27 included work without a permit. Stormwater permit correction notices were issued to document 69 construction activities that were not in compliance with City stormwater code. These sites were re-inspected until corrective actions were taken. Six stop work orders issued.

6.4 Plans for Program Activities in 2023

The City plans to continue to control runoff at a commensurate level of effort as in 2022.

7.0 OPERATIONS AND MAINTENANCE (Permit Section S5.C.7)

7.1 Summary of Permit Requirements

The Permit requires the City to implement a program which addresses the following concerning stormwater pollution prevention for operation and maintenance activities:

- Implement maintenance standards for the municipal separate stormwater system that are at least as protective as those specified in Ecology's *Stormwater Management Manual for Western Washington.* For facilities not listed in the above manual, develop a maintenance standard.
- Perform annual inspections, and require maintenance as needed, of stormwater mitigation facilities regulated by the City under the new development, redevelopment, and construction site pollutant reduction program.
- Perform annual inspections, and perform maintenance as needed, of stormwater facilities owned or operated by the City.
- Develop standard operating procedures to reduce stormwater impacts associated with runoff from all lands owned by the City and municipal road maintenance activities.
- Implement an ongoing training program for City staff whose construction, operations, or maintenance functions may impact stormwater quality.

  Prepare Stormwater Pollution Prevention Plans (SWPPPs) for all heavy equipment maintenance yards, storage yards, or material storage facilities that are owned or operated by the City that are not already regulated by a separate NPDES stormwater permit.

7.2 Program Overview

The City implements an operations and maintenance program with the goal of preventing or reducing pollutant runoff from municipal operations and regulated private stormwater facilities. One focus of the program is the training of municipal staff on good housekeeping pollution-prevention practices that are applicable to daily City operations and activities. Other components include performing annual inspection and maintenance of public stormwater facilities, updating stormwater pollution prevention plans for City facilities, and constructing capital improvement projects that reduce pollution.

City-Owned Facility Maintenance and Inspection

The City maintains a comprehensive program for maintaining City-owned or operated permanent stormwater treatment and flow control facilities. Maintenance standards from Ecology's *Stormwater Management Manual for Western Washington* were adopted by the City and are used to evaluate facilities for both private and public inspections. The City maintains over 964 facilities including 7 regional detention dams, 159 detention/water quality ponds, vaults or pipes, 97 bioswales, 149 rain gardens and bioretention facilities, 59 infiltration/dispersion trenches, 265 sand and media filters, 9 hydrodynamic pre- treatment structures, 22 sections of permeable pavement, one stormwater treatment wetland, and 28 pollution control/oil-water separator structures.

Inspection and maintenance of facilities are scheduled and tracked through a maintenance management system. Inspections occur at a minimum annually, with most facilities inspected several times throughout the year. Filters are inspected more frequently, typically on a three-month circuit. Maintenance is scheduled when a facility exceeds the applicable maintenance standards and corrective actions are executed as soon as practical. Catch basins and inlets owned or operated by the City of Bellingham are inspected and cleaned as necessary to comply with the maintenance standards. In addition, City Storm Operations staff have identified potentially vulnerable stormwater facilities that are monitored during and after major storm events.

Privately-Owned Facility Maintenance and Inspection

The City's private stormwater facility inspection program has two major components. The highest priority is the inspection of private stormwater mitigation facilities that trigger the NPDES annual inspection requirement to ensure maintenance standards are met on post-construction private facilities. Secondarily, the City inspects and provides technical assistance to owners of smaller or older private facilities within the City's jurisdiction.

Private facilities built after 2007 that trigger the Appendix 1 thresholds are inspected annually. Inspection reports document conditions and itemize specific maintenance corrective actions. Notification letters are sent to the property owners along with the inspection report and a timeline for action. Typically, maintenance is required prior to the next annual inspection, however there are circumstances that call for

more frequent follow-up inspection. The City continues to work with owners until maintenance issues have been resolved.

Stormwater Hotline

The City operates a Stormwater Hotline which allows the public to call in and report a stormwater facility maintenance issue or illicit discharge directly with a representative from the Public Works division. The public may also submit an online report through the Stormwater Hotline webpage. The City is also utilizing a "See, Click, Fix" program. This program allows the public, using a mobile app, to inform City staff of any observed stormwater maintenance issues. The program also allows the City to easily provide in-app responses and to follow up with the public as needed.

Stormwater Pollution Prevention Plans (SWPPPs) were developed for the Public Works Operations Complex and the Parks & Recreation Operations Center. Stormwater Committee members perform regular site inspections of operations facilities to ensure that proper good housekeeping practices are being followed and provide training for municipal employees.

The City's street sweeper program aims to clean all city streets on a three- to four-month circuit. More frequent street sweeping occurs on arterial streets and bike lanes, in the downtown Central Business District where streets are serviced twice a week and in the Lake Whatcom watershed where streets are cleaned twice a month.

Capital improvement projects are a major component of the City's effort to reduce stormwater impacts associated with runoff from streets and parking lots. Over the past decade, numerous stormwater quality retrofit projects were completed citywide and many more are scheduled with funding secured. Projects have used LID techniques, conventional water quality facilities, and in-line treatment options. Current capital improvement projects are described in detail in section 11, Capital Projects, and Retrofitting, of this report.

For the Lake Whatcom Watershed in particular, a key component to the City's stormwater treatment strategy is implementing controls that reduce the amount of phosphorus entering the Lake. A notable

accomplishment in this regard is that all public stormwater facilities in the City's portion of the Lake Whatcom Watershed are now utilizing phosphorus-specific filtration media, improving phosphorus removal efficiency to approximately 72%. The City has 58 main treatment systems in the Lake Whatcom Watershed and approximately 150 other smaller ones (including native landscape areas) associated with our Homeowner Incentive Program (HIP). HIP facilities are required by ordinance to be maintained by the homeowner and, as of 2017, participation in HIP requires the homeowner to sign a detailed Maintenance Agreement with an obligation to inform the City upon sale of the property so similar agreements can be made with subsequent landowners.

7.3 Accomplishments in 2022

The City of Bellingham inspected over 65% of all publicly owned stormwater facilities and completed required maintenance for 95% of those inspected. All reported maintenance issues were responded to promptly. In addition, crews performed and completed inspections on 7,319 catch basin/manhole structures, out of which 2,960 were cleaned and maintained as required. Publicly owned structures include 12,952 catch basins and 2,436 manholes. City crews also maintain approximately 287 miles of stormwater mains throughout the city.

The City continued the inspection program for privately owned and maintained stormwater mitigation facilities. The City conducted 188 inspections, achieving over 80% of required inspections. Of these, 153 inspections were for facilities which meet the NPDES requirements for inspection, and 28 inspections were performed on systems that did not meet the NPDES requirements. An additional 13 follow up inspections for compliance were provided. Further technical assistance was provided through an additional 15 site visits. •To help reduce the number of follow-up compliance inspections the City has developed postcards to remind responsible parties of upcoming maintenance deadlines; the postcards also direct citizens to the City’s webpage for additional resources on maintaining stormwater drainage facilities. For facilities requiring maintenance, 85 reminder postcards were mailed.

The City plans to continue to implement pollution prevention and maintenance for municipal operations, private and public facilities, and infrastructure at a commensurate level of effort as in 2022. In addition, the City is gearing up to launch a new project to normalize, city-wide, the practices, policies, and procedures needed to ensure that municipal operations protect water quality to the maximum extent practicable. The City will be engaging a consultant to review our actions related to infrastructure maintenance, ice control, dust control, roadside upkeep, herbicide/pesticide/fungicide use, fertilizers, and trash and pet waste management, amongst others. The complete list of actions is outlined in permit condition S5.C.7.d in the 2019 – 2024 Permit. The following table was developed to identify, across departments and divisions, the appropriate stakeholders for this exercise.

7.4 Plans for Program Activities in 2023

The City plans to continue responding to illicit discharges at a commensurate level of effort as in 2022. Additionally, SSWU Staff intend to provide refresher training opportunities for field crews, first responders, inspectors, and supervisors/management.

Table 4: City Workgroups and Policies, Practices, and Procedures to Protect Water Quality

Applicability of City Departments/Divisions to Practices, Policies, and Procedures in Stormwater Practices Handbook															
Action (from NPDES S5.C.7d)	Pipe Cleaning	Culvert Cleaning	Ditch Maint.	Street Cleaning	Road Repair	Snow and Ice	Utility Install	Pavement Striping	Roadside Vegetation	Dust control	Fertilizers/ Pesticides	Erosion Control	Vegetation Mgmt.	Trash	Pet Waste
Public Works															
Operations Division															
Streets				x	x	x		x	x		x	x	x	x	x
Sewer Utility	x						x								x
Water Utillity							x								
Storm Maintenance	x	x	x	x		x	x		x		x	x	x	x	x
Facilities Maintenance											x	x		x	
Natural Resources Division															
Stormwater	x	x	x	x			x		x	x		x			x
Restoration			x						x		x		x	x	x
Land Management										x		x	x	x	x
Education									x		x			x	x
Engineering Division															
Utility Engineering					x		x	x				x			
Parks and Recreation															
Operations Section	x	x	x							x	x	x	x	x	x
Development Section							x	x				x			
Police						x							x	x	
Fire/EMS						x				x			x	x	

8.0 SOURCE CONTROL FOR EXISTING BUSINESSES (Permit Section S5.C.8)

8.1 Summary of Permit Requirements

The source control for existing businesses Permit requirements aim to reduce or eliminate pollutants from running off public and private properties during storm events into the municipal stormwater system. This section of the Permit contains escalating requirements of the City over the term of the Permit. Specific requirements for this Permit element include:

- Require pollution reducing best management practices (BMPs) be utilized on properties with the potential to discharge pollutants to the storm sewer.
- Inspect sources of pollution from private and public sites, including institutional, commercial, and industrial lands within the City.
- Enforce violations of local codes or other permits that limit pollution from these land uses.
- Implement practices to reduce runoff of fertilizers, herbicides, or pesticides that are found entering the storm sewer.
- By August 1, 2022, the City must have an inventory of properties that have a potential to discharge to the municipal storm sewer.
- By January 1, 2023, the City must implement an inspection and enforcement program of those properties identified in the inventory.

8.2 Program Overview

The source control for existing developments requirements from the Permit are met by the City through an expansion of an existing pollution prevention program. Providing information and assistance to owners of commercial properties with pollution prevention due to the outside storage of equipment, materials, machinery, wastes, or high volume of traffic are the primary objectives for this new program. With the addition of new source control for existing business Permit requirements, the City has rebranded its existing Pollution Prevention Assistance (PPA) Program into the Business Pollution Prevention Assistance Program (BPPA). The BPPA program will be used to meet Permit requirements and PPA contract requirements with the Washington Department of Ecology (Ecology). Beginning on January 1st, 2023, the City will begin conducting BPPA site visits.

The BPPA program will provide technical assistance to businesses which covers a broad array of topics. While the Permit now requires stormwater BMP outreach to local businesses, the City has elected to maintain our Pollution Prevention Assistance (PPA) Partnership with the Department of Ecology. The PPA program is voluntary and is in place to assist the State with meeting its dangerous waste reduction requirements; however, it still serves as a key component of the City's efforts to reduce pollutants from entering the storm sewer and meeting our Permit requirements. The City values the cross-jurisdiction information sharing and resources provided by Ecology through the PPA partnership. BPPA site visits with businesses include in-depth surveys of current practices, including outdoor storage, catch basin maintenance, and the potential for stormwater contamination. Follow-up letters are sent to establishments highlighting existing good practices and itemizing practices that need to be

corrected along with recommendations on how to remedy them. Certain high priority environmental issues, such as evidence of pollution reaching the City stormwater system, trigger an automatic follow-up visit. Dye testing is used in cases where questions arise about the source of the pollutants entering the stormwater system. If documented pollution continues to enter the stormwater system, after outreach and technical assistance efforts are unsuccessful, then the City will follow its established escalating enforcement procedures including letters from City attorneys and fines.

Since the program's inception in 2008, the PPA program focused technical assistance visits on sectors including boat repair, chiropractors, printers, photo processors, dry cleaners, hotels, landscapers, nail salons, nurseries, dentists, veterinary clinics, gas stations, painters, pharmacies, auto body, auto repair shops, wood workers, metal workers, property managers, grocery stores, restaurants, and scrap recyclers. The visits have resulted in significant reductions in stormwater pollution along with reduction in hazardous waste materials sent to our wastewater treatment plant.

8.3 Accomplishments in 2022

Covid-19 social distancing requirements and protocols did not allow the City to complete technical assistance visits during the first months of 2022. The PPA Program conducted 52 full technical assistance visits and 64 follow-up visits to provided additional resources to and to address pollution issues.

The City developed a Permit required inventory of commercial properties which have a potential to discharge pollutants into the storm sewer. This inventory was compiled using business license data, reported business activity codes, and desktop reconnaissance to verify a potential for pollution.

The City also developed business specific BMP checklists and a geographic information system (GIS) based site visit tracking tool. This tool will aid in reporting required data to Ecology and meeting required site visit targets.

8.4 Plans for Program Activities in 2023

During 2023, the City will begin by developing an outreach strategy to the business community. Outreach efforts will be focused on informing business sectors of the program goals, requirements, and an estimate about when City staff may conduct a BPPA site visit.

The BPPA program will be focusing primarily food service and gas stations in 2023. Food service visits will be focused on managing waste fryer oil, preventing floor mat and hood vent cleaning outside, and good housekeeping around dumpsters. Gas station visits will ensure that proper controls are in place during the event of a gas spill.

The BPPA program will continue to offer financial incentives to businesses to eliminate sources of toxic chemicals and purchase pollution prevention equipment. Use of chemicals such as solvents, PFAS, PCBs, PBDE flame retardants, PERC, lead, and mercury typically lead to the generation of hazardous waste and are difficult or impossible to clean up in wastewater and stormwater. The best way to reduce the generation of this hazardous waste, prevent further environmental contamination, protect water quality, and reduce human health risk is to eliminate the use of equipment and practices that use these chemicals.

9.0 TOTAL MAXIMUM DAILY LOAD REQUIREMENTS (Permit Section S7 and Appendix 2)

9.1 Summary of Permit Requirements

Total Maximum Daily Load (TMDL) pollutant limitations and permit requirements must be met by the City if the City storm sewer discharges to a waterbody an Ecology approved TMDL in place. Lake Whatcom is protected by a multi-parameter TMDL for dissolved oxygen, fecal coliform bacteria, and phosphorus. Lake Whatcom receives stormwater from part of the City storm sewer which triggers the following permit requirements found in Appendix 2 of the Permit:

- Develop and report annual results of a repeatable survey to gauge the public's understanding and beliefs regarding Lake Whatcom water quality to inform the development of public outreach programs.
- Update and prioritize a list of new and retrofit treatment and flow control capital improvement projects that are intended to improve Lake Whatcom water quality.
- Analyze and track phosphorous reductions.
- By March 31, 2024, submit to Ecology an operational plan for managing City owned public spaces.
- In coordination with Whatcom County, submit a Quality Assurance Project Plan, which updates models used to assess Lake Whatcom pollutant levels and response to water quality improvement efforts.
- By the submittal of the March 2024 annual report, submit to Ecology a new pollutant loading capacity of Lake Whatcom based on new models.

9.2 Lake Whatcom Total Maximum Daily Load Implementation Plan

While the effort to restore water quality in Lake Whatcom has been ongoing since 1992, the formal regulations that require action on the lake first became embedded in this current Permit term (2019 – 2024). As a result, the City and Whatcom County launched ambitious 50-year plan, the first 10 years of which are outlined in the Lake Whatcom TMDL Implementation Plan. The TMDL Implementation plan and the annual report describing the activities completed in 2022 is attached in Appendix A of this report.

10.0 MONITORING AND ASSESSMENT (Permit Section S8)

10.1 Summary of Permit Requirements

The Permit requires the City to engage in regional and local measures to monitor water quality and assess the efficacy of the City's water quality improvement programs. To meet permit requirements, the City elects to contribute to a regional fund to conduct both "Regional Status and Trends" and "SWMP

Effectiveness" monitoring studies through the Stormwater Action Monitoring (SAM) Program, formerly Regional Stormwater Monitoring Program (RSMP), through the Department of Ecology. The City also engages in local water quality monitoring to assess the water quality of its stormwater discharges.

10.2 Program Overview

The Regional SAM studies are very efficient and produce locally applicable results which the City may employ when making stormwater planning decisions. These studies also help identify sources of pollution which the City may address through its SWMP programs. To-date, the City has utilized SAM derived data to make decision when creating ordinances and updating the SWMP, Capital Improvement Plan, and the Surface and Stormwater Comprehensive Plan.

Locally, The City of Bellingham has conducted routine water quality monitoring for 30 years through our Urban Streams Monitoring Program. This program was initiated in 1990 with the purpose of collecting data and maintaining a record of stream conditions at up to 19 separate stream sites on the 5 major creeks within Bellingham. In addition, the City sponsors an in-depth water quality program focused on the Lake Whatcom watershed. The program began over 50 years ago due primarily to the City's requirement as a purveyor of water to test the quality of incoming water to our water treatment system. The program continues to grow and expand in scope as additional parameters and studies are deemed necessary. In recent years, the City focused not only on the lake quality but also on the nature of the water entering the lake through creeks and large storm drains. Western Washington University (WWU) is commissioned by the City to provide ambient lake monitoring and stormwater input monitoring from the various creeks. Current water quality research information is available online at www.lakewhatcom.whatcomcounty.org and under the Lake Whatcom tab at WWU's Institute for Watershed Studies website www.wwu.edu/iws/.

A third facet of the City's program involves stormwater monitoring. For over 15 years, the City has tested inflows to creeks primarily in the Lake Whatcom Watershed following storm events. Monitoring started with the inclusion of the Park Place stormwater wet pond in the WWU Lake Monitoring study. Today, the City's stormwater monitoring program has expanded to test a variety of BMP's for effectiveness in removing common pollutants and high priority pollutants such as phosphorus. Analysis of systems in Lake Whatcom is used to typify phosphorus removal rates for TMDL compliance. This program is of regional significance because it provides credible information for evaluating new stormwater treatment and infiltration techniques that are specific to Western Washington. Best management practices (BMPs) used in the Lake Whatcom watershed, including filter cartridges, proprietary devices, and infiltration facilities are approved by the Department of Ecology for use to treat phosphorus.

The City also engages in short-term monitoring as a part of our illicit discharge program. During field investigations, flowing outfalls have been tested for basic water quality parameters including fecal coliform, turbidity, pH, conductivity, dissolved oxygen, and temperature. In addition, testing for total phosphorus is included where applicable.

10.3 Accomplishments in 2022

The City's Urban Stream Monitoring Program and Lake Whatcom Monitoring programs continued to collect data through 2022.

The City participated in SAM by not only paying into the program but offering to allow regional partners to monitor two bioretention systems (rain gardens) owned and operated by the City. This research will inform engineers, developers, scientists, and citizens about the real-world performance of systems designed under the 2012 Stormwater Management Manual for Western Washington (the Manual). This builds upon a 2017 SAM study that the City led, which evaluated older rain gardens constructed under the 2005 Manual. Results from that study show that systems are working as designed, while providing valuable insight into different design strategies, inspection requirements, permitting review steps, and long-term maintenance options throughout the region. The current study evaluates bioretention systems constructed under the 2012 Stormwater Management Manual. The City also participated in the development of videos produced by SAM and shared region-wide related to the importance and function of bioretention systems for protecting water quality at the municipal level.

The City of Bellingham, with the financial and technical support of the Department of Ecology, continued a research project aimed at developing and testing a new media blend specifically intended to increase phosphorus-removal capability. The new media blend is expected to provide a best-available solution for municipalities dealing with high levels of phosphorus loading. The media study, funded partially by a state Grant of Regional or Statewide Significance, builds on research completed by Kitsap County and the City of Seattle, which investigated new bioretention mixes that would not leach metals or nutrients. The Phosphorus-Optimized Stormwater Treatment (POST) media was approved for Pilot Use Level Designation (PULD) through the Department of Ecology in 2019. This designation meant that the City could move forward on developing the media by instituting field testing to show real-world performance. That research was completed in 2021 and submitted to the Department of Ecology for final approval, with the first POST media facility coming online in 2022 at Park Place.

10.4 Plans for Program Activities in 2023

The City plans to continue its monitoring at a commensurate level of effort as in 2022. The City will again be electing to pay into the SAM research studies and is an active participant in planning and defining those research projects.

As part of the City's obligation to meet the targets and requirements in the Lake Whatcom Total Maximum Daily Load (TMDL) study, as detailed in the attached TMDL Implementation Plan, the City will continue to monitor stormwater facilities throughout the jurisdiction during 2023. Monitoring results from 2021 will be used to re-calibrate the Lake Whatcom Management Program's annual phosphorus reduction goals and determine appropriate capital improvements to maximize protection of Lake Whatcom.

11.0 CAPITAL PROJECTS AND RETROFITTING (Not Required by Permit)

11.1 Program Overview

The City of Bellingham implements an active Capital Improvement Program associated with the Storm and Surface Water Utility (SSWU). A part of the SSWU funding is used for the replacement of capital assets to maintain the infrastructure and retrofitting stormwater facilities to improve water quality and maximize environmental benefits provided by the stormwater network.

Since the 1980's Bellingham has been active in providing system retrofits and managing stormwater. The retrofits were first primarily related to the prevention of flooding. In 1992 Bellingham received a grant from Ecology and constructed our first water quality facility retrofit for the protection of Lake Whatcom. Lake Whatcom is the drinking water source for about 120,000 people and has remained a top priority for water quality improvement and protection. In this basin alone, the City maintains an oil water separator and more than 57 facilities that reduce phosphorus and other pollutants.

Retrofitting is also of importance to areas outside of Lake Whatcom. The City's stewardship of a temporal resource such as stormwater can make drastic and long-term impacts on the health of all lakes and streams within and adjacent to the City. In addition to required water quality improvements related to transportation improvements, the City employs water quality retrofits in water and sewer utility replacements whenever possible.

11.2 Capital Projects

During 2022, the following capital projects were constructed or began construction:

West Cemetery Creek Water Quality Improvements

To prevent sediment from affecting water quality and harming aquatic life in an urban stream corridor, the city sponsored a restoration project along West Cemetery Creek. The project was designed to correct a number of sources of sediment that were moving from the developed portion of the watershed into the downstream ponds and wetlands near Whatcom Page 46 ny of the habitat features in and around Whatcom Creek were at risk of sedimentation. Research identified that restoring the natural processes in the tributary streams, especially West Cemetery Creek, was important to avoid further impacts to ecological health downstream. This project was substantially complete in December 2022.

Park Place Water Quality Facility Reconstruction

Originally constructed in 1994, and rebuilt in 2005, the water quality facility at Park Place is the largest single stormwater treatment facility in the Lake Whatcom watershed. As the facility approached its functional lifespan, the city investigated the best way to maximize the effectiveness of this vital system at this important location. Beginning in 2017, the redesign of this facility involved rerouting drainage in the

local area, moving other utilities out of the way of new piping, and developing the best possible filter system that would fit in the limited space. In 2022, construction was completed on the first large-scale Phosphorus Optimized Stormwater Treatment (POST) system, a new facility type designed and piloted by the City of Bellingham in partnership with Western Washington University and the Department of Ecology, along with local engineers and experts. The Park Place Facility will be able to treat more area with equivalent pollution removal, at a lower cost, than all other available technologies.

Photo 1: Overview of significant construction work at Park Place

11.3 Retrofit Projects

Bellingham's stormwater capital program has included a substantial number of retrofits over the years. SSWU policy has been that street projects that create new stormwater impacts and trigger code compliance are responsible for those mitigations. SSWU funding has been used to augment those mitigations or to provide funding in total to retrofit project areas that are not responsible for mitigation. Primary examples of this are street projects that are overlaying existing roadways with new asphalt or replacing existing curb/gutter systems. If the improvements do not trigger any code requirements, we look at retrofitting as an opportunity to improve our systems. In such cases decisions are based on average daily traffic for the street, the degree of opportunity, and available funding. Where street projects are only responsible to mitigate for new impervious surfaces, retrofitting is incorporated to aid providing total mitigation for the project area. This is to avoid having streets that are only partially mitigated that may present problems in the future if comprehensive retrofitting is desired or required. New roadways constructed in 2021 met all requirements for stormwater runoff treatment.

11.4 Fish Passage Improvements

A portion of the SSWU Capital Improvement Program budget funds the improvement of culverts that are impediments to fish passage. The City maintains a list of priority City-owned fish passage barrier improvements. Projects are funded based on a combination of opportunity and the prioritization ranking. Prioritization ranking considers existing stream conditions, fish presence, the potential for improvement, coordination with other projects, community support, funding opportunities, and the cost to complete the project. In 2022, the City advanced this previous work by signing a Memorandum of Agreement with Nooksack Indian Tribe, Lummi Nation and Washington Department of Fish and Wildlife which formalized our shared goals of improving fish passage and continuing to work together to replace culverts that block salmon migration. Through this historic agreement, the City committed to continuing our work together to improve salmon access to upstream spawning grounds. The project team was recently awarded a $456,206 grant from NOAA using funds from the federal Infrastructure Investment and Jobs Act to inventory and prioritize the City's culvert replacements. The grant also funded an implementation plan and preliminary design for select culverts. The implementation plan is anticipated to be complete in 2024.

In 2022 the City submitted four Brian Abbott Fish Barrier Removal Board (FBRB) funding applications: Padden Creek at 12th St right-of-way, Padden Creek at 14th St right-of-way, Padden Creek at 30th St right-of-way, and Squalicum Creek at Baker Creek. All four applications are highly ranked for State funding; therefore, in 2023 the City is funding continued design in anticipation of construction grant awards. In 2023, the City also plans to prepare for future grant applications by funding preliminary design of two fish barrier improvements in Padden Creek in the vicinity of Harris St. and developing a funding strategy for fish barriers at Squalicum Creek Estuary.