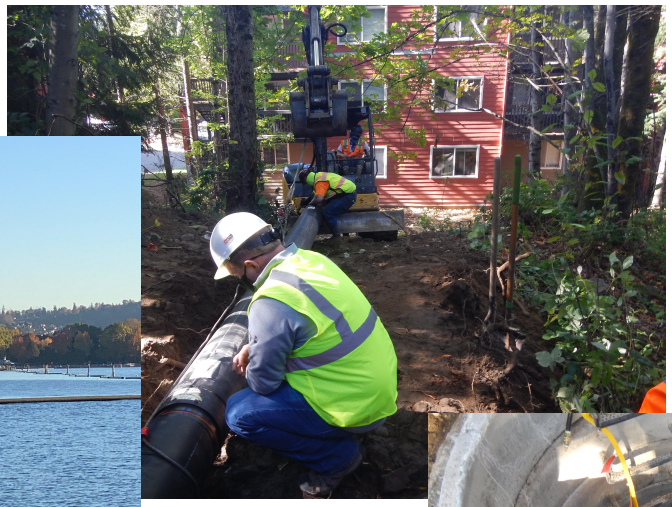
OSBORN CONSULTING INCORPORATED

CITY OF Renton

City of Renton

SURFACE WATER UTILITY SYSTEM PLAN

DECEMBER 2021



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This Surface Water Utility System Plan was partially developed by SAIC between 2007 and 2009. Osborn Consulting was contracted by the City in late 2019 to update and finalize the draft plan. Further updates were introduced by Surface Water staff in 2021. The conclusions, observations and recommendations contained herein attributed to Osborn Consulting, Inc. constitute the opinions of Osborn Consulting, Inc. To the extent that statements, information, and opinions provided by the client or others have been used in the preparation of this report, Osborn Consulting, Inc. has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. Osborn Consulting, Inc. makes no certification and gives no assurances except as explicitly set forth in this report.

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2021 Surface Water Utility System Plan

CITY OF RENTON

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LIST OF ABBREVIATIONS

Term	Definition
BA	Biological Assessment
BE	Biological Evaluation
BMP	Best Management Practice
BO	Biological Opinion
BOD	Biochemical Oxygen Demand
BRPS	Black River Pump Station
CAO	Critical Areas Ordinance
CCTV	Closed-circuit television
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic feet per second
CIP	Capital Improvement Project
City	City of Renton
CMP	Corrugated Metal Pipes
CRC	Cedar River Council
CRS	Community Rating System
CWA	Clean Water Act
DDT	Dichlorodiphenyltrichloroethane
DFIRM	Digital Flood Insurance Rate Map
District	King County Drainage District Number One
DNR	Department of Natural Resources
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EIA	Effective Impervious Area
EIS	Environmental Impact Study
EPA	Environmental Protection Agency
ERP	Ecosystem Restoration Program
ESA	Endangered Species Act
ESGRWP	East Side Green River Watershed Project Plan and Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FTE	Full-time employee
GIS	Geographic Information System
GMA	Growth Management Act
GPM	Gallons per minute

Term	Definition
HEC-RAS	Hydrologic Engineering Center's River Analysis System
HOA	Homeowner association
HPA	Hydraulic Project Approval
HSPF	Hydrologic Simulation Program – FORTRAN
IDDE	Illicit Discharge Detection and Elimination
JARPA	Joint Aquatic Resource Permit Application
KCFCD	King County Flood Control District
KMDP	Kennydale Master Drainage Plan
LAMP	Levee Analysis and Mapping Procedure
LID	Low Impact Development
LOMR	Letter of Map Revision
LWD	Large Woody Debris
MS4	Municipal Separate Storm Sewer System
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PCBs	Polychlorinated biphenyls
PCR	Polymerase chain reaction
pH	Potential of Hydrogen
RC	Resource Conservation
RCW	Revised Code of Washington
RMC	Renton Municipal Code
SBUH	Santa Barbara Urban Hydrograph
SEPA	State Environmental Policy Act
SMA	Shoreline Management Act
SMP	Shoreline Master Program
SWM	Surface Water Management
SWPPP	Stormwater Pollution Prevention Plan

LIST OF ABBREVIATIONS
(continued)

TERM	DEFINITION
SWUSP	Surface Water Utility System Plan
TMDL	Total Maximum Daily Load
TOD	Transit Oriented Development
TSS	Total Suspended Solids
UGB	Urban Growth Boundary
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
Utility	Renton's Surface Water Utility Section
UW	University of Washington
UWCIG	University of Washington Climate Impacts Group
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WQI	Water Quality Index
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

EXECUTIVE SUMMARY

This Surface Water Utility System Plan (SWUSP) represents the City of Renton's (City's) first comprehensive city-wide surface water planning effort since the 1990s. In summary, the SWUSP examines the existing surface water management system, with primary focus on projects and programs that identify and minimize flooding, erosion, and water quality problems as well improve riparian habitat and meet regulatory requirements. Furthermore, the SWUSP is intended to guide programmatic and capital improvement needs for Renton's Surface Water Utility (Utility) for the next six years and for future years' guidance. This includes identifying and developing long-term solutions, prioritizing needs that reflect the community's priorities, quantifying Operation and Maintenance (O&M) needs of the Utility and making sure that there is adequate funding to implement recommendations.

MISSION STATEMENT

The Surface Water Utility's goal is to sustainably manage the quantity and quality of surface water runoff in the City to reduce flood hazards, protect public safety, prevent property damage, improve water quality, and protect fish habitat and environmental resources.

BACKGROUND ON THE SURFACE WATER UTILITY

Utility was created in 1987 as an entity within the Utility Systems Division to maintain, manage, and implement the City's Surface Water Management (SWM) Program. At that time, its main task was to focus on solving quantity-related flooding problems through the planning, design, maintenance, and construction of drainage facilities and the improved maintenance of existing facilities. The surface water program has evolved over the years.

Today, Utility manages the quantity and quality of surface water runoff in the City to reduce flood hazards, protect public safety and prevent property damage, protect water quality, and protect and restore fish and wildlife habitat. Utility includes the Engineering and Maintenance and Operations programs, which include the following activities:

1. Maintaining, repairing, replacing, and improving the City's storm system infrastructure.
2. The planning, design, permitting and construction of surface water projects as part of Utility's Capital Improvement Program.
3. Regulatory compliance associated with the Western Washington Phase II Municipal Stormwater permit, the Clean Water Act, and the Endangered Species Act.
4. Customer service regarding drainage complaints, flooding or water quality problems, utility billing and other technical assistance regarding surface water management, along with public education, public involvement, and stewardship programs.
5. Technical assistance to other City Departments and Divisions (Transportation, Planning, Development Services, and Community Services) regarding projects and surface water standards.
6. Manage City's compliance with the Community Rating System (CRS) Program within the National Flood Insurance Program (NFIP).

7. Assisting in the review of new construction for compliance with surface water design standards and the updating of design standards for new construction.
8. Storm system GIS mapping and management of Utility assets.
9. Emergency management, planning, and response associated with flooding and other disasters.
10. Coordination with other cities and counties, along with state and federal agencies, on regional surface water management topics related to flooding, water quality and habitat, and State/Federal Regulatory requirements.
11. Watershed management, planning, and studies.

As of the end of 2020, Utility serves approximately 24,465 customers over an area of approximately 24 square miles. Utility maintains approximately 286 miles of drainage pipeline and culverts, approximately 24 miles of open channel conveyance systems, 17,043 drainage structures, 127 stormwater ponds, 66 stormwater tanks, and 68 stormwater vaults.

Some of the significant accomplishments of the Utility include:

- Completion of over $85.7 million in Utility capital projects between 1992 and 2020.
- Basin planning efforts in the May Creek, Cedar River, and Black River Basins.
- Completed the Cedar River Section 205 Flood Hazard Reduction Project that included dredging the lower 1.25 miles of the Cedar River, construction of associated levees and floodwalls, constructing multiple mitigation spawning channels and maintaining the facilities to comply with the US Army Corps of Engineers (USACE) Federal Emergency Management Administration (FEMA) Program. This project included dredging the Lower Cedar River twice, in 1998 and 2016.
- Produced updated digital flood insurance rate maps (DFIRMs) and flood studies along 5 miles of the lower Cedar River and 2.8 miles along Springbrook Creek.
- Implemented a significant number of the flooding and riparian habitat improvements identified in the Eastside Green River Watershed Plan, including replacement of major culvert crossings at SW 34th Street and SW 27th Street.
- In partnership with WSDOT, developed the 124-acre Springbrook Creek Wetland and Habitat Mitigation Bank.
- Received over $50 million in grants and matching funds from various agencies and taxing districts including FEMA, King County Flood Control District (KCFCD), USACE, the Washington State Department of Transportation (WSDOT), the Washington State Department of Ecology (Ecology), King County, King Conservation District and Drainage District #1 that were applied to City projects to reduce flooding and improve water quality and stream habitat.
- Completed green street connections projects that combined water quality retrofits with drainage improvements.
- Addressed miscellaneous emergency stormwater projects as well as numerous small drainage problems.

CHALLENGES FACING THE SURFACE WATER PROGRAM

Although Utility has made significant accomplishments, there remain future challenges that must be considered when defining recommendations for new program direction. The following are some of the most significant challenges.

NPDES PROGRAM

A significant impact to the City's program is the increasing state and federal stormwater regulations, primarily, the Western Washington Phase II Municipal Stormwater Permit, also known as the National Pollutant Discharge Elimination System (NPDES) Permit, (NPDES Permit) issued to the City by the Washington State Department of Ecology (Ecology). The City has been ramping up its surface water program since 2007 to be in compliance with this permit. The current permit, which became effective August 1, 2019, has timetables for several elements that mandate full compliance before it expires on July 31, 2024. The most notable changes to the current 5-year permit include new requirements for implementation of a stormwater planning program and a source control program for existing development. Both of these elements will result in increased demand on City resources compared to the previous permit. This is further discussed in Sections 4.4.8 and 5.2.

TMDL

Total Maximum Daily Load (TMDL) is a study required under Section 303(d) of the Clean Water Act that evaluates and determines the allowable pollutant loading for a water body that exceeds state standards for various pollutants. Once the state determines that a particular water body exceeds a pollutant standard, it is placed on the 303(d) list for a TMDL. Renton has several water bodies that are on the 303(d) list that require TMDL studies to be performed. Renton TMDLs are discussed in more detail in Section 4.4.6.

REGULATED FLOODPLAIN IN THE GREEN RIVER VALLEY

KCFCD finalized the scoping summary report for the Lower Green River Corridor Flood Hazard Management Plan as a part of the Environmental Impact Study (EIS) associated with the plan in June of 2019. The purpose of this plan is to implement an integrated long-term approach to reduce flood risk within the Lower Green River Corridor, which extends into the southwestern portion of Renton. The plan is intended to reduce flood risk while balancing other important basin objectives, such as improving fish habitat and supporting the economic prosperity of the region. Communication and coordination between the City of Renton and KCFCD has been ongoing throughout the preliminary stages of formulating the Flood Hazard Management Plan. Further details are discussed in Section 2.4.5.3

CONTROLLING FLOODING FROM THE CEDAR RIVER

One major Utility task is working alongside KCFCD and USACE on the Cedar River Section 205. The Cedar River Section 205 includes periodic maintenance dredging and repairs to the USACE-built facilities, including floodwalls, levees, spawning channels. The City was the sponsor for the USACE Cedar River Section 205 Flood Hazard Reduction Project, which plays an important role in protecting the City from major flooding that has previously caused millions of dollars in damages. In general, large sediment deposits reduce the flood protection in the lowest 1.25 miles prior to discharging into Lake Washington. The 2006 King County Flood Hazard Management Plan identified the dredging of this reach as a major

project. Maintenance dredging occurred in the summer of 2016. The funding for the project was provided by KCFCD at an estimated cost of $4.8 million. KCFCD is a special purpose taxing district that was established by King County in 2007 to protect the public from injury and damage from flood hazards and provide a proactive, regional approach to flooding. The district is especially important in county-wide funding for the repair of levees and revetments. Cedar River flood mitigation is further described in Section 2.4.3.3.

CEDAR RIVER LEVEE RE-CERTIFICATION

In July 2012, the City received notification from USACE that the certification issued for right and left bank levees along the lower 1.23 miles of the Cedar River will expire on August 31, 2013, and future re-certification will be the responsibility of the City. Certification of the levees is essential so that FEMA accredits the levees as providing protection from the 100-year flood and avoid mapping the properties protected by the levees (Renton Municipal Airport and Boeing 737 Plant) in the regulatory floodplain. Levees certified to current FEMA standards must demonstrate that they meet the design, operation, and maintenance requirements described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations. The challenge presented by this effort consists of certifying the levee system based on current standards. Upon conducting various structural, geotechnical, and hydraulic analyses in 2018, the City determined that certain sections of the levees need to be raised to meet current freeboard requirements, and that the levee embankment needs to be widened at certain levee to floodwall transitions. Currently, the City is designing and permitting the required improvements to achieve FEMA accreditation and has secured funding for design and construction from KCFCD. Meanwhile, the City expects to maintain current floodplain designation for the protected areas (Zone X not Zone AE), because FEMA elected to seclude the floodplain of the Lower Cedar River from the King County Digital Flood Insurance Rate Map (DFIRM) update. By secluding the Cedar River levees (and other levees in King County) from the update, FEMA can advance the adoption of the DFIRM and subsequently individually assess the level of flood protection of the secluded levees. The City expects to have the levees certified and accredited prior to FEMA taking any action in that regard.

HOWARD HANSON DAM AND GREEN RIVER VALLEY

Although now operating at full capacity, concerns over reduced storage capacity due to seepage problems at the Howard Hanson Dam and potential flooding of the Green River Valley caused the City to expend significant resources in flood preparedness between 2009 and 2011. In 2009, USACE notified the City and other Green River Valley cities of several sinkholes that had formed in the right embankment of the Howard Hanson Dam after a significant rain event in January 2009. This led USACE engineers to believe that the right embankment could fail if they continued to operate the dam at full capacity. To minimize risk of failure, USACE informed the Green River valley communities that it would need to reduce storage capacity, which could result in the release of more water from the dam during extreme rain events and result in a higher risk of flooding. In coordination with USACE, King County, and other valley cities, the City implemented pre-disaster preparations and preventative measures and continued these measures through 2010. To make the dam fully operational, USACE completed repairs to the dam in the fall of 2011 and can now operate the dam to its full capacity. Further details of the Howard Hanson Dam are discussed in Section 2.4.5.4.

FEDERAL RULING REGARDING CULVERT BARRIERS TO FISH PASSAGE

On March 29, 2013, the US District Court for the Western District of Washington issued a permanent injunction requiring state roads owned by WSDOT, the Washington State Department of Natural Resources, the Washington State Department of Fish and Wildlife (WDFW), and the Washington State Parks and Recreation Commission to operate with culvert crossings that are suitable for fish passage. The decision reinforces treaty fishing rights granted by the federal government to Native American tribes in Washington State dating back to the 1860s. The permanent injunction required the State to prepare a list of all culverts with barriers to fish passage in Western Washington within 6 months. WSDOT must also provide fish passage for culverts with barriers by 2030. Although the court ruling focused on State-owned culverts, it is possible it could be broadened in the future to include other governmental entities such as counties and cities. To proactively address the potential liability that the City may face in the future, Utility will begin the process of conducting a stream inventory of all culvert crossings. This information will be used to field survey each culvert crossing in an effort to identify fish passage issues and develop solutions with priority rankings that can be incorporated in the utility's Capital Improvement Project (CIP) program. Fish passage barriers are described further in Section 5.8.

FLOODING, WATER QUALITY, AND HABITAT PROBLEMS

The City identified 48 flooding problems, ranging from nuisance flooding to flooding of buildings and arterials (in addition to potential flooding from the Green River) (see **Figure 6-2** for locations). The City aims to use CIP funds to reduce flooding for as many of these areas as possible. See the 6-year CIP in Appendix G, which lists projects prioritized for completion in 2021-2026.

The Cedar River, May Creek, Springbrook Creek, Maplewood Creek, Black River, and Lake Washington are all listed on Ecology's 303(d) list of impaired waters. All of these water bodies originate upstream of the City within other upstream jurisdictions that likely contribute to downstream water quality problems. Nevertheless, the City of Renton wants to improve stormwater quality within the City. Water quality problems are typically addressed by the City through development regulations, operational activities (such as street sweeping and catch basin cleaning to remove pollutants before they reach streams), and public education.

Protecting and restoring habitat is both a City and a regional objective. The City participates in regional water resource inventory area (WRIA) planning efforts. WRIA planning is done in response to the state Salmon Recovery Planning Act, which in turn was a response to the Endangered Species Act listings. Portions of the City are in two WRIAs. May Creek, Cedar River, and the East and West Lake Washington Basins are all part of WRIA 8. The Springbrook/Black River, Cedar River, and Soos Creek Basins are part of WRIA 9. Salmon conservation plans for WRIAs 8 and 9 were completed in 2005 with the City having adopted these plans and are a sponsoring participant. These plans, together with other plans prepared throughout the Puget Sound region, became part of the official Puget Sound Salmon Recovery Plan approved by NOAA Fisheries in 2007. These plans contain recommendations for protecting and restoring salmon habitat, from general land-use recommendations applicable throughout the watershed to small and large, site-specific habitat restoration projects. The City plans to be a participant on many of the identified projects located within its jurisdiction. Flooding, water quality, and habitat projects are discussed in further detail in Section 6.

INCREASING OPERATION AND MAINTENANCE DEMANDS

Another challenge to the Utility is increased operation and maintenance as a result of expansion of the service area through previous annexations. This is particularly true for the 2008 Benson Hill annexation, which increased the City's area by 32%, increased infrastructure through new construction and development, and added capital improvement projects. Additionally, Utility maintenance staff have assumed responsibility for maintaining vegetation on all City right-of-way, easements and wastewater, water, and surface water facilities. The City also assumed responsibility for maintenance of over 100 residential stormwater facilities beginning in 2012, following a new City Policy that was issued in 2010. City staff resources were increased as a result of the Benson Hill annexation and have generally increased in the last 5 years to keep pace with population growth. However, additional resources are recommended to accommodate the additional operation and maintenance demands, such as increased vegetation maintenance, assumed responsibility of residential stormwater facilities, and new NPDES requirements.

INCREASING EMPHASIS ON ASSET MANAGEMENT AND SUSTAINABILITY

The need to effectively manage assets (e.g. pipes, structures and facilities) is crucial to the success of the Utility's operations and its ability to meet regulatory requirements. The City is currently using a combination of CityWorks, GIS, and GraniteNet for its asset management strategy. CityWorks is used to track work orders. GraniteNet is used for condition assessment data and prioritization of asset replacement or rehabilitation. GIS, integrated with CityWorks and GraniteNet, is used to display information and track projects and maintenance activity. The asset management program was driven by the need to assess the condition of corrugate metal pipes at risk of failure. However, it is now recommended that the Utility expand their pipe condition assessment program to include non-corrugated metal pipes (CMP) to capture the condition of all pipes at risk of collapse or failure.

Fostering environmental sustainability is a goal adopted by the City Council in the current (2022-2027) business plan. Sustainability is a core principle in the operation of the Utility and Section 4.7.1 describes how the Utility is meeting the sustainability goal set in the current business plan.

RECOMMENDATIONS

Solutions were considered to solve the City's surface water problems and future challenges, including:

- Capital projects.
- Regulatory measures.
- Programmatic and policy measures.

In general, capital projects are best suited for addressing acute, site -specific problems, and regulatory or programmatic measures affect the entire City. The following paragraphs summarize the plan findings. Refer to Section 7 in the report for more detailed information.

REGULATORY COMPLIANCE:

- Develop and implement a source control program for existing land uses.
- Evaluate receiving water conditions in City watersheds and select high priority watershed for which to develop a Stormwater Management Action Plan.

- Map private stormwater systems connected to the City's MS4.

OTHER FUTURE PROGRAM NEEDS AND POLICY CONSIDERATIONS:

- Continue to monitor the increased resources from infill development relative to maintenance staff levels and make adjustments as needed.
- Continuation of Residential Plat Stormwater Management Facility and Maintenance and Operation.
- Continuation of existing surface water initiatives, including the Mosquito Abatement Program, Stormwater Facility Fencing Program, City-Wide Drainage Maintenance Program, and Stream Flow/Water Quality Monitoring Program.
- Enhance the current Asset Management Program to include non-CMP pipes.
- Update the Surface Water Utility System Plan every 6 years.
- Continue with agency coordination such as WSDOT, KCFCD, FEMA, USACE, and Ecology on issues related to surface water management within the City.

CAPITAL IMPROVEMENT PROGRAM

The plan includes a comprehensive list of capital projects proposed to reduce flooding and improve water quality and habitat. Overall, there were substantially more flooding problems identified than could be solved within a six-year planning period. As such, a prioritization scheme was developed with City staff to help guide the timing of project implementation. A three-tiered priority system was developed, as summarized in the following table.

TABLE E-1:
PROJECTS TO REDUCE FLOODING

Priority Level/Description	Number of Projects	Costs (2020 dollars)
Priority 1 - Highest priority projects considering such things as public safety; flooding of arterials that potentially close emergency vehicle access; the number of buildings flooded (numerous buildings vs. one or a few) and the extent of flooding and potential cost of flood damage; and the recurrence of flooding (how often an area gets flooded).	15	$46.6 million
Priority 2 - Projects that may include many of the same factors as the Priority 1, but that are not considered a significant safety hazard, may flood one or a few buildings compared to several, or may be subject to flooding on vary rare occasions.	22	$12.3 million
Priority 3 - Third priority projects reflect projects that temporarily flood local streets or public/private yards but do not result in significant safety hazards or property damage.	14	$9.2 million

Based on current financial scenarios (discussed below), the City will plan to implement most of the Priority 1 projects within the 6-year CIP planning period with some projects expected to extend beyond the 6-year planning period. Priority 2 and 3 projects would be implemented in subsequent years as funding becomes available.

Operations and Maintenance

Continue to uphold the maintenance and operation program level of service to ensure proper maintenance of City storm systems and facilities, to protect public safety and property by preventing flooding, and meet regulatory requirements by improving water quality and habitat.

Water Quality

Several of the projects identified can integrate water quality enhancements to provide a water quality benefit and flood reduction. While most water quality problems are being addressed primarily by water quality programs (e.g., development regulations, operational activities such as catch basin cleaning, and public education), to meet compliance with the NPDES Permit program, three water quality retrofit projects are proposed that would significantly improve water quality within the City. These projects are discussed in more detail in Section 6.

Habitat

As mentioned previously, salmon conservation plans for WRIAs 8 and 9 were completed in 2005, with the WRIA 8 plan updated in 2017, and adopted by the City. These plans contain recommendations for ESA compliance by protecting and restoring salmon habitat, from general land-use recommendations applicable throughout the watershed to small and large, site-specific habitat restoration projects.

The City is committed to helping implement the recommendations of these plans through a variety of methods: partial funding, local sponsorship, expedited permitting, and engineering/planning coordination. Twenty-six projects have been identified in which the City can improve habitat conditions. No detailed cost estimates have been prepared for these projects and a very preliminary high-level cost range between $4M and $8M is estimated. The level of local support provided by the City will vary for each project. The list of projects is given in **Table 6-6** of this plan and their locations are shown on **Figure 6-4**.

SECTION 1
HISTORY, ACCOMPLISHMENTS, AND GOALS

1.1 INTRODUCTION

This Surface Water Utility System Plan (SWUSP) examines the existing surface water management program with the primary focus of identifying and solving flooding, erosion, habitat, and water quality problems as well as meeting regulatory requirements. The SWUSP is also intended to guide programmatic and capital improvement needs for the City of Renton's Surface Water Utility (Utility) for the next six years and beyond. This includes identifying and developing long-term solutions, prioritizing projects that reflect the community's needs, quantifying operation and maintenance (O&M) needs of the Utility, and making sure that there is adequate funding to implement recommendations.

1.2 HISTORY, PROGRAM DESCRIPTION, AND ACCOMPLISHMENTS

The City of Renton (City) was incorporated in 1901. Early land alterations in the City included dredging, channelizing the Green and Cedar Rivers to improve navigation, constructing rail corridors and coal mines, and clearing land associated with agriculture and forestry. Flood control within Renton during the early 1900s consisted of drainage courses made to protect forests and agricultural practices. As the population grew, the lowlands changed from forest and agriculture to urban development. This urban development included heavy investments into industrial activities, because Lake Washington, the lower Cedar River, and the Duwamish waterway were all transportation corridors where industrial activity existed.

Adjacent areas have been annexed to the City since its initial incorporation and additional annexations will likely continue in the future. Portions of Utility's infrastructure (facilities and conveyance systems) are aging and in need of repair and improvement. This aging infrastructure coupled with new development must be maintained, managed, and implemented in a way that meets regulatory requirements, enhances the City's existing storm drainage system, and does not exacerbate existing problems.

Utility was created in 1987 as an entity within the Public Works Department, Utility Systems Division to maintain, manage, and implement the City's Surface Water Management (SWM) Program. At that time, its main task was to focus on quantity-related flooding problems through the planning, design, maintenance, and construction of public drainage facilities; review and approval of the construction of private drainage facilities; and improving maintenance of existing facilities. The surface water program has evolved over the years as described below.

1.3 UTILITY MISSION

Utility's mission is to serve our customers by sustainably managing the quantity and quality of surface water runoff in the City to reduce flood hazards, protect public safety, prevent property damage, improve water quality and protect fish and environmental resources. Where applicable, the City will coordinate the management of the system with other regional and adjacent jurisdiction efforts.

The desired outcome of Utility programs and services is to reduce flooding hazards and to help protect the environmental, recreational, and aesthetic uses of the City's streams, lakes, rivers, and wetlands, which contribute to the livability and appeal of the community.

1.3.1 Program Description and Accomplishments

The Engineering and Maintenance and Operations program includes the following activities:

1. Maintaining, operating, repairing, replacing, and improving the City's storm system infrastructure.
2. The planning, design, permitting, and construction of surface water projects as part of Utility's Capital Improvement Program.
3. Regulatory compliance with state and federal regulatory requirements associated with the Western Washington Phase II Municipal Stormwater permit, the Clean Water Act (CWA), the Federal Emergency Management Agency (FEMA) National Flood Insurance Program, and the Endangered Species Act (ESA).
4. Customer service regarding drainage complaints, flooding and water quality problems, utility billing, and other technical assistance regarding surface water management, along with public education, public involvement, and stewardship programs.
5. Technical assistance to other City Departments and Divisions (Transportation, Planning, Development Services, and Community Services) regarding drainage improvements in their projects, critical area protection standards, and compliance with Surface Water design standards.
6. Manage City's compliance with the Community Rating System (CRS) Program within the National Flood Insurance Program (NFIP).
7. Secondary review of new private development construction for compliance with surface water design standards and updating of design standards for new construction.
8. Storm system GIS mapping and management of Utility assets.
9. Emergency management, planning, and response associated with flooding and other disasters.
10. Coordination with other cities, counties, along with state and federal agencies, on regional surface water management topics related to flooding, water quality, and habitat.
11. Watershed management, including planning and investigative studies.

Utility serves approximately 24,465 customers and is responsible for the maintenance, repair, and replacement of approximately 286 miles of drainage pipeline and culverts, along with approximately 24 miles of open channel conveyance systems. Utility is responsible for the maintenance, repair, and replacement of approximately 17,043 drainage structures, three stormwater pump stations, and 435 publicly maintained flow control (detention) and water quality treatment facilities, including ponds, vaults, tanks, bioswales, and Filterra units. The Utility is responsible for the management of approximately 136 acres of City owned parcels with flow control facilities, water quality facilities, and pump stations within the City that are not public right-of-way.

Some of the significant accomplishments of the Surface Water Utility include:

- Completing over $85.7 million in Surface Water Utility Capital Improvement Projects between 1992 and 2020.
- Basin planning efforts in the May Creek, Cedar River, and Black River Basins.
- Completed the Cedar River Section 205 Flood Hazard Reduction Project that included dredging the lower 1.25 miles of the Cedar River, construction of associated levees and floodwalls, constructing multiple mitigation spawning channels and maintaining the facilities to comply with the USACE FEMA Program. This project included dredging the Lower Cedar River twice: in 1998 and 2016.
- Produced updated digital flood insurance rate maps (DFIRMs) and flood studies along 5 miles of the lower Cedar River and 2.8 miles along Springbrook Creek.
- Implemented a significant number of the flooding and riparian habitat improvements identified in the Eastside Green River Watershed Plan, including replacement of major culvert crossings at SW 34th Street and SW 27th Street.
- In partnership with WSDOT, developed the 124-acre Springbrook Creek Wetland and Habitat Mitigation Bank.
- Received over $50 million in grants and matching funds from various agencies and taxing districts including FEMA, KCFCD, USACE, WSDOT, Ecology, King County, and the King Conservation District and Drainage District #1 that were applied to City projects to reduce flooding and improve water quality and stream habitat.
- Completed green street connections projects that combined water quality retrofits with drainage improvements.
- Addressed miscellaneous emergency stormwater projects and numerous small drainage problems.

1.4 UTILITY GOALS

Utility's goals include flood risk reduction, water quality improvement, and aquatic habitat and environmental resource conservation, while carrying out the policies and priorities set by elected officials and the City's business plan.

The Surface Water Utility provides five basic services:

- Flood risk reduction.
- Regulatory and water quality compliance.
- Aquatic habitat and environmental resource protection.
- Maintenance of the storm water system.
- Customer service.

Flood risk reduction involves protecting public safety by preventing flood damage to property and preventing disruption of mobility and critical services caused by stormwater flows that exceed system capacity. This is accomplished primarily through the planning, design, construction, operation and

maintenance of channels, pipes, roadside ditches, culverts, detention ponds, and natural and man-made open water courses.

Regulatory and water quality compliance programs reduce pollution through public education and involvement, implementation of regulations (inspections and code enforcement of commercial and residential facilities), maintenance of infrastructure (through system catch basin cleaning, and other activities), and capital projects that provide treatment and reduce pollutants. This program is largely driven by required compliance with the Clean Water Act (CWA) and the NPDES Phase II Municipal Stormwater permit as described in Section 1.3.1, but is also important for maintaining the aesthetics and livability of the community. Often water quality capital projects are integrated into flood risk reduction projects. This program area also includes addressing sources of pollution and implementing management practices that reduce non-point pollution in stormwater from public and private sources.

The aquatic habitat and environmental resource protection program area involves identifying and preserving existing habitat; identifying high-quality stream habitat in the City; implementing development standards that protect environmental resources including critical areas such as streams and wetlands and their buffers; improving water quality; providing public education; and coordinating public efforts to protect or enhance habitat.

The Utility provides customer service by providing responses to questions and complaints, public education, flood hazard monitoring and response assistance during flood events.

1.5 Plan Development Process

In developing this Plan, representatives from various City Departments were included in identifying current flooding, water quality, erosion, and habitat problems within the City. City staff also assisted in identifying the level and cost of current programmatic responsibilities and developing priorities for future capital and programmatic needs. Those involved during development of the Plan included staff from Surface Water Engineering, Maintenance Services, Community and Economic Development Services, and Finance.

In addition, as part of the development of the capital improvement program and programmatic needs, workshops were held with City staff to discuss the existing program, NPDES permitting requirements, and stormwater infrastructure maintenance.

Utility engineering and maintenance personnel and management participated in identifying and reviewing capital stormwater improvement projects that need to be programmed in the future. The list of major storm system deficiencies was augmented based on citizen complaints. Utility staff also reviewed King County complaints in annexed areas in order to identify problems related to flooding, water quality, and habitat/environmental preservation.

The public will be involved in the process of developing this Plan through the State Environmental Policy Act (SEPA) process. A draft of this Plan will be included on the City's website for the public to view and provide comments. Copies of the draft SWUSP will be available for public download and review, and the public is always invited to attend City Council meetings or committee meetings that discuss this Plan.

SECTION 2
DRAINAGE BASIN AND SERVICE AREAS

2.1 INTRODUCTION

This section contains descriptions of the study area, the existing surface water system, and the drainage basins within the City of Renton and tributary portions of the City's urban growth areas.

2.2 STUDY AREA GENERAL DESCRIPTION

The major drainage basins within the city limits and Urban Growth Boundary (UGB) include portions of the May Creek Basin, the Cedar River Basin, the Black River Basin, the Soos Creek Basin, and a portion of the Lower Empire subbasin of the Duwamish River Basin. The May Creek, Cedar River, and Soos Creek Basins extend upstream outside the current city limits into the UGB and unincorporated King County. The Duwamish River Basin extends downstream to the northwest beyond the city limits. In addition to these larger drainage basins within the city limits, there are several smaller basins that empty directly into Lake Washington and comprise the East Lake Washington and West Lake Washington Basins. The basins are shown on **Figure 2-1**. **Table 2-1** summarizes the total basin areas as well as the area of each basin within the city limits and the area of the basin outside the city limits and within the UGB. The South Lake Washington Basin is excluded from the study area, because it consists entirely of private property and private stormwater conveyance systems.

The drainage basins within the Renton city limits and UGB have undergone extensive modifications due to various residential and industrial developments in the area. The drainage basins were heavily forested in the 1860s when coal deposits were discovered in the region prior to early settlement of the Renton area. Between the 1860s and the 1890s, coal mining and logging flourished throughout the region. Following closure of the mines, the logging and lumber mills remained, and much of the existing forests were cleared. Urban development began during the early part of the 20th century as the valley areas were settled by crop and dairy farmers. The City of Renton was incorporated in 1901 (HDR, 1995).

Before the area was settled, the Cedar River and Lake Washington flowed via the Black River into the Green River and the Duwamish estuary. At that time, this watershed accounted for 692 square miles from the Lake Washington basin to the Duwamish Estuary. The majority of this area was the 607 square mile Cedar River watershed. In addition, the White River was once a major tributary of the Green River, adding an additional 494 square miles to the total Green River drainage area. Today, the White River is part of the Puyallup River watershed. The Cedar River flows into Lake Washington and is a separate watershed from the Green River.

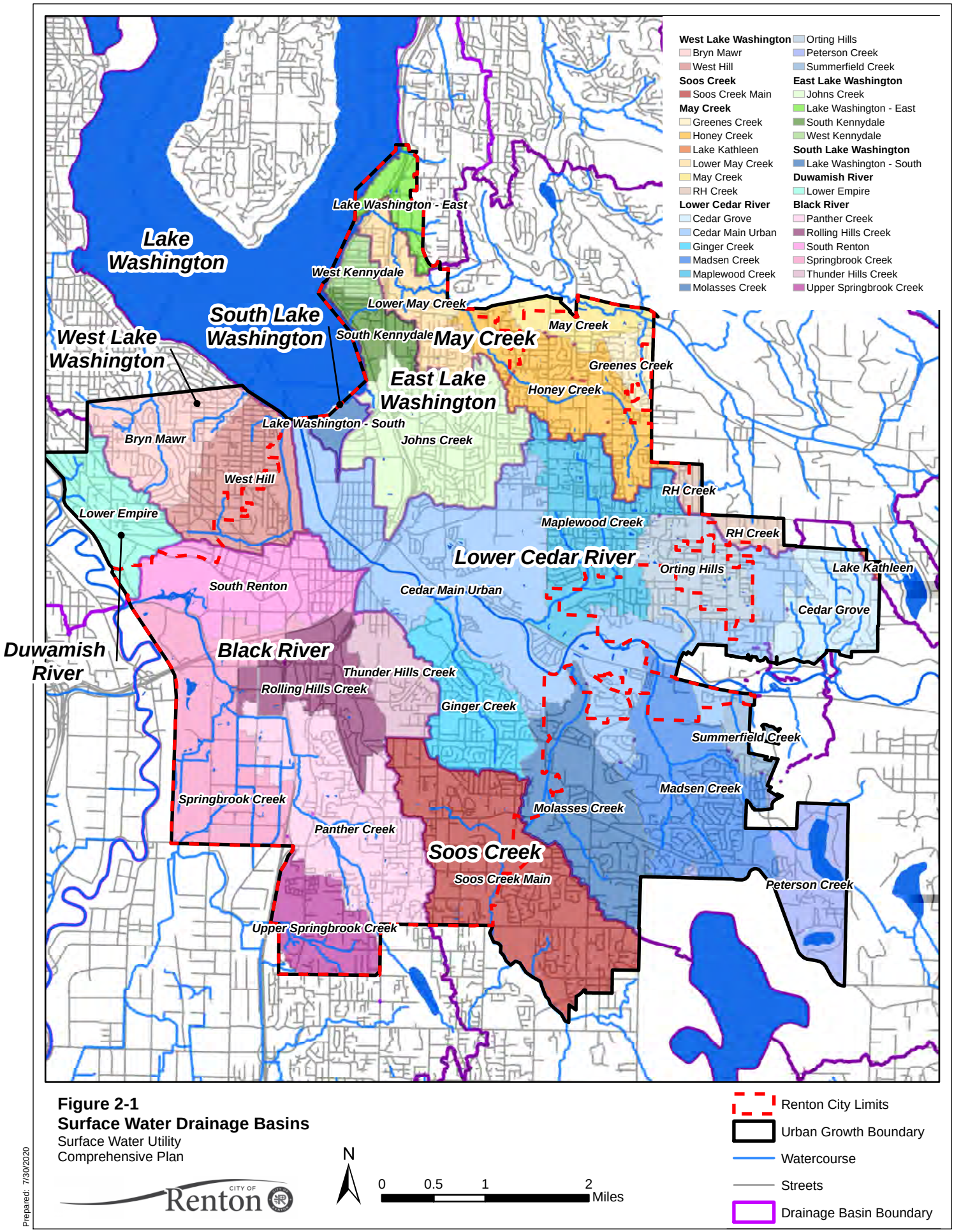


Figure 2-1
Surface Water Drainage Basins
Surface Water Utility
Comprehensive Plan

Prepared: 7/30/2020

TABLE 2-1:
RENTON DRAINAGE BASIN AREAS

Basin	Total Basin Area[1] (square miles)	Basin Area within Current City Limits[2] (square miles)	Basin Area between Current City Limits and the Urban Growth Boundary (UGB)[3] (square miles)	Potential Future Surface Water Utility Service Area[4] (square miles)
May Creek	13.8	2.8	0.5	3.3
East Lake Washington	4.4	2.9	0.0	2.9
Cedar River	25.3	7.5	7.0	14.5
West Lake Washington	16.5	0.5	1.9	2.4
Black River	20.2	8.1	0.1	8.2
Soos Creek	12.3	1.5	1.4	2.9
Duwamish	16.0	0.1	0.8	0.9
Total Square Miles	**108.5**	**23.4**	**11.7**	**35.1**

1. Areas determined using the subbasin delineations provided by the City.
2. Areas determined using the city limits provided by the City.
3. Areas determined using the city limits and UGB provided by the city.
4. Areas determined as basin area within current city limits plus area between the current city limits and UGB.

In anticipation of lowering Lake Washington as a result of the construction of the Hiram Chittenden Locks, the Cedar River was diverted into Lake Washington between 1912 and 1916. The Black River, which previously drained Lake Washington, dried up in 1916 when the water level in Lake Washington lowered. The following list gives a general history of the Green and Cedar River areas:

1911 White River permanently diverted from Green River to Puyallup River.

1912 Masonry Dam closed on the Cedar River and drinking water diverted for the City of Seattle.

1913 Drinking water diversion on the Green River constructed by the City of Tacoma.

1916 Lake Washington outflow directed to Hiram Chittenden Locks and lake levels lowered 9 feet.

1916 Cedar River discharge diverted from the Black River to Lake Washington, and due to the lake lowering, the Black River dried up, except for drainage from Springbrook Creek.

1917 Duwamish Waterway constructed.

1940s Most of Green/Duwamish wetlands converted to developed land.

1962 Howard Hanson Dam built for Green River flood control.

These major actions reduced flood risk and improved navigation and provided drinking water. They also created two distinct watersheds, WRIAs 8 and 9.

2.3 EXISTING SYSTEM DESCRIPTION

Renton's drainage system consists of built facilities and natural channels that convey and treat surface water prior to its discharge into receiving waters. Prior to 1987, when Utility was formed, the City storm drainage facilities were managed within the street and roadway programs, and there was no dedicated staff that focused on the storm water system. As a consequence, the City lacked problem identification, inventory data, and other system details due to the lack of a dedicated stormwater utility.

Since forming, Utility has developed Geographic Information System (GIS) of the Utility's storm system infrastructure. The GIS mapping shows the location of the infrastructure, type of asset, and other data associated with the asset. The Storm System Inventory Maps generated using GIS, and the associated GIS inventory, are incorporated as part of this Plan by reference. The inventory includes the sizes, lengths, type and characteristics of facilities that are known to be the responsibility of the City. Maps are located online here:
http://rentonwa.gov/city_hall/administrative_services/Information_technology/maps___g_i_s_data

The following sections provide a general description of the built drainage system components according to function, which primarily includes conveyance and stormwater (water quality and flow control) facilities. **Table 3-3** summarizes the estimated quantity of drainage system infrastructure and **Figure 2-2 and 2-3** show all of the publicly maintained flow control and water quality facilities located within the City, respectively.

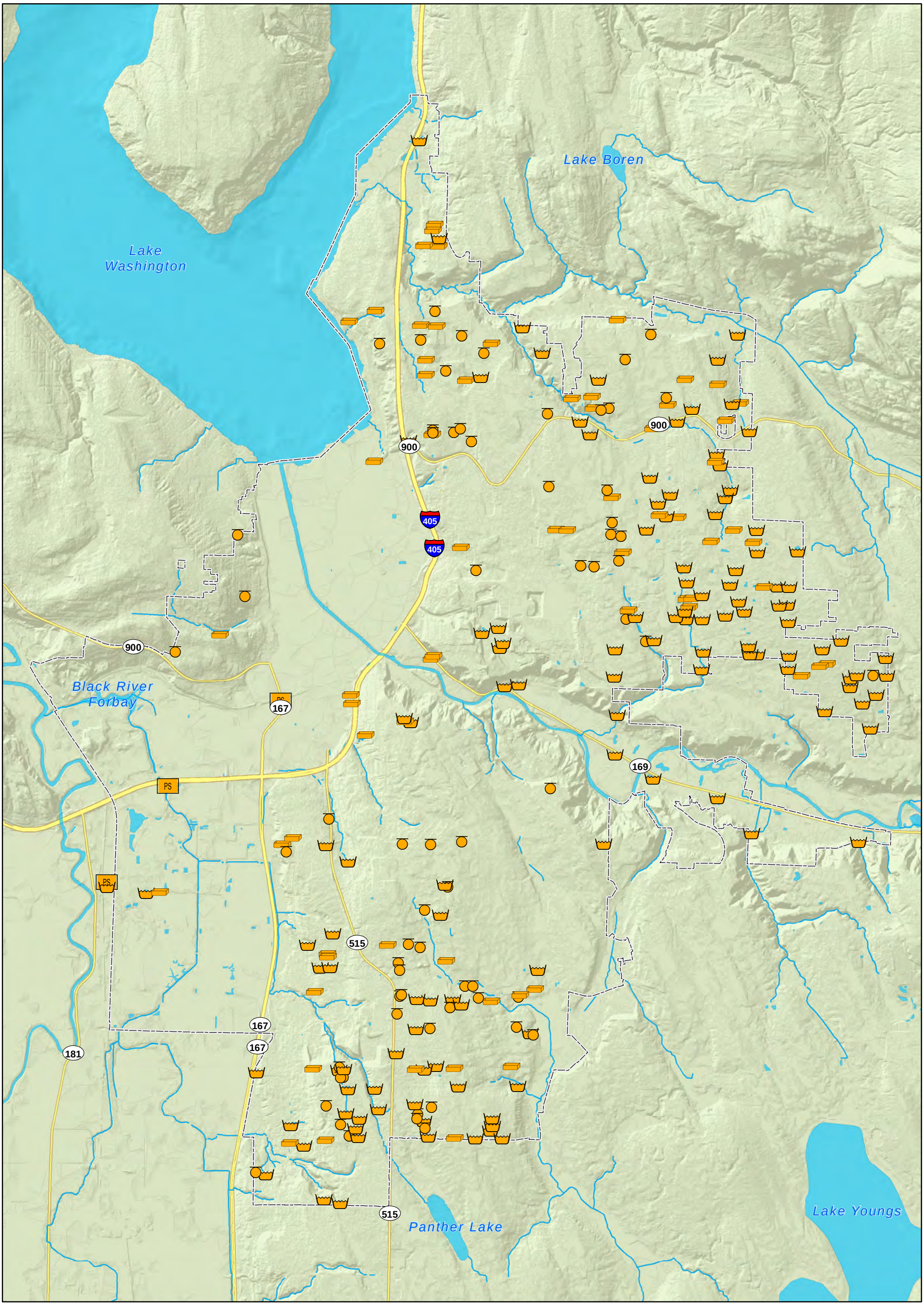


Figure 2-2: Surface Water Stormwater Facilities

CITY OF Renton

Surface Water Utility - GIS | Printed Date: 12/07/2020

0 0.25 0.5 1 Miles

Facility Type

- Pond
- Tank
- Vault
- PS — Pump Station
- City of Renton

N W E S

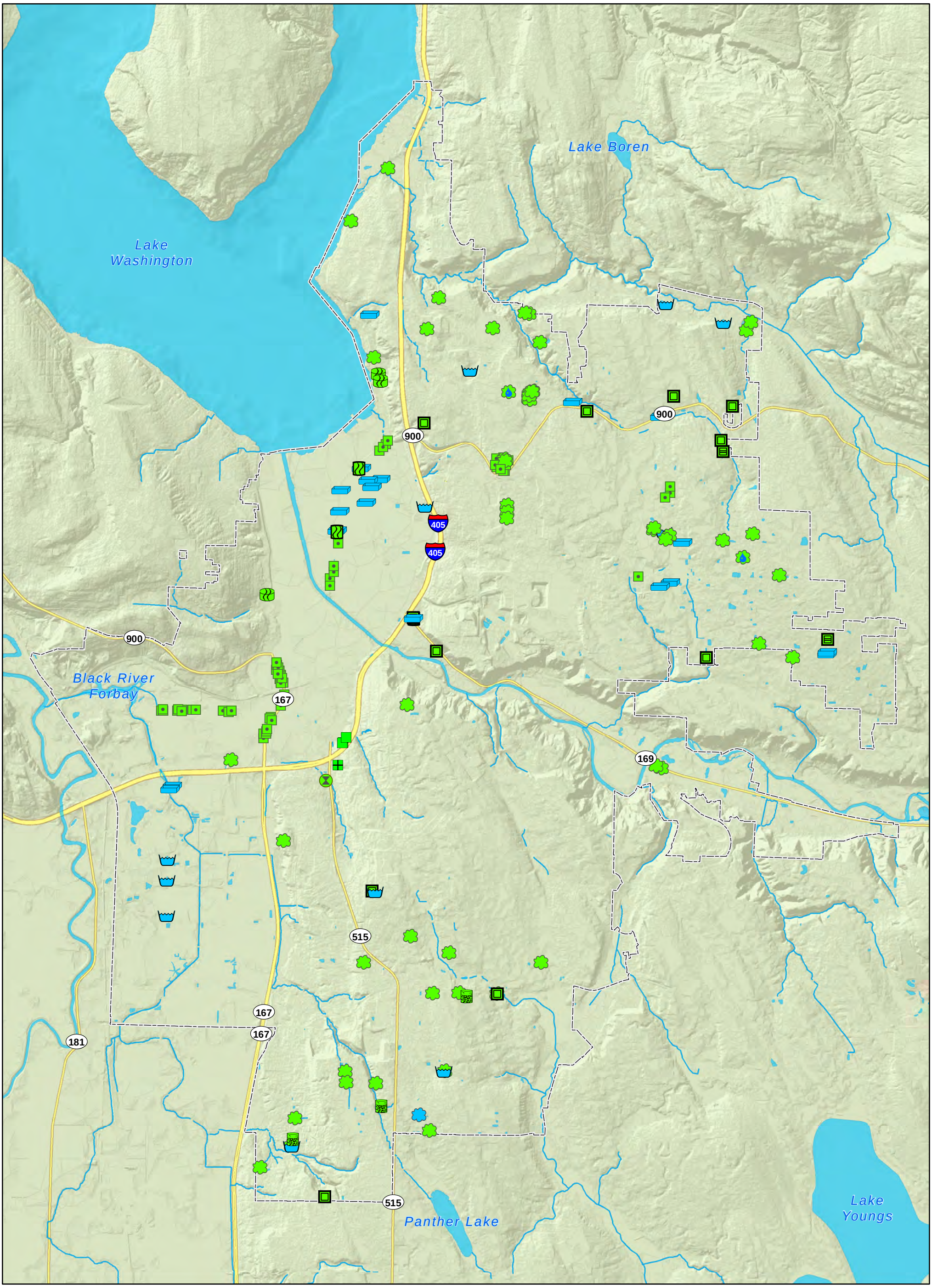


Figure 2-3: Water Quality Facilities

0 0.25 0.5 1 Miles

N W E S

CITY OF Renton

Surface Water Utility - GIS | Printed Date: 12/07/2020

Water Quality Facility

- Bioswale
- Rain Garden
- Sand Filter
- Filterra
- Media Filter Drain
- Modified Media Filter Drain
- Oil/Water Separator Baffle
- Oil/Water Separator Coalescing
- Perk Filter - Oldcastle
- Stormfilter - Contech
- Stormfilter - ADS Bayfilter
- Stormwater Wetland
- Wet Pond
- Wet Vault
- Other
- City of Renton

2.3.1 CONVEYANCE

Conveyance system components, both natural and constructed, collect and transport surface water or stormwater runoff within a drainage basin from one location to a location further downstream. There are several types of constructed conveyance system components described in the following sections. Constructed conveyance systems are designed based on hydrologic predictions of peak flow events for the drainage area; therefore, accurate hydrologic models and predictions are critical to the successful design and function of conveyance infrastructure. Recent studies conducted by the UW Climate Impacts Group indicate that future rain events in the Pacific Northwest will likely be more intense, and King County is developing projections of changes in precipitation to inform stormwater management within King County (Mauger et al., 2018).

2.3.1.1 Stormwater Pipe

The City's stormwater pipes range in diameter from 6 inches to 7 feet and convey stormwater to outfalls that discharge into the City's streams and rivers or into Lake Washington. Concentrated flows disperse at the outfall through energy dissipation systems. Some stormwater pipes have storage or water quality treatment structures built into the system as described in Sections 2.3.2 and 2.3.3. The storage or detention pipes within the City's stormwater system are up to approximately 12 feet in width and 8 feet in height. The total length of pipe within the City is summarized in **Table 2-2**.

2.3.1.2 Culverts

Culverts are short sections of pipe or concrete box structures used to convey stormwater under embankments or roads. Culvert pipes are usually circular concrete or corrugated metal. Some culverts are reinforced concrete 4-sided boxes, or three-sided (i.e., open bottom) with gravel substrate for fish-friendly passage. Headwalls sometimes are located at the inlet and/or outlet of culverts to prevent undermining, deflect flow, and reduce erosion of slopes around the culvert. Frequently, there is an energy dissipation structure at a culvert outlet if exit velocities are high. Culverts within the City's stormwater system are up to 21.5 feet in height by approximately 12 feet in height.

2.3.1.3 Pump Stations

Pump stations are used to convey runoff flow downstream from low-lying or closed depression areas that cannot be served by a gravity system. The City has three publicly maintained pump stations. One pump station is located at the Rainier Ave S/BNSF railway underpass with a capacity of 6,500 gallons per minute (GPM) (Washington State Highway Commission, 1960), and one is located at the Oakesdale Ave SW/I-405 underpass with four 1,100 GPM pumps (City of Renton, 2012). The third pump station is located in Tukwila at SW 27th / Strander Blvd and has a capacity of 6,750 GPM (BergerABAM, 2011).

2.3.1.4 Catch Basins

Catch basins are typically concrete structures with underground sumps that connect the piped storm drain system. Often, they have open grates and are located along the curb line to collect runoff from roads or gutters. The City mostly has type 1, type 2, and type 3 catch basins with differing catch basin inlets, depending on the road grade and orientation to the road curb. In some older systems there may be brick catch basins that were converted from older sewer systems or older combined systems. Most catch basins also provide some level of water quality treatment, as sediment is deposited within the sump (see Section 2.3.2.3). The total number of catch basins within the City is summarized in **Table 2-2**.

TABLE 2-2:
SURFACE WATER MANAGEMENT INVENTORY DATA[1]

Type of Facility	Quantity	Unit
Catch Basins/manholes[2]	17,043	Each
Drainage Pipe/Culverts[2]	286	Miles
Facilities – City Maintained[3]	435	Each
Facilities – Private[3, 4]	787	Each

1. Table does not include ditches.
2. Quantities were estimated in 2020 using information available from the City's GIS. Note that this quantity does not include private systems.
3. Facilities include ponds, vaults and tanks, wetponds, bioswales, Filterras, etc. Quantities estimated in 2020 using information available from the City's GIS
4. The quantity for private facilities includes residential subdivisions, commercial and industrial sites, and facilities not owned by the City.

2.3.1.5 Ditches

Ditches are constructed earth channels, generally lined with vegetation, but sometimes with asphalt, rock, or concrete, that convey stormwater in areas not served by piped systems.

2.3.2 WATER QUALITY TREATMENT FACILITIES

Water quality treatment facilities remove pollutants from stormwater runoff. Water quality treatment facility types consist of vegetated flowpath, wetpool, oil control, bioretention, filtration, and emerging technology.

2.3.2.1 Vegetated Flowpath Facilities

Vegetated flowpath facilities, such as biofiltration swales and filter strips, remove pollutants through particle settling and to a lesser extent, absorption or adsorption onto grass or soil. Biofiltration swales are grass-lined, gently sloped ditches that provide water quality treatment of polluted stormwater runoff. The shape, slope, width, and length of the swale are designed to provide water quality treatment. Biofiltration swales may be wet or dry swales with different grass mixtures determined by type, soil, width and slope characteristics. Filter strips are sloped grassy areas that remove pollutants from adjacent impervious surfaces.

2.3.2.2 Wetpool Facilities

Wetpool facilities such as wetponds, wetvaults, and stormwater wetlands are facilities that store a large permanent volume of water that allows for the settling (removal) of pollutant particles from stormwater runoff. Stormwater wetlands are constructed shallow ponds that treat stormwater through the biochemical and physical processes of aquatic plants.

2.3.2.3 Catch Basins and Oil Control Facilities

The sump at the bottom of most catch basins is used to capture sediment and other debris from incoming stormwater. A trapped outlet (e.g., elbow or tee) that prevents most floating debris and oil from leaving the catch basin is sometimes used.

Oil control facilities include baffle and coalescing plate oil/water separators. These structures are specifically designed for the removal of oil and other petroleum pollutants that are carried in

stormwater runoff from parking areas and streets. Oil/water separators are generally underground vaults and trap sediments and floatable materials in addition to removing oil.

2.3.2.4 Bioretention

Bioretention facilities include cells, swales, and planters. Cells are landscaped shallow depressions. Swales are similar in design to cells, but also convey stormwater runoff. Planters are vertical walled containers that allow for infiltration. These facilities treat stormwater runoff through chemical, biological, and physical processes associated with plants and engineered soils.

2.3.2.5 Other Surface Water Quality Treatment Facilities

Other surface water quality treatment facilities include filtration and emerging technology. Filtration facilities, such as sand filters, sand filter vaults, and linear sand filters, trap pollutants in or on sand particles. Emerging technologies include proprietary and public domain facilities. Proprietary facilities are protected by intellectual property rights and typically contain a filtering device that removes stormwater pollutants. Public domain facilities, such as media filter drain and compost amended biofiltration swales (CABS), remove pollutants through chemical, biological, and physical methods.

2.3.3 Flow Control Facilities

Flow control facilities consist of retention/detention ponds and underground storage facilities (vaults and pipes) as well as infiltration ponds, tanks, vaults, trenches, manufactured systems, and catch basins. The purpose of these facilities is to temporarily store stormwater so that it can be released at a controlled rate to downstream receiving water bodies or into the ground. Flow control facilities thereby reduce increases in runoff rates from new and redevelopment construction projects to prevent downstream flooding and erosion and to protect habitat. The total number of facilities within the City, both privately-owned and City-owned, are summarized in **Table 2-2**.

2.3.4 On-Site BMPs

Changes to land cover associated with proposed development and redevelopment projects within the basin can impact storm and surface water runoff, which results in changes to basin hydrology and water quality. Therefore, the impacts from installation of new impervious, new pervious, existing impervious, and replaced impervious surfaces associated with development must be mitigated by on-site best management practices (BMPs). On-site BMPs are methods for reducing or preventing development-related increases in runoff at the source of the increase and include, among others, dispersion of runoff using preserved native vegetation or other pervious surfaces, permeable pavements, bioretention, infiltration systems, and reduction of the development or redevelopment footprint. The selected and implemented on-site BMPs vary between projects and must be selected based on site conditions following the guidance outlined in the City's Surface Water Design Manual.

2.4 Drainage Basins

The purpose of this section is to characterize the stream and river drainage basins in the City and its UGB and to summarize the status of the Renton Surface Water Utility basin planning efforts.

Drainage basins and subbasins are defined as areas of land where precipitation collects and drains to a common outlet, such as a river and its tributaries, a bay, or other body of water. Precipitation is conveyed through a drainage basin by natural means, such as streams and rivers, or by constructed

means, such as storm drain systems. The basins, subbasins, and various conveyance systems are described in terms of several attributes including physical features, water quality, habitat, ongoing planning efforts, and land use. Land use attributes are typically described in terms of historical, current and future conditions to better understand impacts of development to the basin.

Basin water quality can be quantified using the Water Quality Index (WQI). The WQI, originally developed by the Environmental Protection Agency (EPA) Region 10, was adapted by Ecology for use in Washington State. Ecology's WQI is a rank of water quality for eight constituents in relation to the criteria established by Washington's Water Quality standards (WAC 173-201A) and guidelines for conditions in a specific ecoregion. The WQI attempts to integrate a series of key water quality parameters into a single number, ranging from 1 to 100, with higher numbers indicating better water quality. This can then be used to compare different sampling locations over time. The key water quality parameters influencing the WQI at a specific sampling location are dissolved oxygen, pH, total phosphorus, total nitrogen, turbidity, total suspended sediment, temperature, and fecal coliform bacteria (Hallock, 2002). Measurements of these parameters are aggregated over time for each sample station. Sample stations scoring 80 and above meet water quality standards or guidelines and are of "low concern," scores 40 to 80 indicate "moderate concern," and water quality at stations with scores below 40 are of "high concern." King County is using Ecology's version of the WQI. This WQI may be modified in the future as criteria change and other information becomes available.

The major drainage basins located within the city limits and UGB are:

- May Creek Basin
- East Lake Washington Basin
- Cedar River Basin
- West Lake Washington Basin
- Black River Basin
- Soos Creek Basin
- Duwamish River Basin

Information is presented according to the individual drainage basins and their respective subbasins. Subbasins and minor basins are described as they occur within each of the major basins. Basin statistics are summarized in the Basin Report Cards located in Appendix B.

Estimates of predicted peak flows for each basin within the city limits presented in the following sections were obtained from previously conducted hydrologic and hydraulic studies. The available information comes from studies with varying dates and in each case the date of this information is presented. The studies that produced these flow results were performed to varying levels of detail and employed different hydrological methods and models. Several of the modeling efforts were completed prior to the implementation of current standards for new developments involving greater stormwater detention. As such, it is possible that the future flows presented in these previous modeling efforts are overestimated. Modeling results included in the following sections are based on the basin delineations shown in **Figure 2-4**. The delineations shown in **Figure 2-4** have been revised since these modeling efforts were completed, as illustrated in **Figure 2-1**. However, as no recent modeling efforts have been completed based on the revised basin delineations, **Figure 2-4** is included for reference for the entirety of Section 2.4

Information from other planning studies, reports on previous flooding events, and data provided by City staff were also used. A list of reports used to prepare this information is included in the References section.

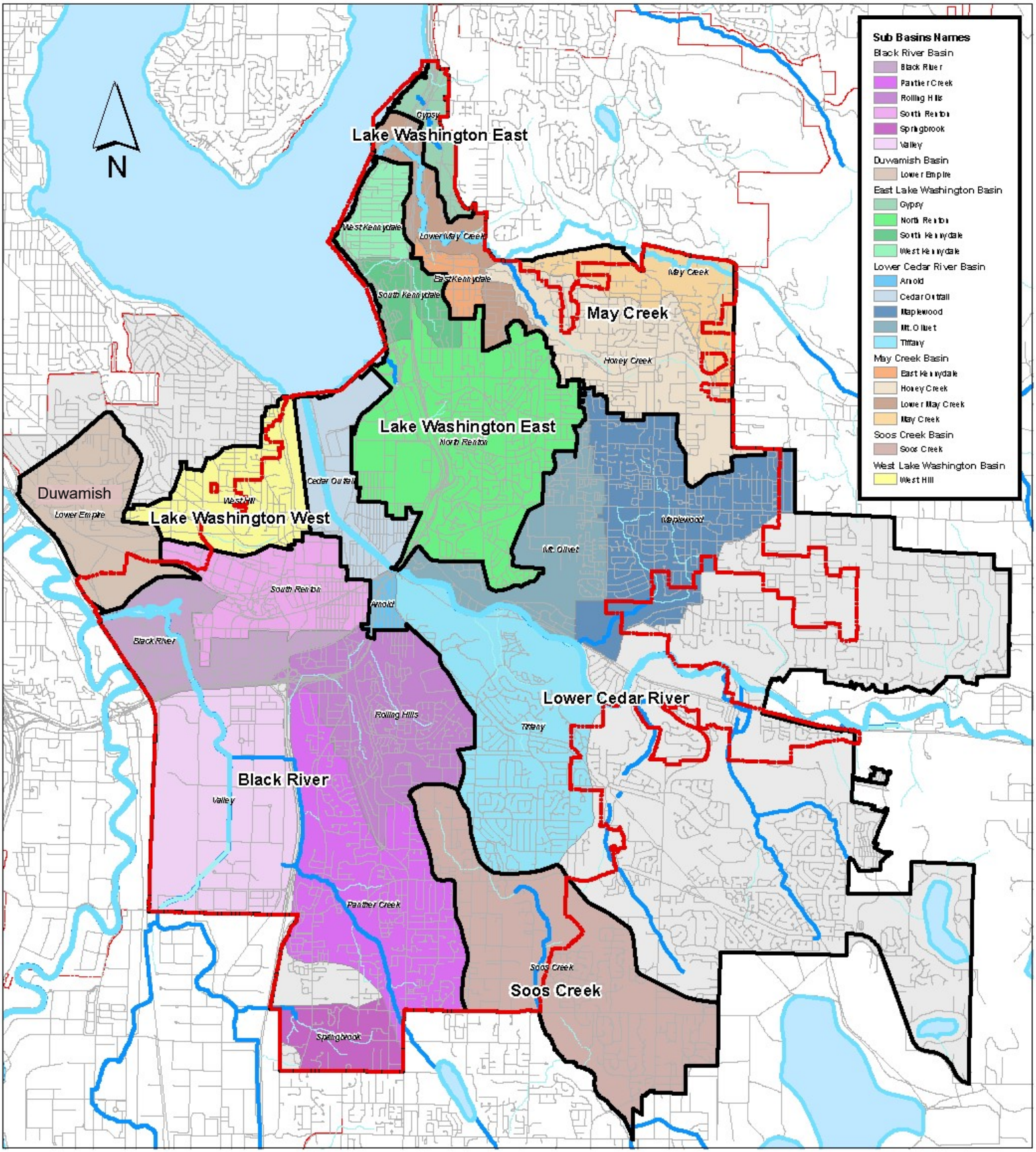


Figure 2-4
Previous Delineation of Surface Water Drainage Basins used for modeling

2.4.1 MAY CREEK BASIN

The May Creek Basin originates northeast of the city limits on the forested slopes of Cougar and Squak Mountains and the Renton Plateau. It drains a total of 14 square miles as it flows northwest through the City to Lake Washington. This basin includes the Honey Creek, Greenes Creek, RH Creek, May Creek, and Lower May Creek subbasins within the City. The May Creek Basin is located in WRIA 8, north of the Cedar River drainage basin, south of the Coal Creek and Tibbetts Creek drainage basins, and west of the Issaquah Creek drainage basin. The eastern portion of the basin contains low density residential and agricultural developments and large regional parks in the highlands. Historical logging, farming, and mining practices have been replaced by residential development in tributary basins, which still contain a significant amount of open space. The western lowland portion of the basin contains fairly dense residential development with a stream gradient increase that has formed a canyon before opening up into Lake Washington (King County, 2016).

The May Creek Basin contains a number of tributaries, including Honey Creek, Gypsy Creek, and Greenes Creek located within the city limits, and Newport Hills Creek, Boren Creek, Long Marsh Creek, and others located outside of the city limits. Portions of Honey Creek have been channelized, but it remains predominately a natural stream in the upper reaches. The newer subdivisions within the lower basin contain piped drainage systems, but the older developed areas still contain a number of systems with open ditches. The mainstem of May Creek is in park land and runs through a steep, narrow, wooded canyon before reaching its outlet at Lake Washington.

Poorly functioning surface water conveyance systems have caused large landslides and major localized erosion along May and Honey Creeks in several locations (King County, 2001).

2.4.1.1 Basin Water Quality

May Creek is listed as impaired for fecal coliform bacteria and temperature on Ecology's 303(d) list (Listing ID 13124) of water bodies that exceed state water quality standards. A 25-year (1979-2004) trend analysis of May Creek data indicated that water temperature, conductivity, and ammonia-nitrogen have increased significantly, but pH, total suspended solids (TSS), and nutrient concentrations (ortho-phosphorus, nitrate, and total nitrogen) have decreased (King County, 2016). WQI indicates that as of July 2020, May Creek's 2018 water year Water Quality Index score was 70 out of 100. May Creek is listed for temperature, fecal coliform bacteria, and bioassessment on the state's 2016 303(d) list. Input of waste to the creek from livestock and septic systems on the upland plateau likely contribute to the presence of fecal coliform within the creek.

Sediment acts as a vehicle of delivery for phosphorous and toxins to water bodies in this basin. High temperatures are also affecting water quality in this stream, partially due to basin development activities and replacement of native vegetation in non-riparian areas.

2.4.1.2 Basin Fish Habitat

The 2001 May Creek Basin Action Plan describes fish habitat in the basin (King County, 2001). The May Creek system provides habitat elements that support coho and sockeye salmon, and sea-run cutthroat and rainbow trout. Despite the lack of physical habitat elements that would typically support a large chinook salmon population, there has been a historical run of chinook in the creek. There are good spawning grounds at the deltas formed by the confluence of tributaries with the mainstem. However, sediment eroded from streams in the Highlands and East Renton Plateau is gradually reducing the capacity of the May Creek channel in May Valley and degrading fish habitat. Furthermore, habitat complexity is limited by the lack of large woody debris in the basin streams. This results in a relative

scarcity of pools, which are an important component of stream habitat. The portion of the stream within the shoreline planning area provides spawning habitat, but all species migrate upstream past the ravine to spawn and rear in May Valley reaches.

2.4.1.3 Basin Planning Status

May Creek and its subbasins were the subject of an extensive study, the May Creek Current and Future Conditions Report (May Creek Report) (King County, 1995a). This study, administered by the King County Department of Public Works, Surface Water Management (SWM), with the support of the City, documented hydrology, erosion, sedimentation, water quality, and aquatic habitat in the basin.

The City and King County also entered into an interlocal agreement for the development of the May Creek Basin Action Plan (May Creek Plan) (King County, 2001). The May Creek Plan was adopted by King County, the City of Renton, and the City of Newcastle. It used the information assembled in the May Creek Report to develop plans for remediation and restoration in the basin. The May Creek Plan focused on a five-year window to implement recommendations. Projects completed since 2001 include placement of large woody debris and outfall projects to correct ongoing hillside erosion.

2.4.1.4 Basin Hydrology

As part of the May Creek Report work, King County modeled stream flows using the Hydrologic Simulation Program - Fortran (HSPF). The HSPF model used recorded stream flow data from May Creek, rainfall data, and land use and channel geometry information to make long-term hydrologic simulations. Predevelopment (forested), current (1995 conditions), future, and future mitigated (with runoff controls) land use scenarios were modeled to evaluate the effects of land use changes on hydrologic conditions in the basin (King County, 1995a).

The proportion of effective impervious area has increased from 0% under predevelopment conditions to a basin-wide average of 7% under 1995 conditions (King County, 1995a). Most of this impervious surface area is in the western and southern portions of the basin, in or near the Renton city limits.

Peak flows have increased as a result of this increase in impervious area and land clearing. Erosion has occurred in the hillsides above May Valley, causing flooding and sediment deposition in the valley area, erosion in the canyon downstream of the valley, and flooding and sediment deposition in the area near the mouth of May Creek.

Future land use assumptions (in 1995) were based on full development in the basin in accordance with the future land use plan developed by the City and King County as part of the growth management process. This development was predicted to increase the effective impervious area for the entire May Creek basin from 7–12%. Some of this increase in imperviousness has occurred since the estimate in the 1995 plan.

Table 2-3 presents results from the May Creek Report HSPF model for predicted peak flows for each May Creek tributary that lies within the City for the 2-, 10-, 25-, and 100-year recurrence events. The table shows flows for 1995 conditions and future conditions without mitigation of flows through the use of stormwater regulatory controls such as retention/detention ponds and infiltration systems.

TABLE 2-3:
PREDICTED PEAK FLOWS (CFS) FOR THE MAY CREEK TRIBUTARIES WITHIN THE CITY OF RENTON

	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
Tributary Name	1995	Future[1]	1995	Future[1]	1995	Future[1]	1995	Future[1]
Lower May Creek	341	452	556	706	666	845	835	1069
Honey Creek	63	81	85	101	95	110	109	123
Gypsy Creek	16	25	25	39	30	47	38	60

1. Future condition flows were predicted in 1995 assuming no regulatory stormwater runoff controls such as retention/detention and infiltration systems for new development. Therefore, these future condition predictions are likely overstated.

Source: *May Creek Current and Future Conditions Report (*King County 1995a)

2.4.1.5 Lower May Creek Subbasin

The Lower May Creek subbasin (see **Figure 2-1**) has a total area of 0.82 square miles, with 0.77 square miles within Renton city limits. Gypsy Creek joins May Creek within the Lower May Creek subbasin, and Honey Creek joins May Creek at the upstream end of the Lower May Creek subbasin. The East Kennydale catchment is a portion of the Lower May Creek subbasin, but was analyzed as a separate subbasin in the hydrologic analysis.

Lower May Creek flows through a canyon and an alluvial fan downstream of the canyon. The stream is contained within the canyon walls until it reaches the alluvial fan, which is located on the downstream (west) side of I-405. The canyon slopes up to a plateau with suburban residential development.

Hydrology - 1995 Conditions: Although the hillslope areas that drain into the Lower May Creek subbasin canyon are highly developed, the May Creek canyon itself has not been developed. This is because the canyon is narrow and has steep and unstable side walls. Increased peak flows from the tributaries contribute to the erosion in the canyon. Sediment from this erosion is moved by the stream to the alluvial fan near its mouth, where it deposits along the Lake Washington shoreline.

The majority of the development that has occurred along Lower May Creek is on, or adjacent to, the alluvial fan near the mouth of the stream. The additional runoff from new development on the alluvial fan adds a relatively small amount to the peak flows traveling down the mainstem of May Creek. As a result, development on the alluvial fan causes few hydrologic and flood-related problems to the mainstem of May Creek. However, some localized flooding outside of the creek's floodplain does occur because of undersized conveyance systems.

Prior to development, 2-year peak flows traveling in the mainstem of May Creek were 30–50% smaller than the peak 2-year flows under 1995 conditions (King County, 1995a). Additionally, the 2-year predevelopment peak flows entering the Lower May Creek subbasin from the tributaries, such as Gypsy Creek and Honey Creek, were much smaller (less than 50%) than the 2-year peak flows under 1995 conditions. In 1995, the mean annual flow of May Creek was 14 cubic feet per second (cfs) upstream of Coal Creek Parkway, and approximately 26 cfs in the lower reach.

Hydrology - Future Conditions: Future development in the Lower May Creek subbasin will probably be limited to areas outside of the canyon. Consequently, any expected increases in peak flows will result primarily from increased peak flows entering the canyon from May Valley and tributaries draining the plateau region to the east. Some additional development is also expected for the alluvial fan area downstream of the canyon.

Table 2-3 presents predicted increases in future peak flows compared to 1995 conditions. As noted in the table, these projected increases are likely overstated, because the 1995 modeling effort did not consider stormwater runoff controls such as retention/detention and infiltration systems for new development and redevelopment.

2.4.1.6 Honey Creek Subbasin (Drains to Lower May Creek)

Most of the Honey Creek subbasin is located within the City of Renton on a flat, upland area known as the East Renton Plateau. A total of 1.38 square miles of the 1.58 square mile subbasin in within City limits and the Honey Creek confluence with May Creek is also within the Renton city limits. Honey Creek is the largest of the plateau tributaries and drains several major commercial areas along Sunset Boulevard NE, in addition to several fully developed neighborhoods. This subbasin has the highest density of urban land cover in the watershed.

Hydrology - 1995 Conditions: King County estimated 2-year peak flows for lower Honey Creek have tripled to 63 cfs under 1995 conditions from the predeveloped (forested) condition, while the County estimated 100-year peak flows have doubled to 109 cfs. These increases have been caused by residential and commercial development and the creation of impervious surfaces. A result of the increased peak flows is additional scour and erosion from the steep slopes between the plateau and the mainstem of May Creek. Major sediment movement into May Creek has an adverse impact on the creek's habitat and wildlife, as well as resulting in property damage due to gully erosion and culvert blockage.

Hydrology - Future Conditions: Future land use planning for the Honey Creek area includes high-density single-family homes and commercial development. Future effective impervious area is expected to exceed 40% in the middle Honey Creek subbasin. However, because of the relatively high amount of development that already exists in the area, future development will not greatly increase runoff from this subbasin.

Relatively, the 100-year peak flows will not increase as much as 2-year flows for the subbasin. This is partially due to a constriction in the stream channel in the vicinity of the King County sewer trunk line. As modeled, the channel at that location is contained within two culverts that limit downstream peak flows to approximately 60 cfs (King County, 1995a). This limit on peak flows helps to protect the downstream channel, but may also result in localized flooding around the culverts.

2.4.1.7 Gypsy Creek (Drains to Lower May Creek)

Gypsy Creek is the furthest downstream of the May Creek tributaries on the north side of the May Creek Basin. It enters May Creek in an alluvial fan area that is moderately sloped. The gradient then steepens considerably as Gypsy Creek climbs out of the canyon to an upland plateau. The canyon channel has been recently incised and delivers significant amounts of sand to May Creek. The plateau area is partially developed with residential and rural residential areas. Only a small portion of the Gypsy Creek subbasin within the City of Renton has a piped drainage system.

Hydrology - 1995 Conditions: The Gypsy Creek confluence with May Creek is within the Renton city limits. Within the Gypsy Creek subbasin, the effective impervious area is approximately 11% under 1995 conditions, with peak flows for the 2-year storm of 16 cfs (**Table 2-3**). Predicted peak flows for the 25-year and 100-year events under 1995 conditions are 30 and 38 cfs, respectively.

Hydrology - Future Conditions: The effective impervious area is expected to increase from 11% to 20% under future conditions for this subbasin. Because of this increase in imperviousness, Gypsy Creek peak flows are expected to increase. It is noted however, that the increases presented in **Table 2-3** may be

overstated, because the 1995 modeling effort did not consider stormwater runoff controls such as retention/detention and infiltration systems for new development and redevelopment.

2.4.1.8 East Kennydale Catchment

The East Kennydale catchment is a portion of the lower May Creek subbasin and is predominantly on the upper plateau. A large portion of this catchment (a 48-acre area) historically drained to a closed depression near the intersection of Aberdeen Avenue NE and NE 24th Street. Recurrent flooding was occurring at the low point and in the late 1990s, the City constructed a trunk drainage system that provided a new gravity outlet that extended north and west to NE 27th Street and then along Kennewick Place NE and ultimately to an existing outfall down a steep slope to May Creek. These improvements were made following a study, NE 27th Street/Aberdeen Avenue NE Storm System Improvement Project (R. W. Beck, 1997b).

Hydrology - 1995 Conditions: Basin hydrology was developed as part of the NE 27th Street/Aberdeen Avenue NE Storm System Improvement Project. The study reported an impervious area percentage of 31 percent and the 25-year and 100-year peak flows to be 9.7 and 11.8 cfs, respectively. Note that the current flows as of today are much higher than this because the 48-acre area that previously drained to a closed depression now drains to May Creek. The current peak flows are more likely to resemble those estimated for future conditions.

Hydrology – Future Conditions: The modeling that was done for the NE 27th Street/Aberdeen Avenue NE Storm System Improvement Project included the new trunk line to drain the closed depression and also looked at future land use conditions. Under future land use conditions, the impervious area was estimated to increase to 37 percent. Estimated peak flows for future conditions for the 25- and 100-year event are 26.1 and 31.9 cfs, respectively. These flows are likely overstated because they do not account for future on-site detention that may be required for new development and redevelopment.

2.4.2 East Lake Washington Basin

The East Lake Washington Basin is within WRIA 8. The East Lake Washington Basin is composed of several subbasins that drain directly to the southeastern portion of Lake Washington, as shown in **Figure 2-1**. These include the West and South Kennydale subbasins near the north end of the City, the NE 44th Street Exit Drainage Area subbasin (formerly called Gypsy subbasin) lying north of the May Creek outlet, and the North Renton subbasin (see **Figure 2-4**) situated south of Kennydale. The North Renton subbasin drains directly to Lake Washington at Gene Coulon Memorial Beach Park via Johns Creek. The North Renton subbasin is one of the more significant drainage basins in the City because it drains a highly developed area near the core of the City.

The NE 44th Street Exit Drainage Area subbasin is predominately an open ditch surface runoff system draining the steep area east of I-405 with upstream contributing Newcastle residential and Renton commercial areas. The lower portion of the subbasin has been channelized or is contained within culverts. In 2008, Utility constructed the Ripley Lane Storm System Improvement Project that included the construction of a 72-inch and 60-inch-diameter storm drain system that conveys flow from Ripley Lane to Lake Washington across the Seahawks Training Center. The project was constructed in coordination with the Seahawks and WSDOT and conveys future condition flows for the NE 44th Street Exit Drainage Area subbasin. This project reduced frequent flooding occurring along Ripley Lane N.

The majority of the West and South Kennydale subbasins are dominated by open ditch runoff collection systems that outfall to Lake Washington across Lake Washington Boulevard N via several culvert

crossings. There are no substantial stream systems in the West or South Kennydale areas. South of the South Kennydale subbasin is the North Renton subbasin that drains a highly-developed area near the core of the City. The majority of the North Renton subbasin is drained by a fully-developed piped drainage system that discharges into Johns Creek and contains portions of the Boeing facilities, PACCAR, the Landing, I-405, the steep portion of Sunset Boulevard, and numerous residential and other commercial properties. The furthest downstream reach of Johns Creek flows in a constructed, low gradient channel for one-half mile prior to discharging to Lake Washington.

2.4.2.1 Basin Water Quality

Lake Washington, at Gene Coulon Park (in the North Renton subbasin), is on the state's 2016 303(d) list for fecal coliform bacteria. Water quality at this beach is affected by Johns Creek, which is listed for temperature, fecal coliform bacteria, and dissolved oxygen. In 2004, King County ended the swimming season on August 24 due to high concentrations of fecal coliform at the park. In 2005, King County again had to temporarily close the swimming beach for a week in July (King County, 2005). This prompted the City to perform the Gene Coulon Park Microbial Source Tracking Study (Herrera, 2006) to determine sources of the pollution and identify potential solutions. The study determined that the highest bacterial loadings come from residential areas that drain to Johns Creek. However, human fecal sources accounted for only 7% of the bacteria, and avian sources accounted for 50%. Avian loadings may be controllable by increased park maintenance, rooftop guards, and modified waste management practices.

Lake sediments are a sink for pathogens and toxins, and sediment quality can affect lake ecology. Due to limited transport and mixing of sediments, poor sediment quality is usually localized in stream deltas and old industrial sites. A 2004 study found that some Lake Washington sites contained elevated levels of Polychlorinated biphenyls (PCBs), but that tributyltin, metals, and polyaromatic hydrocarbon levels were not above normal. Levels of Dichlorodiphenyltrichloroethane (DDT) are decreasing from historic levels when DDT was unregulated, and recent inputs are not apparent (Parametrix, 2008).

Sediment deposits from upstream sources are also a vehicle for input of phosphorus to the lake. Past eutrophication in the lake (for which phosphorus is usually the main cause) has been found to result from historic direct discharge of sewage, a practice that was discontinued in the 1960s. While phosphorous inputs from upstream tributaries are not currently causing eutrophication, this is a potential result if tributary water quality deteriorates due to future buildout and associated increases in sediment and phosphorous loading (Parametrix, 2008).

Tributary discharge and other runoff are also sources of pathogens and toxins that affect water quality in Lake Washington. There are 11 impaired water quality listings along Renton's Lake Washington shoreline, such as Johns Creek (Ecology, 2020a). Johns Creek, Cedar River, Lake Washington at Gene Coulon Beach park, May Creek, and an Unnamed tributary to Lake Washington in the South Kennydale subbasin are on Ecology's 303(d) list for pH, temperature, bacteria, and dissolved oxygen (Ecology, 2020a). These sites are associated with industrial sites or tributary mouths (Parametrix, 2008).

2.4.2.2 Basin Fish Habitat

The ecology of Lake Washington has been affected by shoreline-scale processes and human activities. Bank armoring (i.e., bulkheads) has contributed to the reduction in availability of shallow water habitat, and in combination with the alteration to riparian areas, has led to a substantial reduction in natural shoreline vegetation and large woody debris, which provide above- and in-water cover for fish. In addition, sockeye salmon with a lake-type history rely on a gravelly lakeshore and groundwater upwelling for spawning, but these features are limited by bulkheads and other modifications. Existing

cover consists primarily of docks, piers, floats, and other constructed structures. These structures provide excellent habitat for nonnative warm species such as yellow perch, brown bullhead, smallmouth bass, and largemouth bass. Such species use these structures as cover to prey on juvenile salmonids.

2.4.2.3 Basin Planning Status

The Kennydale area that is part of this basin includes the West and South Kennydale subbasins. The West and South Kennydale subbasins drain to Lake Washington and are included in the Final Lake Washington/Cedar/Sammamish Watershed Chinook Salmon Conservation Plan (WRIA 8 Steering Committee, 2005).

The Renton/Lake Washington Pollution Abatement Program characterized the sources of stormwater pollution arising from the North Renton subbasin through an Ecology Centennial Clean Water Fund grant. The objectives of this project included improving the quality of runoff generated within the basin and providing baseline data for future compliance with NPDES stormwater permit requirements. It included a hydrologic analysis based upon annual runoff and sampling and chemical analyses of stormwater and sediment. The project has produced three reports: a Hydrologic Analysis (R. W. Beck, 1993), a Pollution Source Characterization (Herrera, 1993a) and an Implementation Plan (Herrera, 1994).

2.4.2.4 Basin Hydrology

For the East Lake Washington Basin, separate studies predicted stream flow rates for the various subbasins using different hydrologic modeling methods. These hydrologic analysis methods are described below for each subbasin.

2.4.2.5 Kennydale Subbasin

The Kennydale area that is part of this basin has been divided into two subbasins by the City of Renton. The two subbasins, West and South Kennydale, both flow into Lake Washington and are discussed below.

Hydrology - 1995 Conditions: The West Kennydale subbasin is the northern portion of a gently sloping hillside located between I-405 and Lake Washington. This basin has been developed into a single-family residential area. The drainage system is comprised of both open ditches and culverts that discharge via culverts directly to Lake Washington.

The South Kennydale subbasin includes a portion of gently sloping hillside, east of I-405, and a more steeply sloped narrow strip of land between I-405 and Lake Washington. The area east of I-405 is fully developed into single-family residences, whereas the hillside above the lake is less developed. In areas where development has occurred along this hillside, it has primarily been developed into multifamily units. The drainage system includes both open ditches and piped systems which discharge into Lake Washington at a number of locations.

To predict flooding potential, peak flows were calculated for both subbasins (HDR, 1995); however, the methodology used to calculate these flows was not described. South Kennydale was divided into four subbasins, each draining independently into Lake Washington. Peak flows predicted for 1995 conditions varied between subbasins, depending mostly on the size of the area drained (**Table 2-4**). The area drained by subbasin 4 produced more runoff, because of its larger acreage, than subbasin 2, although subbasin 2 has been developed with multifamily housing and subbasin 4 is developed with single-family residences.

Hydrology - Future Conditions: Future land use in the West Kennydale area is expected to remain medium-density, single-family homes. More change is expected in the South Kennydale area, where development of areas into medium-density single-family residential areas is expected to occur. Future flows from South Kennydale subbasin 4 more than double for the 2-year and 10-year peak events. **Table 2-4** presents predicted future peak flows for the West and South Kennydale subbasins. It is noted however, that the increases presented may be overstated, because the modeling did not consider stormwater runoff controls such as retention/detention and infiltration systems for new development and redevelopment.

TABLE 2-4:
PREDICTED PEAK FLOWS (CFS) FOR THE KENNYDALE SUBBASINS

	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
Subbasin Name	**1995**	**Future[1]**	**1995**	**Future[1]**	**1995**	**Future[1]**	**1995**	**Future[1]**
South Kennydale 1	0.3	1.2	0.9	2	1.2	2.5	1.7	3
South Kennydale 2	3.7	4.1	6.6	7.2	8.4	9	10.2	10.8
South Kennydale 3	5.0	8.6	9.9	14.5	13	17.9	16.2	21.4
South Kennydale 4	6.4	15.5	14.6	27.7	20.3	35.2	26.5	43.1
West Kennydale	29.8	Same	60.6	Same	79.0	Same	97.8	Same

1. Future condition flows were predicted in 1995 assuming no regulatory stormwater runoff controls such as retention/ detention and infiltration systems for new development. Therefore, these future condition predictions are likely overstated.

Source: *(HDR 1995)*

2.4.2.6 NE 44th Street Exit Drainage Area (formerly Gypsy) Subbasin

There is a small area of land to the north of the May Creek outlet that has been referred to as the Gypsy subbasin in previous documentation, but to avoid confusion with Gypsy Creek in the May Creek basin, this area is now referred to as the NE 44th Street Exit Drainage Area subbasin. This area drains through a culvert near the intersection of I-405 and Lake Washington Boulevard NE.

Hydrology - 2005 Conditions: The area drained by this culvert is a steep slope that has been partially developed for commercial use and multifamily residential units. The most recent hydrologic modeling of this subbasin was done in 2007 as part of the Ripley Lane Drainage Improvement Project (Parametrix, 2007). This study included updating a prior StormSHED modeling of the basin by Entranco and by WSDOT that used 2005 aerials for the existing land use. The resulting peak flows for the 100-year storm are presented in **Table 2-5**. This study did not investigate other storm events for current land use conditions.

Hydrology – Future Conditions: The Ripley Lane Drainage Improvement Project (Parametrix, 2007) also included an estimate for the 100-year storm for future land use conditions. This study did not estimate peak flows for the 2-, 10-, or 25-year storms. However, prior modeling done by WSDOT for future land use conditions provided similar results for the 100-year storm and results from this modeling effort also included the 25-year storm (and thus was added to **Table 2-5**). The future condition 100-year peak flow estimate represents an increase in 36% over existing conditions. Part of this increase is the result of an I-405 project that increased the basin size by draining an estimated 70 acres of additional area to Gypsy Creek (Parametrix, 2007). The remaining part of the increase is to increases in impervious area.

TABLE 2-5:
PREDICTED PEAK FLOWS (CFS) FOR THE NE 44TH STREET EXIT DRAINAGE AREA SUBBASIN

Subbasin Name	25-Year Peak Flows		100-Year Peak Flows	
	Existing (2005)	Future	Existing (2005)	Future
Gypsy[1]	—	159.5	145.4	198.2

1. From *Ripley Lane Drainage Improvement Project* (Parametrix, 2007); values determined using Stormshed.

2.4.2.7 North Renton Subbasin

The North Renton subbasin contains some of the greatest concentrations of valuable commercial, industrial, and residential land within the City. Within the boundaries of the North Renton drainage basin, shown in **Figure 2-4**, are portions of the Boeing facilities, the PACCAR facility, The Landing, and numerous residential and commercial sites. The basin includes a developed upland area that slopes down to a flat valley floor. A piped drainage network conveys runoff from the area prior to discharging to Johns Creek, which flows into Lake Washington.

Most of the area was developed before stormwater regulations came into effect. Therefore, runoff is conveyed directly to Johns Creek or Lake Washington via an elaborate pipe network with no detention or treatment. Almost all surface conveyance is through pipes, since many small streams were eliminated by historic land development practices. Runoff in the upper portion of the basin is collected in roadside ditches and conveyed to a network of collector storm drains installed along the roadways. Runoff in the lower basin is collected and conveyed in a series of stormwater pipes. The pipe systems discharge near the intersection of Lake Washington North and Houser Way North into an open-channel system. From this point, the water flows through a series of culverts and sections of constructed open channel (Johns Creek) through Gene Coulon Park to Lake Washington. Johns Creek has a flat slope; therefore, water in this channel can back up from Lake Washington during high flows. For this reason the creek does not experience erosion, but is subject to sediment deposition due to its low gradient. The lake is an important aquatic resource for the bird and fish species established in the wildlife habitat near the outlet, as well as for the public that use the beach and boat launch facilities.

Hydrology: The South Lake Washington Roadway Improvement Report, (BHC, 2007) analyzed the capacity of the storm drain both before and after roadway construction. The hydrologic analysis of the North Renton subbasin was conducted using the Santa Barbara Urban Hydrograph (SBUH) method. The subbasin was divided into additional subbasins for analysis, presented in **Table 2-6**. The upland subbasins were combined into the Johns Creek (at upstream outfall) subbasin. This subbasin includes the area south of Sunset Boulevard and east of I-405. Flows from this area enter the storm system at the east end of N 8th Street. The three northernmost subbasins contain residential neighborhoods and drain to a pipe system that extends west from Sunset Boulevard to a pond on the south side of Lake Washington Boulevard prior to discharging into Johns Creek. Flow from the Boeing facilities and their maintained outfalls are not included in the table. The PACCAR/residential site was modeled individually along with the area south of N 8th Street, east of Logan, north of N 4th Street, and west of Garden Avenue S. This area drains both to the Johns Creek system via Garden Avenue as an overflow and to the N 6th Street outfall to the Cedar River.

These analyses determined that the limited capacity of the downstream system has an upstream effect on flooding in localized areas of The Landing and the PACCAR/residential areas. Consequently,

improvements in the PACCAR area included the installation of a 72-inch-diameter storm drain between the intersection of Garden Avenue N and N 8th Street and Lake Washington Blvd. The Landing/South Lake Washington Roadway Improvement Project improved the conveyance and water quality in the valley area prior to discharge to Lake Washington.

TABLE 2-6:
PREDICTED PEAK FLOWS (CFS) FOR THE NORTH RENTON SUBBASIN

Outfall Name	25-Year Peak Flows	100-Year Peak Flows
Johns Creek (at upstream Outfall)	4.0	4.3
North 6th Street Outfall to Cedar River	5.0	5.0
Logan Ave Outfall to Cedar River	24.4	28.2
Cedar River Park Outfall to Lake Washington	75.2	86.6

Source: *South Lake Washington Roadway Improvement Drainage Report (BHC, 2007)*

Hydrology - Future Conditions: Almost the entire North Renton subbasin has been developed, and no major changes in land use are expected to occur. Except for some minor infill in the residential areas in the east and north portion of the subbasin, little additional development is likely.

In 2005, WSDOT conducted a study of the lower reach of Johns Creek in support of designating the portion of the creek west of I-405 as a direct discharge waterbody. The WSDOT Johns Creek Report also computed stormwater flows in the North Renton subbasin which were found to generally agree with the BHC study.

2.4.3 CEDAR RIVER BASIN

The Cedar River runs through downtown Renton, where it discharges into Lake Washington. The Cedar River basin extends far beyond the city boundaries and forms the southwest edge of WRIA 8. The basin includes 191 square miles, with 125 square miles that lie upstream of the City of Seattle Landsburg drinking water diversion. Almost all of the land upstream of the diversion is owned by the City of Seattle and maintained as natural environment to protect Seattle's water resource. The upper watershed is mostly second growth forest with about 15% of the upper watershed as old growth forest.

Subbasins of the Cedar River basin located entirely within Renton include the Cedar Outfall, Mt. Olivet, and Arnold. Subbasins located partially within Renton include the Maplewood and Tiffany subbasins. Collectively, these five basins are referred to as the Lower Cedar River subbasin (see **Figure 2-4**). Several additional subbasins are located within the UGB, including Fairwood, Madsen, and Orting Hill.

The lower Cedar River has been extensively altered. Approximately 64% of the lower Cedar River was modified on at least one bank, which, coupled with decreased flows, has narrowed the river from a historic average of 250 feet to 110 feet in width by 2001 (Kerwin, 2001). The loss of floodplain and riparian connectivity in the lower Cedar River has affected storage, sediment, and contaminants, and it has simplified in-stream habitat.

The drainage networks within this basin are quite varied. The Lower Cedar River subbasin drains downtown Renton, large portions of the Boeing facilities, and adjacent industrial and commercial areas. Closed-pipe networks deliver surface runoff directly to the river. The upper portions of the basin collect runoff in piped systems, but typically discharge to natural stream channels before being conveyed to the Cedar River.

2.4.3.1 Basin Water Quality

The lower Cedar River has good water quality with the highest quality water in the upper reaches and decreasing water quality as the river flows through developed urban and suburban areas. Ecology has two water quality monitoring stations along the Cedar River, one near Landsburg and the other in Renton at Logan Street. The WQI score at these locations for water years 2016, 2017, and 2018 were above 85 for the Logan Street station and above 93 for the Landsburg station (Ecology, 2020b). Both of these scores are above the threshold value of 80 for "good" water quality, per the Washington DOE river and stream water quality index, indicating that the water quality at these locations meet expectations and these areas are of lowest concern for water quality issues. The Cedar River segment from the confluence with Molasses Creek to Lake Washington is included in the state's 2016 303(d) list for temperature, dissolved oxygen, and pH.

2.4.3.2 Basin Fish Habitat

The lower Cedar River mainstem provides habitat for chinook, coho, and sockeye salmon and steelhead, bull, and cutthroat trout (Kerwin, 2001). The Cedar River's chinook salmon population is one of the native stocks that comprise the evolutionarily significant unit of Puget Sound chinook, which is listed as threatened under the Endangered Species Act. Fish access and passage barriers, loss of channel complexity and connectivity, increased sedimentation and altered sediment transport processes, and degradation of riparian conditions have been identified as factors of decline for the Cedar River (WRIA 8 Steering Committee, 2002).

Channelization and the disconnection of the Cedar River floodplain for flood control, due to land use changes, have also decreased the amount of and prevented access to off-channel habitat by salmonids and other organisms. This is of particular concern for chinook salmon, which use these areas for juvenile rearing. More individuals now exhibit a lake-type life history and use Lake Washington for rearing (Parametrix, 2008).

Projects to restore channel complexity are ongoing. Several opportunities to increase riparian vegetation, shallow water, and off-channel habitat in the lowest reach of the Cedar River have been identified. USACE fish enhancement projects were completed in 1999, including constructing a groundwater-fed spawning channel for sockeye salmon in the floodplain on the south bank of the river at river mile 4.6 and reconstructing a rock revetment that protects the Maplewood Golf Course on the north bank at river mile 4.2 to provide habitat benefits for rearing salmon juveniles (USACE, 2000).

In 1999, USACE performed a study to evaluate gravel quality, quantity, and transport on the Cedar River mainstem, including the effect of bank armoring, to determine if a lack of gravel supply is limiting salmon spawning. The study determined that man-made structures cut off sources of gravel for the mainstem. In 2001, the groundwater-fed spawning channel was destroyed by the Nisqually Earthquake, which migrated the mainstem Cedar River into the groundwater channel. A new channel, called the Elliot Spawning Channel, was constructed in 2001, but was significantly damaged after the 2006 and 2009 Cedar River high flows. Repair and enhancement of the Elliot Channel were completed in 2016 as part of the mitigation associated with environmental permits obtained for the Cedar River Maintenance Dredging Project (GeoEngineers, 2017).

2.4.3.3 Basin Planning Status

The WRIA 8 Steering Committee's Final Lake Washington/Cedar/Sammamish Watershed chinook salmon Conservation Plan (2005) was written to organize cooperation toward restoring ecosystem health in the

watershed. The City ratified this plan in Resolution 3761. The Plan was updated in 2017 and ratified in Resolution 4336.

In 1998, the City partnered with USACE to construct the Cedar River Section 205 Flood Hazard Reduction Project in an effort to reduce chronic flooding along the lower Cedar River, including areas within the Renton Airport and the Boeing aircraft manufacturing facility. The project constructed levees and floodwalls along the left and right bank of the lower 1.25 miles of the river in addition to removing over 120,000 cubic yards of dredge material. After completion of the project, the City requested that USACE certify the right lower Cedar River setback levee that was designed and constructed to contain the 100-yr base flood. USACE concurred with the City's request and certified the right bank levee as containing the 100-yr base flood in 2004. Maintenance dredging occurred in summer 2016 (Brooks et al., 2019).

In 2006, as part of FEMA's Countywide DFIRM update, the City prepared and submitted a LOMR for the purpose of revising the current effective FEMA maps for the lower Cedar River. The LOMR, based on updated hydrology and the USACE certification of the right bank levee, was approved by FEMA in 2007. The resulting floodplain maps showed areas previously designated as flood hazard areas (Zone AE) designated as shaded Zone X (areas protected by levees).

In July 2012, the City received notification from USACE that the certification issued for right and left bank levees along the lower 1.23 miles of the Cedar River would expire on August 31, 2013, and future re-certification will be the responsibility of the City. Certification of the levees is essential so that FEMA accredits the levees as providing protection from the 100-year flood and avoid mapping the properties protected by the levees (Renton Municipal Airport and Boeing 737 Plant) in the regulatory floodplain. Levees certified to current FEMA standards have to demonstrate that they meet the design, operation, and maintenance requirements described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations. The challenge presented by this effort includes certifying the levee system based on current standards. Upon conducting various structural, geotechnical, and hydraulic analyses in 2018, the City determined that certain sections of the levees need to be raised to meet current freeboard requirements and that the levee embankment needs to be widened at certain levee to floodwall transitions. Currently, the City is designing and permitting the required improvements in Phase 3 of the Cedar River 205 Project Levee Recertification Project to achieve FEMA accreditation and has secured funding for design and construction from KCFCD. Meanwhile, the City expects to maintain current floodplain designation for the protected areas (Zone X not Zone AE), because FEMA elected to seclude the floodplain of the Lower Cedar River from the King County DFIRM update. By secluding the Cedar River levees (and other levees in King County) from the update, FEMA can advance the adoption of the DFIRM and subsequently individually assess the level of flood protection of the secluded levees. The City expects to have the levees certified and accredited prior to FEMA taking any action in that regard.

2.4.3.4 Basin Hydrology

The City and King County entered into an interlocal agreement to develop a basin plan for the Cedar River. In November 1993, King County SWM produced the Cedar River Current and Future Conditions Report (Cedar River Report). This report includes information on the environmental setting of the Cedar River, current as of 1993 and in the geologic past, and analyses of surface water hydrology, flooding, erosion, water quality and aquatic habitats. The basin was studied for changing land use and its effects upon the river hydrology using the HSPF hydrology model.

The analyses divided the river basin into three geographic components. The components included the Upper Basin, which is the area above the City of Seattle's Landsburg Diversion, and the Middle and Lower Basins. This study addresses hydrologic problems in areas within the city boundary, within the UGB, as well as the area beyond the city limits.

The Cedar River Basin planning effort also includes characterization of the hydrogeology of the basin, mapping of susceptibility to groundwater contamination, groundwater level measurements, and groundwater modeling. The results of the hydrogeologic study help to identify measures needed to protect groundwater resources, including surface water management in areas of critical groundwater recharge.

The latest Cedar River flow estimates were developed by King County in March 2000. King County estimated flow values for the 10-, 50-, 100- and 500-year flows based upon a flood frequency analysis of approximately 80 years of peak flow data (fit by a Log Pearson Type III distribution). The 10-, 50-, 100- and 500-year return peak flows (**Table 2-7**) for the Cedar River at Renton are estimated to be 5,940 cfs, 9,860 cfs, 12,000 cfs, and 18,400 cfs, respectively. These estimates were made assuming consistent Masonry Dam operations.

Prior to this, King County had developed an HSPF model in 1993 as part of the Cedar River Current and Future Conditions Report. The 1993 modeling estimated local flows from subbasins within the UGB (**Table 2-7**).

The majority of flows in the river above 4,000 cfs in Renton are caused by peak inflows of similar magnitude from the upper basin, not by lower basin flow contributions within the UGB. Basin runoff has increased as a result of deforestation and land development, with most increases occurring during the winter flood season.

Urbanization in the tributaries has caused an estimated 7% increase in mainstream flood peaks from natural conditions. Flows from the lower basin area have a minor impact on the mainstem peak discharges, but increase the duration of flooding at Renton significantly. Current levels of urbanization within the basin have increased the durations of flood flow at Renton by 12% over forested conditions.

According to King County projections (King County, 1993), future land development will result in an additional 8% (unmitigated) increase in peak flows for the lower outfall area of the Cedar River. In addition, flood flow duration will also lengthen, increasing 17% over current conditions.

TABLE 2-7:
PREDICTED PEAK FLOWS (CFS) FOR THE CEDAR RIVER BASIN

Subbasin Name	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
	1993	Future[1]	1993	Future[1]	1993	Future[1]	1993	Future[1]
Lower Basin (Outfall)[2]		N/A	5,940	N/A	N/A	N/A	12,000	N/A
Tiffany/Ginger Creek[3]	63	69	101	111	121	134	152	172
Maplewood[4]	59	132	104	207	135	257	197	349
Molasses[3]	96	130	153	200	180	238	220	299
Summerfield[3]	4	7	7	10	8	13	9	16
Orting Hill[3]	54	88	93	136	114	160	147	195
Madsen[3]	132	156	217	251	262	302	331	382

1. Future condition flows were predicted in 1993 assuming no regulatory stormwater runoff controls such as retention/detention and infiltration systems for new development.
2. Flows calculated by King County in March 2000 with HEC-RAS
3. Flows calculated using HSPF
4. 1993 flows reviewed and updated by King County in 1995. Future flows calculated using HEC 1 by Parametrix

Sources: *Cedar River Current and Future Conditions Report (King County, 1993). Comprehensive Storm Water Plan, Maplewood Creek Basin Plan (Parametrix, 1989). City of Renton Surface Water Utility Comprehensive Plan (HDR, 1995).*

2.4.3.5 Lower Cedar River Subbasin

The City has designated a number of subbasins tributary to the Cedar River; however, several of these subbasins were combined in the Cedar River Report. The Arnold, Mt. Olivet, and Cedar River Outfall subbasins were combined into a larger subbasin, called the "Lower Cedar River" in the Cedar River Report; thus, individual studies of these subbasins do not exist. Well-developed storm drainage systems in these areas deliver runoff water directly to the Cedar River.

Hydrology - 1993 Conditions: The lowest reach of the Cedar River is an artificial channel that was constructed to reroute the Cedar River from the Black River to Lake Washington in the early part of the 20th century as a result of the lowering of Lake Washington. The channel is wide and has a gentle gradient, which results in lower velocities that allow for the deposition of excess sediment from upstream sources. Sediment deposits reduce channel capacity and increase the risk of flooding. Much of the area surrounding the lower reach has been developed and includes a portion of the downtown area, a residential neighborhood, the Renton Municipal Airport, some commercial areas, and portions of the Boeing industrial complex.

This subbasin has been urbanized since the early 20th century. Storm drains were most likely installed during development and any subsequent redevelopment. A specific hydrologic analysis has not been performed for the area. Because of the small area, and development which already exists, future flows are not expected to increase from this portion of the City. However, flooding problems in this area may increase as a result of increased flows in the Cedar River and increased sedimentation on the lower reach of the river.

Land use in the Mt. Olivet subbasin, however, is quite diverse. There were two cemeteries, a ballpark, a quarry, an industrial area, a residential subdivision, cleared open land and forested land within the subbasin (HDR, 1995). Land use in the Arnold subbasin is primarily residential.

The subbasin was modeled using HSPF (King County, 1993) to predict peak flows and the capacity of the drainage system to convey the flows. The Cedar River flows were further evaluated by King County in 2000. Storm events were developed from the 2-, 10-, 25-, and 100-year, 24-hour design storm; these flows are shown on **Table 2-7**.

Hydrology – Future Conditions: The Mt. Olivet subbasin recently experienced increased commercial and residential development, so current peak flows are likely to be closer to the estimated "future" peak flows in the Cedar River Report (King County, 1993). However, since the 1993 estimates did not consider stormwater runoff controls such as retention/detention and infiltration systems for new development, they are likely overstated.

2.4.3.6 Tiffany/Ginger Creek Subbasin

The Tiffany/Ginger Creek subbasin drains an area on the southwest side of the Cedar River, upstream of the Arnold subbasin. The major tributary flowing through this subbasin is Ginger Creek. The Tiffany/Ginger Creek subbasin includes the Ginger Creek drainage basin area plus an area drained by several smaller, non-designated streams. The entire area was studied as a part of the Cedar River Report; however, the County study had slight variations in watershed boundary, subbasin delineation, and land use from Renton Land Use Maps. The developed portion of the subbasin includes established drainage systems which discharge into Ginger Creek.

Hydrology - 1993 Conditions: The geography of the Tiffany/Ginger Creek subbasin lends itself to varying land uses. The subbasin contains a low flat area (which is a part the Cedar River floodplain), a steeply sloping area above the flood plain, and a gently sloping plateau area at the top of the basin. Within the city limits, the lower flood plain area has been developed primarily into an industrial area. The steep slopes above this area have remained forested, as has much of the moderately sloping rise to the plateau. The plateau area, both near and beyond the city limits is nearly fully developed with single-family residential homes. **Table 2-7** presents 1993 conditions and future peak annual flows for the subbasin.

Hydrology - Future Conditions: The City of Renton land use plan for this subbasin indicates the possibility of additional low-density single-family residential areas in some lower areas and low- and medium-density single-family residential development in the forested areas. If this development occurs, increased downstream carrying capacity may be required.

The Cedar River Report assumed that future land use will remain similar to the as-built conditions that existed in 1993 or at least slightly larger than the 1993 conditions flows.

2.4.3.7 Maplewood Creek Subbasin

Maplewood Creek is a subbasin of the Cedar River that straddles the eastern Renton city limits. The creek collects flow from a plateau approximately 1,500 feet above its confluence with the Cedar River. The creek consists of two major tributaries that join on the plateau and flow down a steep ravine through the Maplewood Golf Course. The creek is a significant natural resource because of its use as recreation and open space in addition to providing fish and wildlife habitat. Substantial urban development has occurred in the plateau area of the basin, significantly impacting the natural drainage system. The creek is included in the state's 2016 303(d) list for temperature at the confluence with Cedar River.

The Maplewood Creek subbasin has been studied by both the City of Renton and King County. A detailed study of this area - the Comprehensive Storm Water Plan, Maplewood Creek Basin Plan (Parametrix, 1989) - was prepared for the City of Renton in October 1989. It analyzes current (then 1989), future and

future mitigated peak flows for the basin with current and expected land use scenarios. The future land use in this study closely resembles the future land use presented in the City's comprehensive plan, and appears to provide good predictions of future flows. This study also identified existing and future drainage problems and solutions, and recommended development criteria. In addition, King County studied this subbasin as a part of the Cedar River Report in 1993. The resultant peak flow estimates are different between the two documents as the 1989 estimates (Parametrix) were based upon an event-based model (HEC 1), whereas the 1993 plan (King County) used a continuous simulation model (HSPF).

Hydrology - 1993 Conditions: Table 2-7 summarizes the 2-, 10-, 25-, and 100-year peak runoff estimates for 1993 conditions based on the HSPF modeling.

Hydrology - Future Conditions: The Renton Comprehensive Land Use Plan predicts a significant increase in residential development in the subbasin. This increase will also result in a significant increase in runoff (see **Table 2-7**). Note that these increases are likely overstated, as they did not include regulatory stormwater controls (detention) for new development.

2.4.3.8 Other Subbasins

Hydrology - 1993 Conditions: Upstream from the Tiffany/Ginger Creek and Maplewood subbasins are several subbasins that were modeled by King County and included in the Cedar River Report. Several of these subbasins are within the UGB but partially outside of the city limits. These include the Molasses Creek, Madsen Creek, Orting Hills, and Summerfield subbasins. All of these basins have significant amounts of residential development among forested areas. **Table 2-7** presents predicted peak flows for 2-, 10-, 25- and 100-year return periods for these subbasins, in addition to those discussed in previous sections.

Hydrology - Future Conditions: As urbanization and land development continue, increases in peak flows will be experienced within the upper subbasins as a result of increased low-density, residential development.

2.4.4 West Lake Washington Basin

As previously mentioned, portions of the City in WRIA 8 that drain to Lake Washington include the West Lake Washington basin (along with May Creek, the Cedar River, and the East Lake Washington Basin). The overall Lake Washington basin includes most of the 692 square miles contained in WRIA 8 (Kerwin, 2001). The portion of the Lake Washington Basin within the City is approximately 21 square miles, or roughly 3% of the basin.

The West Hill subbasin is the only subbasin in the West Lake Washington basin. This subbasin is partially within the city limits. This highly urbanized subbasin is located along the southern shoreline of Lake Washington and is part of WRIA 8. This basin straddles the city limits along the southwestern shoreline of Lake Washington and includes a portion of unincorporated King County.

Runoff collection from this basin in characterized by natural channels and closed pipe systems. However, virtually all of the runoff is delivered to the Black River Box Culvert, which discharges directly to Lake Washington at the northwest end of the Renton Municipal Airport.

2.4.4.1 Basin Water Quality

The West Hill subbasin has been characterized in the Renton/Lake Washington Pollution Abatement Program. The objectives of this project included improving the quality of runoff generated within the

basin and providing baseline data for future compliance with NPDES stormwater permit requirements. It included a hydrologic analysis based upon annual runoff and sampling and chemical analyses of stormwater and sediment. The project has produced three reports, a Hydrologic Analysis (R. W. Beck, 1993), a Pollution Source Characterization (Herrera, 1993a) and an Implementation Plan (Herrera, 1994). The project was partially funded by an Ecology Centennial Clean Water Fund grant.

2.4.4.2 Basin Hydrology

Hydrology - 1993 Conditions: A hydrologic analysis was performed in 1995 using WaterWorks (HDR, 1995). This single-event model includes an analysis of 1993 land use for the entire 736-acre basin, approximately 40% of which is located within the City. Although most of this basin is residential, the area within the city limits contains almost all industrial and commercial development. The Renton Municipal Airport is located on the eastern edge of the basin and is zoned for industrial use. In addition, a commercial strip is located along Rainier Avenue S. Commercial and industrial land use total about 125 acres. Almost all of the runoff originating within the city limits is collected into storm drains and discharged to the Black River Box Culvert. Additional hydrologic analysis of this basin was done as part of the Renton/Lake Washington Pollution Abatement Program (R. W. Beck, 1993). However, this effort was limited to estimates of annual runoff volume for the purpose of estimating pollutant loading.

Table 2-8 presents the predicted 1993 peak flow values for this area. These estimates did not include any on-site detention facilities for the area.

TABLE 2-8:
PREDICTED PEAK FLOWS (CFS) FOR THE WEST HILL SUBBASIN

	1993			
Subbasin Name	2-Year Peak Flows	10-Year Peak Flows	25-Year Peak Flows	100-Year Peak Flows
West Hill	84	155	196	240

Hydrology - Future Conditions: Except for minor infill, little change in land use is expected in the future. Some of this infill will be commercial structures along major thoroughfares.

2.4.5 BLACK RIVER BASIN

The Black River/Eastside Green River Basin is in WRIA 9 and includes most of the southwestern portion of the City (see **Figure 2-4**). The Black River, which formerly drained Lake Washington, is now part of a system that drains the eastern side of the Green River basin, an approximately 24-square-mile area in the cities of Renton and Kent. The Black River Basin includes the South Renton, Rolling Hills, Panther Creek, Springbrook, and Valley subbasins, which are all located within the city limits. The original Black River Basin was extensively modified when the water level in Lake Washington was lowered. The flows from this area are collected in the Black River Pump Station (BRPS) forebay, then pumped to the Green/Duwamish River. The BRPS regulates flows into the Green River. The pump station also acts as a dam during flooding in the Green River, blocking high flows from the Green River from flooding up into the Black River, Springbrook Creek, and the Earlington Industrial Park in Renton. The BRPS must reduce pumping rates when Green River flow exceeds 9,500 cfs at the Auburn gaging station, per operational procedures and the Green River Interlocal Agreement (R. W. Beck 2007). If flows reach 12,000 cfs, the BRPS may have to completely stop the pumps (R. W. Beck, 2007).

On the valley floor, land use is primarily commercial and industrial, and contains multiple natural wetlands. On the eastern upper plateau, land use is mostly residential with some commercial areas. Significant surface water features include Panther Lake and Springbrook Creek (P-1 Channel) and four of its tributaries: Panther Creek, Rolling Hills Creek and Upper Springbrook and Mill Creeks, which join with Springbrook Creek just south of the city limits. Although the industrial, commercial, and residential areas contain piped surface water collection facilities, they all discharge to natural or modified channels. The South Renton subbasin, however, is drained almost entirely by a closed pipe system that discharges directly to the forebay for the BRPS.

Upland areas in the plateau of the basin are underlain by geologic deposits that force groundwater horizontally and produce seeps in the shallow aquifer that support summer baseflow in Springbrook Creek. The high amount of impervious surface area limits infiltration potential and redirects water overland, causing high peak flow rates. Springbrook Creek (with a mean annual flow of 10 cfs) contributes to water quality impairment, as proportionate to flow, in the mainstem Green/Duwamish River (with a mean annual flow of 1,530 cfs).

2.4.5.1 Basin Water Quality

Black River is included in the state's 2016 303(d) list for dissolved oxygen, bioassessment, and fecal coliform bacteria at the confluence with Green River and Duwamish River. Water quality samples were taken for the Black River Basin Water Quality Management Plan (Herrera, 1993b) and for the Comprehensive Fisheries Assessment of the Mill Creek, Garrison Creek and Springbrook System (Harza, 1995). Copper and lead were found to be below detrimental levels, but zinc measurements ranged from 32 to 154 micrograms per liter in Springbrook Creek (Harza, 1995). Zinc levels at 10, 9, and 103 micrograms per liter adversely impact 7 gram rainbow trout, cutthroat trout, and chinook fry, respectively (Harza, 1995). Water quality conditions in Springbrook Creek are poor with a Water Quality Index (WQI) score of 36 out of 100 in water year 2018 (King County, 2020).

Springbrook Creek is listed on the state's 2016 303(d) list for bioassessment, dissolved oxygen and fecal coliform, and it is listed as "impaired" for temperature. Dissolved oxygen is usually highly correlated with temperature and has become a major limiting factor for salmonids in this watershed. Temperature increases can be attributed to impaired hydrologic and hydraulic functions of the basin, reduced flows to baseflow, reduced flows from lack of summer snowmelt, and decreased forest shading, as well as increased climate temperatures. Water quality testing of Mill, Garrison, and Springbrook Creeks was conducted by Abbey Road Group in the fall (September) and spring (April) from fall 2014 through spring 2019. Results of this testing indicate increased temperatures, decreasing levels of dissolved oxygen, decreasing pH, and elevated levels of fecal coliform bacteria at different sampling locations within all three creeks. Measurements of turbidity decreased slightly and all TSS and biochemical oxygen demand (BOD) samples were within the acceptable range.

2.4.5.2 Basin Fish Habitat

Juvenile coho, chum, winter steelhead, and cutthroat have been captured at numerous locations throughout the subbasin (Harza, 1995) and utilize habitat primarily for migration. Although Springbrook Creek has poor fish habitat, there are upper reaches of some of the tributaries to Springbrook Creek that do provide good fish habitat. As recently as 2011, adult chinook have been observed spawning in Upper Springbrook Creek. The creek has been highly modified and is choked with invasive reed canary grass and has little instream habitat structures and no large woody debris. The BRPS is a partial fish passage barrier, but the combination of a fish ladder and a fishway chute aids salmonids in upstream passage. Fish migrating downstream are diverted around the pumps using an air-lift pump to raise them to the

downstream water levels (King County, 2000). The Black River Water Quality Management Plan (Herrera, 1993b) notes that the existing conditions of Springbrook Creek lack suitable spawning habitat capacity due to degraded water quality during summer months. The low gradient of the creek results in reduced flow velocities that allow fine sediment to settle out in the creek bed, reducing potential spawning habitat. There are tributaries to Springbrook Creek that have good fish habitat. Upper Springbrook Creek, whose headwaters originate in Renton's Springbrook Springs Watershed located on the eastern plateau, has excellent water quality. The drainage basin land use consists mostly of low density residential (R-1 and R-4) and resource conservation (RC). A significant tree canopy along the creek corridor in combination with cool spring water helps to lower water temperatures in the creek. In addition, the creek's steep gradient facilitates the recruitment and deposition of gravel along the creek channel as it meanders down to the valley floor, which provides good spawning habitat.

2.4.5.3 Basin Planning Status

Ecology, King County and the Municipality of Metropolitan Seattle (Metro) coordinated the Green-Duwamish Watershed Nonpoint Action Plan in January 1991. The goal of this plan was to minimize nonpoint source water pollution, protect beneficial uses, and enhance water quality in this watershed. This plan was last updated in 2002 (King County).

The area studied in the Green-Duwamish Watershed Nonpoint Action Plan extends from Howard Hanson Dam to Elliott Bay, an area of nearly 250 square miles (King County, 2002). Portions of the City lying in this area have undergone urbanization since the early 1990s. A number of priority concerns were addressed in the plan. Stream channel erosion from construction practices due to rapid urbanization appears to be one of the biggest concerns in this portion of the basin.

The Black River Basin Water Quality Management Plan (Herrera, 1993b) was prepared for the City to identify existing (as of 1993) and future water quality problems within the basin. The study area for this plan includes areas of Renton and unincorporated portions of King County east of Renton. The project was partially funded by an Ecology Centennial Clean Water Fund grant.

A parallel and related process to the Black River Basin Water Quality Management Plan is the development of the East Side Green River Watershed Project Plan and Environmental Impact Statement (ESGRWP) (R. W. Beck, 1997a). This plan was developed through the cooperation and involvement of the jurisdictions in the basin, including the City of Kent and King County. The plan was updated in 2007 (R. W. Beck). The hydrologic analysis was performed using the HSPF computer program. Results of the hydrologic analysis are shown in **Table 2-9**.

The Green/Duwamish Ecosystem Restoration Program (ERP) is a collaboration between WRIA 9 jurisdictions in the valley including Renton, Tukwila, Kent, Auburn, King County and USACE to improve salmon habitat in the basin. The program has resulted in several habitat projects that have been completed in Kent and King County. The City and USACE recently completed an ERP project that restored approximately 1,000 feet of spawning habitat along Upper Springbrook Creek.

The Flood Insurance Rate Map (FIRM) for the area upstream of the Black River Pump Station, including tributary areas to Springbrook, Mill, Rolling Hills, and Panther Creek, was remapped to show a revised preliminary floodplain delineation (i.e., not made effective by the Federal Emergency Management Agency [FEMA]) (NHC, 2005; R. W. Beck, 2006). Subsequently, in 2007, FEMA issued preliminary DFIRMs for King County. These new draft maps were based on levees that could demonstrate meeting the criteria for certification. Because a significant number of the levees on the Green River could not be certified (non-accredited), FEMA would not consider the levees as providing flood protection and issued revised maps to show the Renton Valley entirely within the 100-year regulated floodplain. Some areas

were mapped with flood depths up to 12 feet. FEMA developed the revised maps without conducting any detailed hydraulic analysis and simply extended the elevation of the floodplain within the main channel of the Green River across the valley floor.

King County and Green River valley cities including Renton, Kent, Tukwila and Auburn disagreed with the methodology that FEMA used to develop the updated maps. In response, the County retained Northwest Hydraulic Consultants, Inc. to develop a model to predict flooding in the Green River valley based on multiple levee failure scenarios. The resulting maps show significantly less area in the floodplain. Areas flooded to a depth of 12 feet based on the revised FEMA maps were shown flooded to a depth of 6 feet in the maps. The County maps became available to the public for review and comment in November 2010 in preparation for FEMA approval and subsequent adoption in 2011. However, in the spring of 2011, FEMA announced a policy change regarding non-certified levees, which has put the adoption of the revised DFIRM for the Green River Valley on hold. In December 2011, FEMA developed a proposed revised policy that included new methodologies to better reflect the true flood risk of non-accredited levees on the floodplain. FEMA completed the public review/comment processes in 2013 and as a result, developed analysis and mapping procedures for non-accredited Levee Systems also known as Levee Analysis and Mapping Procedure (LAMP).

Non-accredited levee systems are those “that do not meet the National Flood Insurance Program (NFIP) regulatory requirements of 44 CFR 65.10… and that are not shown on a FIRM as reducing the base flood hazard” (FEMA, 2018). Many non-accredited levee systems on the Green River are located in the City of Kent. Some of these levees also provide flood protection for parts of Renton. In 2010, Kent began an effort to certify and/or reconstruct up to 12 miles of levees at a cost of approximately $100M. Once the levees are certified, the intent is for FEMA to issue new DFIRM that show the Cities of Kent and Renton as protected by levees and outside the 100-year floodplain. In addition to the various levee projects occurring in Kent, the KCFCD finalized the scoping summary report for the Lower Green River Corridor Flood Hazard Management Plan as a part of the Environmental Impact Study (EIS) associated with the plan in June of 2019. The purpose of this plan is to implement an integrated long-term approach to reduce flood risk within the Lower Green River Corridor, which extends into the southwestern portion of Renton. The plan is intended to reduce flood risk while balancing other important basin objectives such as improving fish habitat and supporting the economic prosperity of the region. Communication and coordination between the City of Renton and the KCFCD has been ongoing throughout the preliminary stages of formulating the Flood Hazard Management Plan.

2.4.5.4 Howard Hanson Dam and Potential Flooding from Green River

Although now operating at full capacity, concerns over reduced storage capacity due to seepage problems at the Howard Hanson Dam and potential flooding of the Green River Valley caused the City to expend significant resources in flood preparedness between 2009 and 2011. In 2009, USACE notified the City of Renton and other Green River Valley cities of several sinkholes that had formed in the right embankment of the Howard Hanson Dam after a significant rain event in January 2009. During the event, USACE decided to hold back water in the dam to prevent downstream flooding of the Green River Valley. The formation of the sink holes as well as sediment laden water that was observed flowing from the dam’s drainage tunnels, indicating seepage through the material in the right embankment, led USACE engineers to believe the right embankment could fail.

To minimize risk of failure after this event, USACE decided they would need to reduce storage capacity, which could result in the release of more water than usual from the dam during extreme rain events and result in a higher risk of flooding in parts of the City in the Green River valley. In coordination with the Corps, King County, and other valley cities, the City implemented pre-disaster preparations and

preventative measures in anticipation of higher than usual flows in the Green River and continued these measures through 2010. To make the dam fully operational, USACE completed the installation of a seepage barrier or grout curtain and other improvements to the drainage in the abutment in the fall of 2011. Prior to completing this work, engineers and geologists ran a series of tests in the summer to gather data to evaluate the effectiveness of the repairs. Based on the analysis of the data, USACE concluded that the dam can now operate at the full design pool elevation (1,206 feet) with low risk to the dam.

Although the dam is fully operational, it does not eliminate the risk of flooding in the Green River Valley. The dam, in conjunction with downstream levees serve only to reduce the risk of flooding and as such the Corps is working with local communities including the City to prepare for the risk of flooding by using the best available information (USACE, 2019).

2.4.5.5 Basin Hydrology

Because it has such a large percentage of impervious area, the Black River Basin has high peak flows and short-duration hydrologic response to precipitation. Hydrology for individual subbasins is detailed in the sections that follow.

TABLE 2-9:
PREDICTED PEAK FLOWS AT SELECTED LOCATIONS (CFS) FOR THE BLACK RIVER BASIN

Subbasin Name	Source (& basis for existing land use)	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows[1]		100-Year Peak Flows[1]	
		2003 / 2007	Future	2003 / 2007	Future	2003 / 2007	Future	2003 / 2007	Future
South Renton (SW 7th System)	Gray & Osborne (2003)	N/A[2]	122	N/A[2]	165	N/A[2]	185[6]	N/A[2]	213
Springbrook Creek (at BRPS)[3]	ESGRWP (2007)	457	756	931	1053	1276[4]	1251	1197	1343
Panther (at SW 23rd St.)[3]	ESGRWP (2007)	67	119	130	149	152	174	197	226
Rolling Hills (at I-405)[3]	ESGRWP (2007)	N/A[5]	N/A[5]	148	197[4]	199[4]	186	261	330
Valley Subbasin (Springbrook Creek at SW 23rd St.)	ESGRWP (2007)	365	612	769	845	900	1003	1013	1139

1. These flows reflect a future "conveyance" event. There is also a "storage" event that reflects pumping limitations on the BRPS. For more information, see ESGRWP Supplement (R. W. Beck, 2007).
2. Flows were estimated for future conditions only.
3. Flows are based on frequency analysis performed on Springbrook Creek at the BRPS. Individual frequency analyses have not been done.
4. Flows are higher because this event coincides with high flows in the Green, forcing BRPS to operate at a reduced rate, and thus affecting the peak rate.
5. Peak flows for the 2-year recurrence interval were not available.
6. A subsequent report prepared by GHD modeled the 25-year future condition flow at 175.0 (Scenario 2A).

Source: *ESGRWP Supplement* (R. W. Beck, 2007) and *SW 7th Street Storm Drainage Improvement Project* (Gray & Osborne, 2003)

2.4.5.6 South Renton/SW 7th Subbasin

The South Renton subbasin, also called the "SW 7th Basin," is located in the former floodplain of the Black River. This subbasin is generally flat and includes much of the southern portion of the core area of Renton, a small residential sector, and a large area of commercial and industrial facilities.

Surface water in the basin is generally collected and conveyed in a south and west direction to reach a major trunk storm drain along SW 7th Street that discharges to Springbrook Creek. Limited pipe capacity has caused significant flooding along SW 7th Street. The City has begun a phased approach for solving these problems.

To date, pipe improvements have included two projects. First, a new 60-inch-diameter pipe was installed between Lind Ave SW and a new outfall at Naches Ave SW along with a header vault approximately 550 feet east of Lind Ave SW. The 60-inch-diameter pipe was put in as a parallel system to increase system capacity (parallel to a 54-inch-diameter pipe). The header vault was installed to facilitate connection of another pipe extension under the second project. The second project included a new 60-inch pipe extension from the header vault to Shattuck Ave SW. This system parallels an existing 24-inch pipe (with the exception of a 150-foot gap at Hardie Avenue, which only contains the 60-inch pipe).

Hydrology - 2003 Conditions: This subbasin is approximately 538 acres. Current condition predicted flows for this subbasin were not estimated as part of the most recent modeling (Gray & Osborne, 2003).

Hydrology - Future Conditions: Future condition predicted flows are presented in **Table 2-9**. A subsequent study by GHD included additional modeling for the 25-year storm, which provided similar results to the 2003 study. Note that this subbasin is already highly developed; therefore, current condition flows are likely very similar to future condition flows.

2.4.5.7 Springbrook Creek Subbasin

Springbrook Creek is a long creek within the East Side Green River watershed, draining much of the area of south Renton. The Black River/Springbrook Creek is located at river-mile 11 of the Green River. Much of the Black River/Springbrook Creek land is urbanized. Development generally extends to the streambank that limits the width of the riparian corridor. Much of the subbasin known as the Springbrook subbasin within the City of Renton is drained by a fork known as "Upper Springbrook Creek" in the ESGRWP (R. W. Beck, 1997a). This fork flows northwesterly underneath SR-167 and then joins the mainstem of Springbrook Creek just south of the city limits. Springbrook Creek then flows northward through Renton in the Valley subbasin where it eventually joins the Black River. The majority of the Springbrook Creek subbasin lies in between Highway 167 and Panther Lake. Less than a sixth of this is within the current Renton city limits.

The portion of the Black River Basin known as the Springbrook Creek subbasin has a portion within the city limits that consists of open forested land known as the City of Renton watershed. Existing riparian vegetation is typically herbs, shrubs, and deciduous trees with much of the ecological function highly impaired. The area beyond the city boundaries, which drains into the City, has been partially developed into single-family residential neighborhoods. However, the portion of the Springbrook Creek subbasin within the City's watershed will remain forested.

Hydrology - 2007 Conditions: This subbasin is approximately 574 acres, with 86 acres of effective impervious area (EIA) (R. W. Beck, 2007).

Table 2-9 presents 2007 conditions and future peak flows expected as a result of changing land use for the Springbrook Creek subbasin.

Hydrology - Future Conditions: In the future, this subbasin is expected to continue to be developed as a residential area, with some areas being developed as commercial development and multifamily housing. The estimated future EIA is 23%, an increase of 46 acres, with most of the conversion occurring outside the City (R. W. Beck, 2007).

2.4.5.8 Panther Creek Subbasin

The Panther Creek subbasin straddles the Renton city limits. Only a small, lower portion of the subbasin is within the city limits, between the Valley and Rolling Hills subbasins. This portion of the subbasin contains a long, narrow wetland area that parallels SR 167, known as the Panther Creek Wetland. This wetland extends along the east side of SR 167 from near I-405 at the north to Panther Creek (near S 37th Street) at the south. The SW 23rd Street drainage channel originates at the Panther Creek Wetland. Most of the Renton portion of the subbasin is downstream, within the "P3" and "P4" subbasins, as analyzed by the ESGRWP (R. W. Beck, 1997a).

Hydrology - 2007 Conditions: This subbasin is approximately 1,700 acres, with 372 acres of EIA (R. W. Beck, 2007).

The peak flows for 2007 conditions from this subbasin are presented in **Table 2-9.**

Hydrology - Future Conditions: Most of the future development will include converting open space to single-family residences. The City of Renton Comprehensive Plan (2015) has zoned the entire area as residential, except for commercial mixed used and areas designated as environmentally sensitive. It is estimated that an additional 249 acres of EIA will exist in the future, reflecting a 67% increase in impervious area (R. W. Beck, 2007). This growth is expected to be evenly distributed between the City portion of the basin and the upper plateau in Kent.

The future predicted peak flows for the basin, presented in **Table 2-9**, show large increases for frequent storm events and smaller increases for rare events. The increases would be larger, but the flows pass through the large Panther Creek Wetland, which helps attenuate storm peaks.

2.4.5.9 Rolling Hills Subbasin

The Rolling Hills subbasin is similar geographically to the adjacent Tiffany/Ginger Creek subbasin, although flows from this subbasin go west to Panther Creek and the BRPS rather than north to the Cedar River. The Rolling Hills subbasin contains a small stretch of low-lying areas in the Green River valley floor, a moderate to steeply sloping region above the valley, with two incised canyons, and a gentler sloping plateau area at the top of the basin. The lower flat area has been developed into a commercial-industrial belt and I-405 transportation corridor. The slopes above most of this area have been developed into multifamily housing units and single-family homes except for the steeply sloping canyons. Much of the upper portion of the basin has also been developed into single-family homes.

Rolling Hills Creek is routed under I-405 via a parallel pipe system and discharges into the Panther Creek Wetland and a channel that flows south along the east side of SR-167. The channel enters a box culvert that conveys flows west under SR-167. This culvert connects to a pipe system along SW 19th Street, which conveys flow west until it discharges into Springbrook Creek. During high-flow periods, the channel upstream from the SR-167 box culvert can overtop and spill out into the Panther Creek Wetland.

Hydrology - 2007 Conditions: This subbasin is approximately 926 acres, with 293 acres of EIA (R. W. Beck, 2007). Predicted 2007 condition peak flows are presented in **Table 2-9**.

Hydrology - Future Conditions: The Rolling Hills subbasin will remain in a similar land use pattern to what existed in 2006 according to the City of Renton Comprehensive Plan (2006). The estimated future EIA is 50%. This reflects an additional 167 acres of EIA (R. W. Beck, 2007). **Table 2-9** presents the expected changes in peak flows.

2.4.5.10 Valley Subbasin

The Valley subbasin is a flat part of the Green River Valley. Its dominant drainage feature is Springbrook Creek, which flows south to north and discharges into the BRPS forebay. While flowing through this subbasin, Springbrook Creek joins with Panther Creek, at SW 23rd Street; Rolling Hills Creek, at SW 19th Street; and the SW 7th system. Water surface elevations in Valley subbasin are impacted by peak flows, storage capacity of the adjacent wetlands; the conveyance capacity of the stream channels, culvert crossings, and bridges; and the operation of BRPS, which depends on the flow in the Green River. Most of the open land is cleared flat lowland, with scattered wetland areas. The developed area is over 90 percent commercial or industrial, with much of development large warehouse type structures.

Hydrology - 2007 Conditions: Flows in this subbasin include flows from Garrison Creek, Mill Creek, Panther Creek, Springbrook Creek, and the Rolling Hills subbasin, which all converge within the Valley subbasin. **Table 2-9** presents estimated peak flows at various locations in the valley.

Hydrology - Future Conditions: The dominant system in this subbasin, Springbrook Creek, will be subject to higher peak flows in the future due to upstream development in both Renton and Kent. Peak flow increases are greater for the smaller events such as the 2-year compared to projected flow increases for the more rare events. This is due to the significant storage attenuation for the more severe flood events provided by the valley wetlands.

2.4.6 Soos Creek Basin

The Soos Creek Basin is a large basin that lies between the Cedar River and Black River basins and is tributary to the Green River, which places it in WRIA 9. A portion of the basin which includes Big Soos Creek is located in the very southeast edge of the present Renton city limits, as shown **in Figure 2-1**, and only 17 acres of the basin are actually within the City. A larger portion of the basin is located within the UGB; however, the Big Soos Creek flows in a southerly direction, away from the current city boundaries, and therefore, flow changes within Big Soos Creek are not likely to impact the City.

Development in the upper portion of the basin is almost entirely single-family and multifamily residential with a fairly large area of the basin identified as wetlands and related habitat. In addition, floodplains are found in the Soos Creek Basin.

2.4.6.1 Basin Water Quality

No water quality data was available within the city limits in the uppermost portion of the basin. River-mile 10.5 is as far upstream as monitoring has been conducted. According to a Habitat Limiting Factors and Reconnaissance Assessment Report prepared for WRIA 9 (King County, 2000), dissolved oxygen in Big Soos Creek was observed to be below rearing and incubation standards in some measurements; many of the excursions occurred during defined salmon incubation periods. Big Soos Creek, downstream of the City jurisdictional limits, is on the state's 2016 303(d) list for dissolved oxygen and bacteria.

2.4.6.2 Basin Fish Habitat

As mentioned in the WRIA 9 Limiting Factors report (King County, 2000), there is a general lack of habitat information for the Soos Creek Basin, especially since the mid-1980s. Despite the lack of information, the technical advisory group for the WRIA 9 Limiting Factors report was able to conclude:

- There is a lack of large woody debris throughout the streams in the Soos Creek basin.
- The increased frequency of peak flows attributed to increased impervious surfaces has been at least partially responsible for degrading salmon habitat through channel incision and excessive sedimentation. This degradation limits successful incubation by scouring and smothering redds and limits rearing by reducing channel complexity.

2.4.6.3 Basin Planning Status

The Soos Creek Basin Plan, adopted in January 1992 (King County), recommended a combination of tools for basin management aimed at correcting surface water problems and providing protection for the basin's water resources. Among the recommended tools were various land use controls, the Basin Steward Program, capital improvement projects, and a basin management evaluation program. Ecology, in collaboration with local partners, is developing a plan to control pollutants in the Soos Creek watershed. The plan will set two TMDLs for pollutants of concern: a multi-parameter TMDL addressing dissolved oxygen, temperature, and bioassessment, and another TMDL for fecal coliform. Studies were initiated in 2006 for temperature and dissolved oxygen, in 2011 for bioassessment, and in 2012 for fecal coliform; and the TMDLs are expected to be complete in 2022 (Ecology, 2020d; Ecology 2020e). A detailed discussion of these TMDL standards is provided in Section 4.4.6.

2.4.6.4 Basin Hydrology

Hydrology - 1992 Conditions: Development in the upper portion of the Soos Creek basin is almost entirely single-family residential. The Soos Creek Basin Plan estimates 1992 condition and future peak flows at the point where Big Soos Creek crosses Lake Youngs Way at the edge of the urban growth boundary. These flows are presented in **Table 2-10**.

TABLE 2-10:
PREDICTED PEAK FLOWS (CFS) FOR THE SOOS CREEK BASIN

	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
Subbasin Name	1992	Future	1992	Future	1992	Future	1992	Future
Big Soos Creek	50	78	81	120	N/A	N/A	124	178

Source: *Soos Creek Basin Plan (King County, 1992)*

Hydrology - Future Conditions: As shown in **Table 2-10**, full buildout in the upper Soos Creek subbasin will cause about a 50% increase in peak flows. Land use is expected to remain similar to the present (1992), primarily residential. It is noted however, that the increases may be overstated, because the prior modeling effort did not consider stormwater runoff controls such as retention/detention and infiltration systems for new development and redevelopment.

2.4.7 DUWAMISH RIVER BASIN

The Duwamish River Basin is located in the northwest portion of the City. It is a small basin that discharges directly to the Duwamish/Green River. The Duwamish River Basin is part of the Green River Watershed. Impacts of river channelization are apparent in the estuary. Estuaries are extremely important to habitat rearing and outmigration of juvenile salmonids. River channelization in this area, including ditching, draining, dredging, and filling, has destroyed the estuary area.

The entire basin consists of approximately 61 acres. The portion of the basin in the City includes a large quarry/gravel pit. Most of the area outside of the City is residential and is bisected by Martin Luther King Jr Way S. There is no hydrologic flow or water quality information for this subbasin.

SECTION 3
CURRENT SURFACE WATER MANAGEMENT PROGRAM

3.1 GENERAL DESCRIPTION

Utility resides within the Utility Systems Division of the Public Works Department. **Figure 3-1** presents the organization of Utility in relation to other entities within the City that provide support to Utility. The City is governed with a Mayor-Council form of government that is elected by and accountable to its citizens.

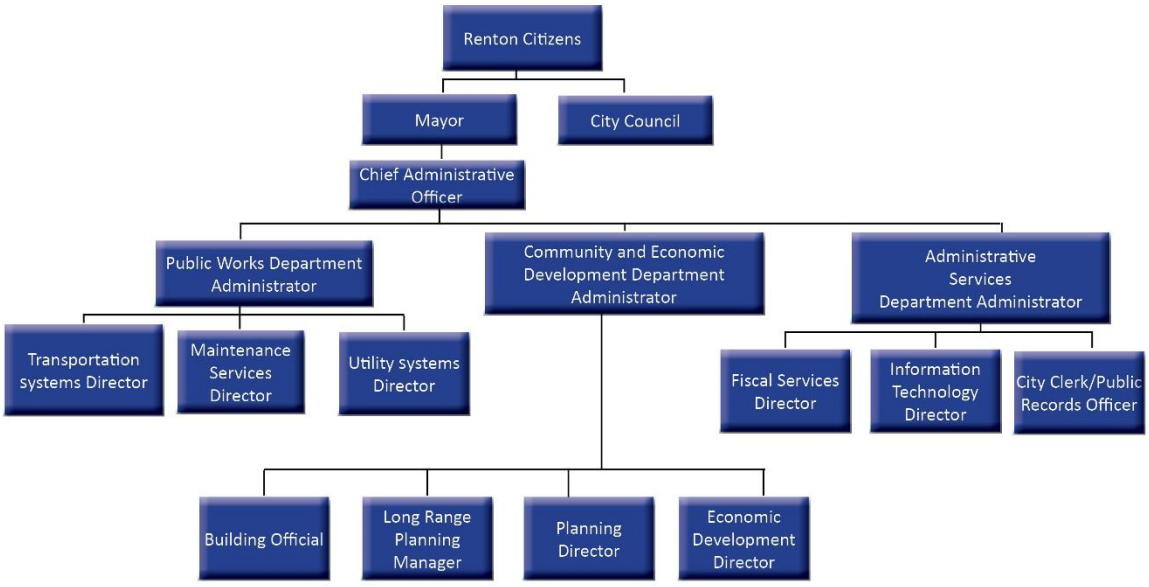


FIGURE 3-1. SURFACE WATER UTILITY SUPPORT ORGANIZATION CHART

The Mayor is the head of the executive branch of government and provides general supervision over the various City departments. The Chief Administrative Officer is appointed by the Mayor to supervise the departments and assist with day-to-day operations. The City Council forms the legislative branch and is principally responsible for making policy. Not all City departments that provide support to Utility are shown on the chart. For example, Human Resources and Risk Management provide hiring, benefits, insurance, and other support to the utility, but are not included. The support they provide is not directly related to surface water management activities. **Figures 3-2** and **3-3** show more detail about the groups within Public Works and Community and Economic Development that are directly and indirectly involved in Utility program support.

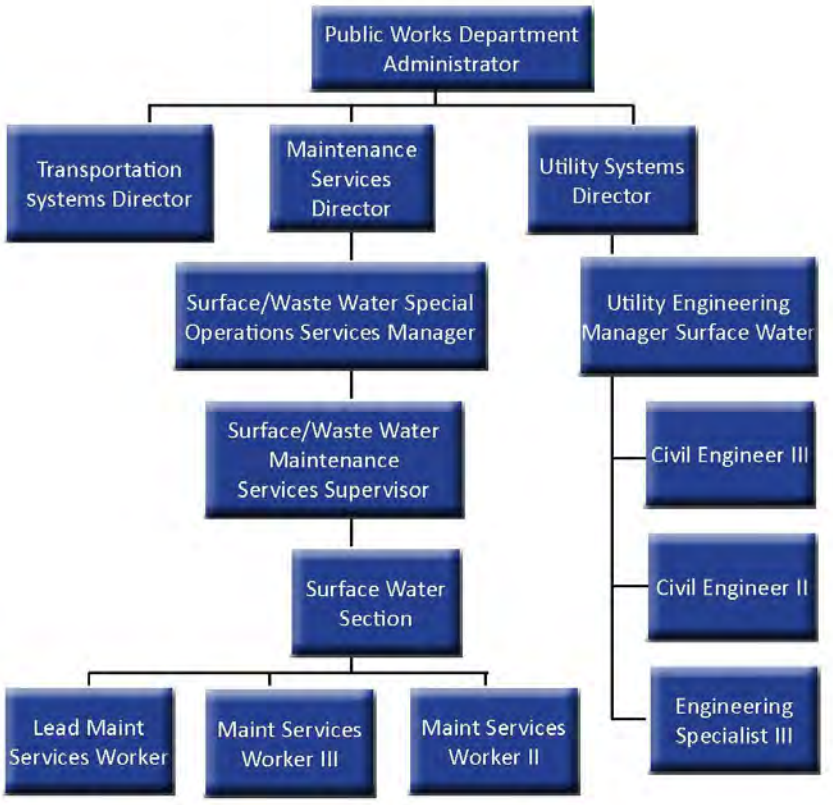


FIGURE 3-2. SURFACE WATER STAFF WITHIN PUBLIC WORKS DEPARTMENT

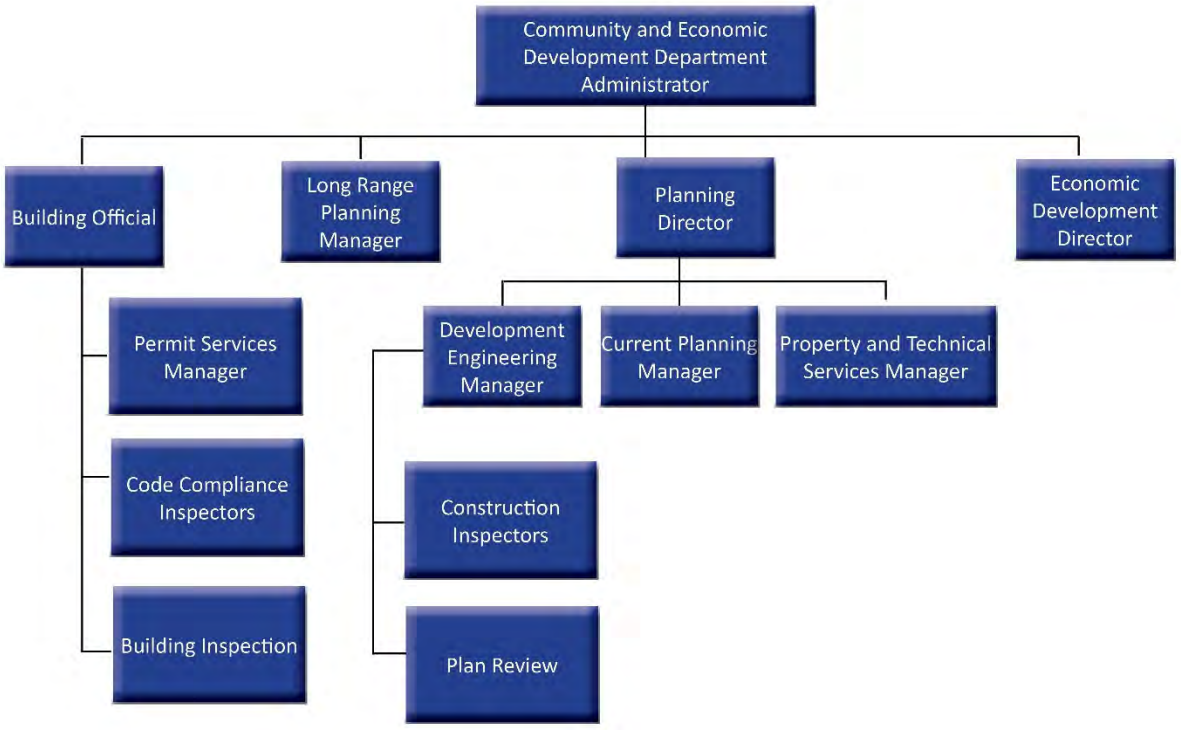


FIGURE 3-3. COMMUNITY AND ECONOMIC DEVELOPMENT DEPARTMENT ORGANIZATIONAL DETAIL

Table 3-1 shows the surface water program elements implemented by Utility. Many of these services are also coordinated with different work groups within the City organizational structure and are discussed in more detail below.

TABLE 3-1:
UTILITY SURFACE WATER PROGRAM ELEMENTS

Category	Program Elements	Description
Engineering, Planning, Compliance, and Coordination	Planning	Participate in long-range planning (i.e., Comprehensive Planning) and assist with development of annexations and area plans.
	Plan Review	Review surface and stormwater components of new development plans as needed.
	Coordination with Other Jurisdictions/Agencies	Participate in regional and local forums to plan and implement cross-jurisdictional initiatives such as flood control, salmon recovery, and water quality improvements.
	Technical Assistance and Coordination	Provide surface and stormwater technical assistance and coordination with other City departments and outside groups such as the Cedar River Council and WRIA 8 and WRIA 9.
	Regulatory Compliance	Responsible for compliance with local, state and federal codes, laws and permits related to surface and stormwater.
	Public Education and Involvement	Develop and provide public education and outreach on surface and stormwater related topics.

TABLE 3-1:
UTILITY SURFACE WATER PROGRAM ELEMENTS

Category	Program Elements	Description
	Storm System Inventory	Maintain and update stormwater system inventory.
	Drainage Problem Inventory	Investigate and track drainage complaints.
	Capital Projects	Develop and implement surface and stormwater capital projects.
	Flood Hazard Monitoring and Response	Conduct pre-event monitoring and preparation, post-flooding recovery and assistance during flood emergencies.
	Community Rating System	Implement City's community rating system to reduce flood risk and flood insurance premiums for property owners.
Inspection, Operations and Maintenance	Illicit Discharge Detection and Elimination	Respond to spills. Identify, track and coordinate removal of illicit discharges.
	Inspection	Inspect new construction, conduct CCTV on pipes, conduct public and private drainage system and facility inspections.
	Cleaning	Conduct drainage system cleaning (i.e., pipes, ditches, catch basins, facilities, etc.)
	Repairs	Conduct drainage system repairs (i.e., pipes, ditches, catch basins, facilities, etc.)
	Construction	Construct new drainage system elements (i.e., pipes and catch basins).
	Vegetation Maintenance	Conduct vegetation maintenance on City rights-of-way, easements, and at City-owned water, wastewater and surface water facilities.
	Emergency Response/customer service	Respond to emergencies such as flood events, drainage pipe breaks, etc. and customer complaints.
Administration	Utility Billing	Prepares and mails utility bills and processes payment collection.
	Information Technology	Telecommunications, computer equipment, and information services operations.

This section includes a description of Utility program elements, including the 2015-2019 expenditures, staffing levels, and the specific City organizations that perform each service. Utility services are provided by the following departments, divisions, and sections:

- Public Works Department, Utility Systems Division, Surface Water Utility Engineering Section.
- Public Works Department, Maintenance Services Division.
- Community & Economic Development Department, Development Engineering and Planning Divisions.

- Administrative Services Department.

As shown in **Table 3-1**, there is significant coordination between Utility and these departments. These interactions are further described below. Some examples include: Utility supporting the Community & Economic Development Department to address surface water issues relating to large master planning areas or annexations, assisting with plan review on large projects, assisting in public education and involvement associated with stormwater, coordinating with the Maintenance Service Division to ensure that maintenance programs and frequencies are meeting regulatory requirements, and coordinating with the Finance and Information Services Department associated with utility billing.

There are a total of 25.15 full-time employee (FTE) surface water positions as of December 2020.

Sections 3.2 through 3.4 describe the surface water program elements performed within various Utility programs. Section 3.5 describes management activities of the Utility. Section 3.6 provides a summary including a cost breakdown between the various programs and the number of hours within each. The hours are based on the 2015-2019 actual timesheet data and do not include the unfilled positions or time off work.

3.2 ENGINEERING, PLANNING, COMPLIANCE, AND COORDINATION

Utility conducts several work activities related to engineering, planning, compliance, and coordination. These work elements are often done in collaboration with other City Departments or work groups and sometimes with outside organizations. The following work elements comprise the engineering, planning, compliance, and coordination category:

- Capital Projects
- Planning
- Plan review
- Technical assistance and coordination
- Coordination with other jurisdictions/agencies
- Regulatory compliance
- Public education and involvement
- Storm system inventory
- Drainage problem inventory
- Flood hazard monitoring and response
- Community Rating System (CRS)

3.2.1 CAPITAL PROJECTS

A significant amount of the Utility Engineering Section's time is spent in the design and construction management of capital improvements. Engineering staff are responsible for contract management for engineering design and construction, and development of capital project solutions to surface and stormwater system problems. Additionally, small engineering projects are sometimes designed in-house

by engineering staff depending on the size and complexity of the project. Additional capital projects activities are construction inspection on the surface water component of City projects completed by the Development Services Department, and capital purchases funded from the Maintenance Services Division.

3.2.2 PLANNING

Planning activities include CIP planning and stormwater grant applications. Utility also provides assistance with long-range plans such as the City Comprehensive Plan, area plans, master plans, large annexations, and providing solutions to existing and future surface water management problems. Planning expenses are incurred in the Utility Engineering Section when staff time is charged to planning activities.

3.2.3 PLAN REVIEW

Plan review for surface and stormwater-related components of new development within the city limits is completed by staff in the Planning Division, with assistance on an as-needed basis from the Utility Engineering Section. Plan review may include technical assistance related to compliance with City surface water codes and drainage manual.

3.2.4 TECHNICAL ASSISTANCE AND COORDINATION

Internal technical assistance is provided by the Utility Engineering Section to assist and coordinate with other City departments. The assistance may include technical support related to surface water management in other City Departments, Divisions, and Sections. Transportation Services and Community Services (Parks Division) also often request surface water technical assistance to remedy problems. Assistance includes internal meetings to discuss WSDOT Coordination, FEMA disaster assistance related to surface water issues, and regional disaster preparation.

External technical assistance is also provided to public-private forums such as the Cedar River Council and WRIA 8 and WRIA 9 Forums and associated committees, and the governmental organization, King County Drainage District No. 1. This type of assistance is limited to as-needed customer service efforts completed by the Utility Engineering Section and the Maintenance Services Division.

3.2.5 COORDINATION WITH OTHER JURISDICTIONS/AGENCIES

Utility Engineering Section staff routinely coordinate with outside jurisdictions on activities including, WRIA 8 and 9 planning, coordination with King County for Flood Hazard Management and the KCFCD, and support related to WSDOT activities. Staff also coordinate with FEMA and USACE on emergency response, post-flood events to repair facilities, and flood hazard reduction associated with the Green and Cedar Rivers. Because of shared borders with the cities of Kent, Tukwila, and Newcastle, the City routinely works with these neighboring jurisdictions to address flooding, water quality, and habitat issues. A more detailed discussion of City coordination efforts with WSDOT and the KCFCD is included in Section 5.

The City also collaborates with local organizations including the Cedar River Council (CRC) and special purpose districts, such as King County Drainage District No. 1 (District).

The CRC is a group of stakeholders who participate in monthly discussions to share opinions and concerns about issues regarding the health of the Cedar River. CRC membership cultivates collaboration

among a variety of citizens, including basin residents and representatives of community groups, businesses, and local, state, federal, and tribal governments.

The District was formed in the early 1900s for the specific purpose of maintaining drainage ditches and canals that were created to support the farming community located in the Green River Valley primarily within the jurisdictions of Kent and Renton. Within Renton, the District maintains a 40-foot right-of-way along Springbrook Creek between SW 43rd Street and the Black River Pump Station. The District collects an ad valorem tax on properties in the valley and uses the revenue to provide maintenance of the Springbrook Creek right-of-way and provide grant money for local jurisdictions to use for flood control improvements along the creek.

3.2.6 Regulatory Compliance

Utility regulatory activities include development of new city surface water codes and/or design guidelines (e.g., Surface Water Design Manual), and compliance with the municipal NPDES permitting requirements, and city, state, and federal laws and ordinances. Section 4 of this Plan describes surface and stormwater regulatory requirements.

3.2.7 Public Education and Involvement

Public education and involvement includes providing surface water public education literature through the Customer Services counter, discussing runoff codes with developers, and meeting with the public at Council Utilities Committees. Utility also maintains website information related to NPDES Permit requirements, illicit discharges and spill reporting, surface water maintenance recommendations, flooding emergencies information, watersheds, car washing, storm drain marking, and salmon recovery activities. Utility provides an education and outreach program and public involvement and participation program to meet the NPDES Permit requirements. Utility staff also occasionally present to students when engaged by schools or teachers.

3.2.8 Storm System Inventory

The Utility continually updates its storm system inventory to ensure accurate GIS mapping to improve customer service to the public, developers, engineers, and other City departments. Updating the storm system inventory mapping is an activity conducted within the Utility Engineering and Maintenance Services Surface Water Section. Maintenance staff provides GPS coordinates and redlines maps for Utility Engineering staff to update in GIS.

3.2.9 Drainage Problem Inventory

Drainage complaints are jointly addressed by Utility Engineering Section staff and Surface Water Maintenance staff. Complaints originate from a variety of sources, including city residents, businesses, Maintenance Services, and other City departments. Usually, complaints are investigated, and an action item, such as a work order, may be initiated as a result of the complaint. Otherwise, the complaint is tracked and logged with a description of how it was handled.

3.2.10 Flood Hazard Monitoring and Response

This activity involves flood monitoring, pre-flood preparation, post-flooding recovery and repairs, communicating with internal and external groups, and assisting in emergency response during floods.

Flood hazard response varies depending on the severity of storm events from year to year and the potential to result in flooding, particularly on the City's large rivers: the Cedar and the Green. Notable flood events occurred in January 2009, December 2015, December 2019, and February 2020. Potential flooding of the Green River due to problems with the Howard Hanson Dam is discussed in Section 2.4.5.4. Part of this activity involves coordinating with other agencies such as the KCFCD, as discussed above in Section 3.2.5.

3.2.11 Community Rating System (CRS)

The Community Rating System (CRS) is a program within FEMA's NFIP. NFIP provides property owners access to federally backed flood insurance. Any property that is financed through a federal loan is required to have flood insurance if the property is located in the FEMA regulated floodplain. NFIP provides property owners flood insurance that may not be otherwise available through the private insurance market. Additionally, where private insurance is available, it is generally very expensive, and NFIP provides flood insurance at a discounted rate compared to private insurance. Currently, the City has a rating of 5 out of 10, which allows for a 25% discount in federal flood insurance.

CRS is a voluntary incentive program that recognizes communities that implement floodplain management practices that exceed the federal minimum requirements of the NFIP to provide protection from flooding.

By implementing policies and practices that reduce flood risk, the City receives credits the can be used to reduce flood insurance premiums for property owners. These reduced premiums reflect the reduced flood risk resulting from the City's efforts toward reducing flood damage to insurable properties. Utility Engineering Section staff are responsible for implementing the CRS program in Renton.

3.3 Inspection, Operations, and Maintenance

Inspection, operations, and maintenance is generally completed by the Maintenance Services Division in Public Works in coordination with Utility Engineering Section staff. Current Maintenance Services Division staffing for surface water O&M is 16.24 FTEs, including the Surface Water Maintenance Manager and Supervisor. The following are surface water work activities in the inspection, operations and maintenance category:

- Illicit discharge and detection elimination
- Inspection
- Cleaning
- Repairs
- Construction
- Emergency response/customer service
- Vegetation Control for water, surface water, and wastewater facilities and street rights-of way

Table 3-2 summarizes the surface water infrastructure that the Maintenance Services Division is responsible for inspecting and/or maintaining.

Table 3-2.
Surface Water Management Inventory Data

Type of Facility	Quantity[1]	Unit
Catch Basins/manholes	17,043	Each
Drainage Pipe	277	Miles
Ditches	24	Miles
Culverts	8.5	Miles
Detention Facilities[3] – City Maintained	264	Each
Water Quality Facilities[2] – City Maintained	171	Each
Detention Facilities[3] – Privately Maintained[4]	437	Each
Water Quality Facilities- Privately Maintained[4]	350	Each

1 Quantities were estimated in 2020 using information available from the City's GIS.
2 Facilities include wetponds, bioswales, Filterras, etc.
3 Facilities include ponds, vaults, and tanks.
4 The quantity for private facilities includes residential subdivisions and commercial and industrial sites.

The City has a maintenance management system where Maintenance Service Division activities are recorded. **Table 3-3** lists these activities, along with the activity numbers and the categories into which they are grouped. Maintenance Services Division staff record all hours worked in these categories.

Table 3- 3.
Maintenance Program Activities

Category	Activity	Activity No.
Cleaning	Manhole Cleaning	60002
	Line Cleaning	60010
	Root Cutting	60015
	Brush Ctg/Ease/RDS/DT	60016
	Facility Cleaning	60009
	CB Cleaning	60072
	Drain Patrol	60075
	Retention Cleaning	60081
	Ditch Cleaning	60091
Repair/Replace	MH Repair/Replace	60001
	MH Lid and Ring Replace	60006
	Line Repairs	60012
	CB Repairs	60172
	Retention System Repairs	60173
	Ditch Repair	60174
Inspection	Inspect New Construction	60019
	TV Inspection	60020
	Misc/Inspections	60024
	Public/Private Drainage Inspections	60194
	NPDES WQ Facility Inspection	60007
Construction	Line Construction	60112
	CB Construction	60113
Vegetation Control	Rights-of-way	60333
	Domestic Water Facilities	60331
	Surface Water Facilities	60300
	Surface Water Easements	60005
	Wastewater Easements	60334
Other	Customer Service/Info	60100
	IDDE and IC	60700
	Equipment and Shop Service	60800
	Emergency Response	60911
	Work for Other Sections	60999
	Field Supervision	60901
	Professional Training	60902

3.3.1 Illicit Discharge Detection and Elimination

Illicit discharge detection and elimination (IDDE) is the responsibility of the Maintenance Services Division with support from the Utility Division to respond to spills, report, and keep records per the NPDES permit requirements. Coordination is sometimes needed with the City airport, Planning Division, Parks Division, Renton Regional Fire Authority and other city departments.

3.3.2 Inspection

Inspection activities for compliance with the Controlling Runoff and Operations and Maintenance programs of the NPDES Permit are shared by Public Works staff in the Maintenance Services Division and Utility Division, and by the Planning Division of the Community and Economic Development Department. Private stormwater facility inspections are conducted by the Utility Division while public stormwater facility inspections are conducted by the Maintenance Services Division. Construction inspection of City projects is provided by the Maintenance Services Division and Planning Division, and construction inspection for private development is completed by staff in the Planning Division. Inspections may lead to follow-up maintenance work for the Maintenance Services Division for stormwater facilities for which the City has assumed maintenance responsibilities, or for which private owners have not cooperated to fulfill their maintenance obligations if the lack of maintenance is impacting the City's system. **Table 3-2** shows the number of City-maintained and privately maintained facilities.

3.3.3 Cleaning

The Maintenance Division is responsible for cleaning the stormwater system, including ditches, pipes, culverts, catch basins, and inlets. There are three eductor truck crews that are dedicated to the Utility with the following functions:

- NPDES-related services throughout the City, primarily pipe and catch basin cleaning.
- Ongoing maintenance in the Benson Hill area. After the April 1, 2008, annexation of the Benson Hill area, City crews noted that surface water management facilities required more maintenance than anticipated. Some of this maintenance includes minor/major repairs/replacement to catch basins, driveway culverts, and pipes to maintain functionality of the drainage system.
- Other necessary work throughout the City and assistance with the eductor truck crews. This includes NPDES-related services and includes remaining activities requiring an educator truck crew, regardless of location within the City.

The NPDES permit specifies catch basin inspection requirements and the conditions under which catch basins must be cleaned. The City has opted for an alternative compliance approach according to Section S5.C.7.c.iii.c. of the NPDES Permit, as described in Section 4. Pipes, ditches, catch basins, and inlets with a circuit are cleaned once during the permit term.

3.3.4 Repairs

Repairs are made on surface and stormwater infrastructure as needed by the Maintenance Division. These include ditch regrading, catch basin and catch basin lid repair and replacement, spot repairs on pipes, and other small repairs to keep the system functioning. The NPDES permit dictates a schedule for maintenance activities. For stormwater system components that do not meet maintenance standards,

problems related to the component's function must be addressed within one year for stormwater facilities, within six months for catch basins, and within two years for maintenance requiring capital construction costs of less than $25,000.

3.3.5 CONSTRUCTION

New construction consists of installation of new stormwater infrastructure in areas where none previously existed or to solve existing drainage problems. The Maintenance Division also inspects and repairs CMP pipe as part of the asset management program further described in Section 5.7.

3.3.6 EMERGENCY RESPONSE/CUSTOMER SERVICE

Maintenance Division staff respond to emergencies such as flooding, surcharging catch basins, pipe breaks, and other problems for which they have the skills and equipment to rapidly deploy. Additionally, they routinely provide customer as the first responders to drainage complaints and other calls that come to the customer service counter.

3.3.7 VEGETATION CONTROL

Maintenance Division staff control vegetation in the right-of-way, easements and at public facilities. Six FTEs are dedicated to mowing, brush removal, noxious weed elimination and herbicide application mostly from May through October. Vegetation control equipment consists of six types of mowers, three flatbeds, three trailers and hand tools.

3.4 ADMINISTRATION

Utility administration requires staffing in the Public Works Department as well as support from the Administrative Services Division. Utility pays for a portion of the Public Works Department administrative staff. In addition, a portion of the Utility Engineering Section's expenditures is administrative, as are certain Maintenance Services Division administrative costs. Administrative services provided outside the Surface Water Utility include:

- Information Technology
- Utility Billing

Also considered administrative are insurance costs and Utility's share of technical services costs for monument control, survey services, and appraisal services. Taxes, debt service, and general fund allocation account for a percentage of the overall Utility budget and are described below.

3.4.1 INFORMATION TECHNOLOGY

Expenses included under this program element are interfund payments for telecommunications, computer replacement, and information services operation.

3.4.2 UTILITY BILLING

Utility pays a portion of the Administrative Services Department staff to process surface water utility bills. This effort includes preparing and mailing utility bills, utility bill payment collection, assisting the public with billing inquires, and enforcement of delinquent payments.

Utility billing activities include the costs that the Finance & Information Services Department charges Utility. In addition, a percentage of Utility Engineering Staff time is spent estimating the billing characteristics of new non-residential development. Utility billing activities include account set-up, responding to customer billing complaints, and researching surface water utility billing.

3.4.3 General Fund Cost Allocation

Utility's share of the 2020 General Fund Cost Allocation is $363,000, which is 4.3% of the program's total expenditures.

3.4.4 Taxes

Taxes include the 1.5% state B&O tax and the 6.8% city utility tax.

3.4.5 Debt Service

The debt service expense for Utility projects was $641,000 in 2020, which is 7.6% of the program total.

3.5 Management

Internal management activities include response to public records requests, budgeting, staff meetings, performance appraisals, and day-to-day administration of the Utility's Engineering Section.

External management activities include response to lawsuits, preparation of latecomer's agreements, and formation of special assessment districts. These activities are infrequently provided by the Utility's Engineering Section.

3.6 Summary of Existing Program

The 2015-2019 expenditures for each program element are shown in **Table 3-4**. This data was compiled by reviewing staffing cost data from the Utility's budget and the amount of time spent on different broad program elements, as categorized in **Table 3-1**. Based on this information, budget was allocated to the programs that the Utility delivers to ratepayers.

Table 3- 4.
Average 2015-2019 Staffing Expenditures for Program Elements[1]

Program Element	Hours	Cost
Engineering, Planning, Compliance, and Coordination	5,467	$322,297
Inspection, Operations and Maintenance[2,3]	33,779	1,641,063
Administration[3]	1,933	100,797
Management	2,626	162,806
Capital Improvement Projects	6,569	395,041
TOTAL Staff Hours and Costs	50,374	2,622,004

[1] Hours and costs are based on 5-year average between 2015 and 2019.
[2] Current Surface Water maintenance crew staffing (2020) is 16 FTEs at an approximate cost of $126,545 per FTE per year. This is subject to change.
[3] A portion of Administration and all Inspection, Operations and Maintenance Hours are based on budgeted hours instead of actual hours.

SECTION 4
REGULATORY REQUIREMENTS AND CITY POLICIES

4.1 INTRODUCTION

This section provides background for the regulatory framework by which Utility must operate and how the City carries out policy direction, which is mostly driven by federal, state, and local regulations and the City's Land Use Comprehensive Plan.

4.2 REGULATORY REQUIREMENTS

Through the process of owning, operating, maintaining, and constructing the City's surface water management system, Utility has been designated as the responsible entity for ensuring compliance with a number of local, state, and federal regulations. These regulations govern the quality of surface water discharged, construction or other activities that affect aquatic habitat and endangered species, development within critical areas, and participation in flood insurance programs. In some cases these rules apply because of construction activities that Utility conducts to solve flooding, water quality, or fish habitat problems. In other cases these regulations apply because Utility serves as the owner and operator of the City's Municipal Separate Storm Sewer System (MS4) and must comply with Federal and State laws such as the City's NPDES permit.

The City of Renton coordinates with jurisdictions at the local, county, state, and federal levels. A brief discussion of this coordination is provided below.

There are portions of several major drainage basins that lie within the city limits and the UGB. As the City of Renton lies at the downstream end of most of those basins, the City coordinates with neighboring jurisdictions who share those basins to work together to alleviate flooding and improve water quality in Renton and the surrounding area. Jurisdictions with shared basins include the cities of Kent and Tukwila in the Black River Basin, Tukwila in the Duwamish River Basin, City of Seattle for Duwamish River Basin, West Lake Washington Basin and the Cedar River Basin, the City of Newcastle in the May Creek Basin and Gypsy subbasins, and unincorporated King County in the Cedar River Basin and Soos Creek Basin.

The City coordinates with agencies at the state level, including Ecology on activities related to WRIAs 8 and 9 and NPDES permitting; WSDOT on transportation-related activities and stormwater mitigation for highway projects within the City limits (see Section 5.10.1.1); WDFW, particularly for Hydraulic Project Approval Permits (HPAs), which are required for work in streams such as culvert replacements and channel restoration; and KCFCD for flood prevention (see Section 5.10.2).

The City also coordinates with agencies at the federal level on activities requiring USACE permits, specifically for work in wetlands, lakes, and streams that require a CWA Section 404 permit, as well as flood prevention and emergency response (see Section 5.10.3). There are additional federal regulations within the CWA and the NFIP that the City is required to follow, but Ecology has permitting authority under the CWA and the Revised Code of Washington (RCW). As a result, the City coordinates directly with Ecology for several of these regulations.

This section summarizes the regulations, as well as the related agency coordination required for the City of Renton's Surface Water Program.

4.3 CITY ORDINANCES AND REGULATIONS

This section provides an overview of the City of Renton's ordinances and regulations relevant to surface and stormwater management. The City's regulations are set forth in the Renton Municipal Code (RMC). Stormwater related ordinances and regulations are in Title IV Development Regulations of the RMC. Chapter 4, Environmental Regulations and Overlay Districts, includes the Critical Areas Ordinance and Shoreline Master Program. Chapter 4 includes Development Guidelines and Regulations and Grading, Excavation and Mining Regulations. Chapter 6 is where Drainage (Surface Water) Standards are found. Below is a summary of each of these chapters and relevance to the Utility.

4.3.1 RMC 4-3-050 CRITICAL AREAS REGULATIONS

The purposes of RMC 4-3-050 as outlined in Section A are to:

1. Manage development activities to protect environmental quality and promote diversity of species and habitat within the City.
2. Ensure that activities in or affecting critical areas do not threaten public safety, cause nuisances, or destroy or degrade critical area functions and values.
3. Prevent the loss of critical area acreage and functions and strive for a net gain over present conditions through restoration where feasible.
4. Assist or further the implementation of the policies of the Growth Management Act, the State Environmental Policy Act, and the City Comprehensive Plan.
5. Provide City officials with information to evaluate, approve, condition, or deny public or private development proposals with regard to critical area impacts.
6. Protect the public life, health, safety, welfare, and property by minimizing and managing the adverse environmental impacts of development within and abutting critical areas.
7. Protect the public from:
    - Avoidable monetary losses due to maintenance and replacement of public facilities and utilities, property damage, public mitigation of avoidable impacts, and public emergency rescue and relief operations.
    - Potential litigation on improper construction practices occurring in critical areas.
8. Reduce the potential for damage to life and property from abandoned coal mines and return the land to productive uses.
9. Maintain, to the extent practicable, a stable tax base by providing for the sound use and development of areas of flood hazard areas to minimize future flood blight areas.
10. Protect riparian habitat to provide for bank and channel stability, sustained water supply, flood storage, recruitment of woody debris, leaf litter, nutrients, sediment and pollutant filtering, shade, shelter, and other functions that are important to both fish and wildlife.

This section of the RMC includes regulations that apply to wellhead protection, flood hazards, geologic hazards, habitat conservation, wetlands, streams, and lakes. Management of stormwater requires understanding potential impacts adjacent to or within critical areas because of the connection of stormwater runoff to lakes, streams, groundwater, and wetlands, and linear infrastructure that

intersects with critical areas features. Stormwater-related projects and activities in these areas may require a review, unless exempt.

4.3.2 RMC 4-3-090 Shoreline Master Program Regulations

RMC 4-3-090 adopts the Shoreline Master Program (SMP). The City's SMP regulations are in accordance with the Washington State Shoreline Management Act (SMA), as governed by RCW 90.58. and Washington Administrative Code (WAC) WAC 173-26. The purpose of the SMA is to manage the shoreline for long-term benefit by preserving ecology and natural character and increasing recreational opportunities and public access. Uses that alter natural character, but are dependent upon the shoreline are also recognized as an important part of the SMP.

The City has several shorelines subject to the SMP: the Cedar River, Lake Washington, Springbrook Creek, Black River, and May Creek. Shoreline planning and regulations include the water body as well as the lands within 200 feet of the ordinary high water mark (OHWM) or within 200 feet of floodways, whichever is greater. Additionally, contiguous floodplain areas and all marshes, bogs, swamps, and river deltas associated with streams, lakes, and tidal waters that are subject to the provisions of the State Shoreline Management Act are included in the jurisdictional areas.

The City conducts a periodic review of its SMP every eight years, in accordance with the SMA, to ensure that the SMP is consistent and up-to-date with applicable laws and regulations, City goals and policies, and addresses changed or unique circumstances in the City.

Each shoreline has unique qualities that make it valuable, and Shorelines of Statewide Significance are of particular importance. For the City, this includes Lake Washington and the Green River Shoreline. Although the Green River is not within City limits, portions of the two hundred foot shoreline jurisdiction are within the City Limits. The shorelines for these two water bodies comprise approximately 5.8 miles of the shorelines of the state that are regulated by the City. Preference is, therefore, given to the following uses in descending order of priority for Shorelines of Statewide Significance as established by RCW 90.58.020:

1. Recognize and protect the statewide interest over local interest;
2. Preserve the natural character of the shoreline;
3. Result in long-term over short-term benefit;
4. Protect the resources and ecology of the shoreline;
5. Increase public access to publicly owned areas of the shorelines;
6. Increase recreational opportunities for the public in the shoreline;
7. Provide for any other element as defined in RCW 90.58.100, deemed appropriate or necessary.

Approximately 18 miles of shoreline in the City fall under the jurisdiction of the SMA. These shorelines are considered an extremely valuable resource not only to the City, but also to the region:

- Cedar River
- Green River (Portions of the 200-ft shoreline jurisdiction within City limits)
- Lake Washington

- May Creek from the intersection of May Creek and NE 31st Street in the southeast quarter of the southeast quarter of Section 32-24-5E WM.
- Springbrook Creek from the Black River on the north to SW 43rd Street on the south.
- Black River

The SMP and SMA are typical considerations when stormwater infrastructure projects have the potential to affect shoreline uses.

4.3.3 RMC 4-4-030 Development Guidelines and Regulations – General

RMC 4-4-030 provides guidance to the Development Services Division and the Hearing Examiner for various land use recommendations and decisions. Stormwater-related provisions include requirements for temporary erosion and sediment control, hydroseeding of graded areas, and the adoption by reference of this Plan and other City Plans and Regulations.

4.3.4 RMC 4-4-060 Grading, Excavation, and Mining Regulations

The purposes of RMC 4-4-060 as outlined in the RMC in Section A are to:

1. Provide a means of regulating mining, excavation, and grading to promote the health, safety, morals, general welfare, and aesthetics in the City.
2. Promote the progressive rehabilitation of mining, excavation, and grading sites to a suitable new use.
3. Protect those areas and uses in the vicinity of mining, excavation, and grading activities against detrimental effects.
4. Promote safe, economic, systematic, and uninterrupted mining, excavation, and grading activities within the City.
5. Minimize adverse stormwater impacts generated by the removal of vegetation and alteration of landform to comply with the requirements of the NPDES Phase II Municipal Stormwater Permit.
6. Protect water quality from the adverse impact associated with erosion and sedimentation in order to comply with the requirements of the NPDES Phase II Municipal Stormwater Permit. (Ord. 5526, 2-1-2010).

This code is intended to reduce potential deleterious effects of grading, excavation, and mining on surface water quality and provides City staff with tools for review, inspection, and enforcement of code violations. Staff in the Community and Economic Development Division are primarily responsible for activities related to grading, excavation, and mining. Utility staff review soil and geotechnical reports for compliance with this regulation.

4.3.5 RMC 4-6-030 Drainage (Surface Water) Standards

RMC 4-6-030 contains the City's Drainage Standards. The following is the language from the RMC, Section A. Purpose:

1. The purpose of this Section is to preserve the City's watercourses by minimizing water quality degradation from siltation, sedimentation and pollution of creeks, streams, rivers,

lakes and other bodies of water, protect property from increased runoff rates, and to ensure public safety.

2. It shall also be the purpose of this Section to reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance groundwater recharge; and prevent water quality degradation through permit review, construction inspection, enforcement, and maintenance of drainage facilities/systems.
3. It shall also be the purpose of this Section to regulate the Municipal Separate Storm Sewer System (MS4) regarding the contribution of pollutants, consisting of any material other than stormwater, including but not limited to illicit discharges, illicit connections and/or dumping into any storm drain system, including surface and/or groundwater throughout the City that would adversely impact surface and groundwater quality of the City and the State of Washington, in order to comply with requirements of the NPDES Phase II Municipal Stormwater Permit.
4. It shall also be the purpose of this Section to create attractive and functional drainage facilities that do not reduce public safety. (Ord. 5526, 2-1-2010; Ord. 5749, 1-12-2015)

The Administrator of the Public Works Department is responsible for the general administration and coordination of this RMC section. This includes responsibility for reviewing drainage plans submitted in accordance with this RMC section. This Section of the RMC adopts the 2016 King County Surface Water Design Manual (KCSWDM) as amended by the City of Renton Amendments by reference. In February 2010, the City adopted the 2009 KCSWDM with City Amendments. These amendments to the 2009 KCSWDM are carried over to the current 2016 KCSWDM. The amendments were tailored to meet the specific needs of the City of Renton by providing the exceptions, modifications and additions to the King County Manual. One important change to the 2009 KCSWDM was the inclusion of a modified Flow Control Map that shows a significant area of the City, including the Renton valley, downtown, and areas east of I-405 mapped as a Peak Rate Flow Control standard matching existing site conditions. This is a significant deviation from the County's 2009 flow control map which shows all areas mapped as Flow Control Duration Standard matching forested conditions.

4.3.6 CITY OF RENTON COMPREHENSIVE PLAN

The first City of Renton Comprehensive Plan was developed in 1990 to meet the requirements of the State Growth Management Act (GMA). Pursuant to Engrossed Substitute House Bill (ESHB) 2342, Renton is required to review and, if needed, revise its comprehensive plan and development regulations by June 30, 2024, and every eight years thereafter. The most recent version was adopted in 2015. The City's Comprehensive Plan incorporates a number of objectives and policies relevant to surface water resources, which are described in Section 4.7 of this Plan. In addition to these objectives and policies, the greatest impact of the City's Comprehensive Plan on surface water systems and resources comes from its land use element, which establishes the level of development density throughout the City. Greater development densities result in higher percentages of impervious area, which impact water quality, fish habitat, and the rate and volume of runoff.

4.4 STATE REGULATIONS

State regulations that govern activities conducted by Utility are described in this Section.

4.4.1 RCW 43.21C State Environmental Policy Act

Modeled after the National Environmental Policy Act (NEPA), the State Environmental Policy Act (SEPA) requires the identification and evaluation of probable impacts of activities for all elements of the environment. The SEPA rules (Chapter 197.11 WAC) became effective in April 1984. SEPA review occurs in tandem with other agency processes. Whereas, other regulations focus on specific parts of a project proposal, SEPA requires identification and evaluation of all probable environmental impacts (Ecology, 2020c). SEPA addresses nonexempt construction, demolition, comprehensive plans, zoning, and development regulations that are licensed, funded, or approved by a government agency. Any nonexempt governmental action—at any level—may be conditioned or denied pursuant to SEPA (RCW 43.21C.060).

SEPA review occurs for almost all Utility projects.

4.4.2 RCW 77.55 Hydraulic Code

WDFW requires a Hydraulic Project Approval (HPA) for construction activities that use, divert, obstruct, or change the natural flow or bed of any waters of the state. The purpose of the requirements, which are administered through the HPA permit process, is to ensure that construction or performance of work is done in a manner that protects fish life (WAC 220-660-010). The types of construction activity that typically require an HPA include bridge painting, channel improvements, stream restoration, or culvert replacements within the OHWM of freshwater. Flood-damage repair and prevention activities such as bank stabilization, bridge repair, removal of sandbars and debris, channel maintenance and other approved activities may be permitted as a five-year plan, avoiding the need to permit each individual activity.

Fish habitat enhancement projects involve elimination of fish passage barriers through culvert repair and replacement as well as stream bank restoration and/or placement of instream structures.

An HPA is applied for by either submitting online through WDFW's Aquatic Protection Permitting System (APPS) or by submitting a Joint Aquatic Resource Permit Application (JARPA) (http://www.epermitting.wa.gov/site/alias__resourcecenter/9978/default.aspx). This is the same form that can be submitted for permits from Ecology, USACE, and DNR. After a 45-day review period, WDFW will approve, deny, or condition the permit. WDFW may require modifications to plans and specifications and work timing to avoid or compensate for project impacts on fish ecology. Project activities and possible modifications include, but are not limited to:

- Making a culvert fish passable (includes consideration of 95 and 10% exceedance flows, minimum flow depth, and maximum hydraulic drop).
- Providing large woody debris in a stream channel.
- Moving grading limits outside the ordinary high water line.
- Specifying construction practices that prevent entry of construction equipment and/or materials into the watercourse.
- Specifying bed material, construction methods, construction period, riparian vegetation, and any required mitigation.

If it is more cost-effective, the applicant may be permitted to perform off-site mitigation, provided it would generate equal or greater biological functions and values compared to on-site mitigation.

4.4.3 RCW 86.16 Flood Plain Management

Chapter 86.16 RCW Flood Plain Management establishes statewide authority through regulations promulgated by Ecology for coordinating the floodplain management regulation elements of the NFIP. Under Chapter 173-158 WAC, Ecology requires local governments to adopt and administer regulatory programs compliant with the minimum standards of the NFIP. Ecology provides technical assistance to local governments for both identifying the location of the 100-year (base) floodplain and in administering their floodplain management ordinances.

Ecology also establishes land management criteria in the base floodplain area by adopting the federal standards and definitions contained in 44 CFR, Parts 59 and 60, as minimum state standards. Ecology has approval authority over local floodplain management ordinances. Federal regulations allow residential and nonresidential development in the floodplain if the proponent demonstrates that the project is constructed to be one foot above the 100-year base flood elevation as determined by a flood insurance study. Ecology will disapprove an ordinance if minimum federal criteria for enrollment in NFIP or state regulations on development in the floodplain are not met. State regulations allow only for repair, reconstruction, or improvements of existing residential structures within the floodplain that do not increase the ground floor area and that cost less than 50% of the market value of the existing structure. The City's first Flood Insurance Study and FIRMs were published in May 1981 and have been updated in May 1995 and again in 2020.

The City participates in the Community Rating System (CRS), and as a result it receives discounts on flood insurance. Engaging in the following activities gives the City CRS credits:

- Maintaining elevation certificates on all new and substantially improved buildings in the Special Flood Hazard Area.
- Maintaining elevation certificate data in computer format.
- Making copies of elevation certificates on newer properties available at the CRS Coordinator's office.
- Providing information on FIRMs and the flood insurance purchase requirement to inquirers and publishing a document that tells lenders, insurance agents, and real estate agents.
- Informing insurance agents about the availability of flood certificates.
- Keeping a log of FIRM requests and responses.
- Keeping the City's FIRM updated and maintaining old copies of the FIRM.
- Maintaining flood risk reduction materials in the public library.
- Enforcing the floodplain management provisions of municipal zoning, subdivision, and building code ordinances.
- Enforcing the current municipal building code.
- Using and updating the City's digital mapping system.
- Maintaining the City's elevation reference marks.
- Enforcing the stormwater management provisions of municipal zoning, subdivision, and building code ordinances for new developments in the watershed.

- Enforcing the requirement that all new buildings must be elevated above the street or otherwise protected from drainage problems.
- Implementing the City's drainage system maintenance program.
- Performing inspections and subsequent maintenance if warranted.
- Enforcing the City's stream dumping regulations.

4.4.4 RCW 36.70A Growth Management Act

Enacted in 1990, the GMA is intended to manage growth in Washington's fastest-growing counties through the adoption of local comprehensive land use plans and development regulations. A 1995 GMA amendment requires all counties and cities in Washington to include the best available science in developing policies and development regulations to protect the functions and values of critical areas.

The standard for all plans consists of 13 advisory goals aimed solely at guiding the development of local comprehensive plans and development regulations. These advisory goals include encouraging urban growth where reasonable, reducing urban sprawl, encouraging efficient transportation systems based on regional priorities, encouraging the availability and variety of affordable housing, encouraging the retention of open space and recreational opportunities, and protecting the environment.

4.4.5 RCW 90.48.260 and State Implementation of Clean Water Act

The CWA was passed in 1972 "to restore the chemical, physical, and biological integrity of the Nation's water" (33 USC 1251 [a]). There are four sections of this legislation that affect the City's surface water program. They are:

- Section 303(d)
- Section 401
- Section 402 – NPDES
- Section 404

The CWA is a federal regulation, but it establishes statewide authority for those states that the EPA grants NPDES permitting authority. Washington state has been granted this authority and administers the CWA through regulations promulgated by Ecology for Sections 303(d), 401, and 402 (RCW 90.48.260). These three sections, which the state administers using the same designations as the federal government, are described in further detail below. Section 404 is administered federally and is described in Section 4.5.3.

4.4.6 Section 303(d) – Water Quality Standards

Section 303(d) of the CWA requires states to periodically compose a list of water quality-limited water bodies. Waters on this list require a TMDL study, which determines the allowable pollutant loading for the receiving waters for the water quality parameter causing the water quality impairment. It is the responsibility of the state to perform the TMDL studies. Waters on the 303(d) list are prioritized for TMDL studies. The TMDL is issued upon completion of the study. Several waters within the City are on the 2016 303(d) list**.** The waters in **Table 4-1** are still on the waiting list for TMDL studies to be performed. Although not within the City, there is a portion of the Soos Creek watershed within unincorporated King County that is on the 303(d) list for low dissolved oxygen, temperature,

bioassessment, and bacteria. Because of the critical salmon habitat provided by the Soos Creek system, Ecology in coordination with the EPA and King County is conducting studies and developing a plan to control a range of pollutants, including low dissolved oxygen and high temperature. This multiparameter TMDL will identify problem pollutants and how much pollution reduction needs to occur to achieve clean water (Ecology, 2020d). Additionally, a parallel process is being conducted to develop a TMDL for fecal coliform in Soos Creek (Ecology, 2020e). Because some of the upper portion of the watershed is in Renton, the City is actively participating in various stakeholder meetings to discuss development of the TMDLs.

TABLE 4-1:
CATEGORY 5 ASSESSED WATERS IN RENTON[1]

Water Body	Segment	Parameter(s)
Unnamed Tributary to Springbrook Creek	Reach near 108th Ave SE and SE 196th St	Bioassessment
Unnamed Tributary to Springbrook Creek	Reach near intersection of 103rd SE and SE Carr Rd	Bioassessment
Unnamed Tributary to Springbrook Creek	Upstream and east of Hwy 167	Bioassessment
Springbrook Creek (Mill Creek)	Near intersection of Talbot Rd. S	Bioassessment
Johns Creek	Lake Washington to I-405	Temperature, dissolved oxygen, fecal coliform bacteria
May Creek	East of May Creek Park	Temperature
May Creek	Near mouth at Lake Washington	Temperature, fecal coliform bacteria, bioassessment
Maplewood Creek	Confluence with Cedar River	Temperature
Molasses Creek	Confluence with Cedar River to SE Fairwood Blvd.	Bioassessment
Rolling Hills Creek	South of I-405	Bioassessment
Black River	Near Confluence with Green River and Duwamish River to Longacres Industrial Park	Dissolved oxygen, fecal coliform bacteria, Bioassessment
Lake Washington	Gene Coulon Park	Fecal coliform bacteria
Lake Washington	North of May Creek mouth	Sediment bioassay
Unnamed Tributary to Lake Washington	South of Renton Municipal Airport	Bioassessment
Unnamed Tributary to Lake Washington	North of Gene Coulon Park	Temperature, fecal coliform bacteria
Cedar River	Lake Washington to Molasses Creek confluence	Temperature, Dissolved oxygen, pH
Unnamed Tributary to Cedar River	Maplewood Golf Course	Bioassessment

1. Category 5 assessed waters are per 2016 Washington Water Quality Atlas 303(d) listings (https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx Webpage accessed 8/10/20)

4.4.7 SECTION 401 – CERTIFICATION

Section 401 of the CWA requires that applicants receiving a Section 404 permit from USACE first receive certification from the state that the proposed project will meet state water quality standards and other aquatic protection regulations. In Washington, applicants are required to obtain the Section 401 water quality certification from Ecology. The 401 Certification can cover both the construction and operation

of the proposed project. Any conditions of Ecology's certification become conditions of the federal Section 404 permit. The federal agency cannot issue its permit until the certification is approved, conditioned, or waived by the state. If the state denies a certification, an individual Section 401 certification is required for activities covered by a nationwide permit (ORIA, 2020).

4.4.8 Section 402 – National Pollutant Discharge Elimination System

Section 402 of the CWA states that pollutants may not be discharged directly to surface waters unless this is done under a NPDES permit. In Washington, authority to issue permits and oversee compliance has been delegated to Ecology by the EPA. Ecology asserts requirements and a schedule for compliance. The compliance schedule is never longer than the term of the permit. Permits are required to be renewed at least every five years, and Ecology is responsible for writing new permits.

The NPDES program, as it relates to precipitation-induced runoff (considered a point source), provides permits for multiple activities that could impact water quality. These include but are not limited to:

- Industrial Activities
- Operating an MS4
- Construction Activities

Utility operates its stormwater program under its NPDES Permit. The most recent permit was issued on July 1, 2019 and became effective on August 1, 2019. The City has been operating under the NPDES Permit since 2007. Continued City NPDES Permit coverage requires compliance with special and general conditions outlined in the 2019 permit. These include the continuation of conditions familiar to Renton from the 2013 Permit and new conditions that must be implemented by the prescribed permit schedule. A summary of Renton's activities to meet permit compliance is available in the City's current Stormwater Management Program Plan. New regulatory requirements and resource needs are described in a regulatory memorandum (Appendix D) and in Section 5.

Key changes, from the previous permit to new permit beginning in August 2019, are described below. A summary of resource needs and deadlines for these NPDES changes is provided in Section 5, **Table 5-1**.

4.4.8.1 Long-Range Planning

The new permit requires a review of how stormwater management needs and protection/improvement of receiving water health are informing long-term plans.

4.4.8.2 Low Impact Development

The permit requires continuation of previous permit requirements to make Low Impact Development (LID) the preferred and commonly-used approach to site development and require LID Principles and BMPs in local development codes, rules, standards, or other enforceable documents. The permit requires an annual assessment and documentation of newly identified barriers to implementation of LID Principles or BMPs and measures developed to address the barriers.

4.4.8.3 Watershed Planning

The new permit requires the City to evaluate watershed conditions and prioritize its watersheds based on receiving water conditions and ability to affect change with stormwater management actions. A stormwater management action plan must be developed for a high priority catchment that outlines strategies and projects to improve watershed conditions.

4.4.8.4 MS4 Mapping

The permit requires continued documentation of MS4 features, and new requirements to collect and update outfall size and material data, and complete mapping of all known connections from privately owned stormwater systems.

4.4.8.5 Source Control and Business Inspection Program

The new permit requires development and implementation of a source control program for existing land uses. It requires enforceable documents or ordinances to require source control BMPs for pollutant generating surfaces, an inventory of potential pollutant generating sites, an inspection program, enforcement policy, and staff training.

4.5 FEDERAL REGULATIONS

4.5.1 NATIONAL ENVIRONMENTAL POLICY ACT

The goals of NEPA are to protect, restore, and enhance the environment. NEPA documentation requirements apply to all activities with a federal nexus, (i.e., generally either federally funded or needing federal permits). NEPA requirements are: adequately describe the environmental ramifications of proposed actions, fully disclose to the public proposed federal actions and provide a mechanism for public input to federal decision-making, prepare environmental impact statements, and consider alternatives and mitigation for every major action (usually construction projects) that would significantly affect the quality of the human environment. The provisions for ensuring that agencies follow NEPA are in the Council for Environmental Quality (CEQ) provisions for implementation (43 CFR 1500-1508).

4.5.2 CLEAN WATER ACT

The CWA includes four sections that affect the City's surface water program. They are:

- Section 303(d)
- Section 401
- Section 402 – NPDES
- Section 404

As described previously in Section 4.4.5, the Clean Water Act is a federal regulation that establishes statewide authority through regulations promulgated by Ecology for Sections 303(d), 401 and 402 (RCW 90.48.260). These three sections are described in Sections 4.4.6 through 4.4.8.

Section 404 is not administered by the state, and is described as follows.

4.5.3 SECTION 404

Section 404 pertains to activities involved with filling waters of the United States. The water in question is usually a wetland or classified stream. A wetland is defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil" (33 CFR 328.3 [c][16]). USACE has regulatory authority to administer a permit program that results in no net loss of these waters of the United States.

When evaluating activities that are regulated by Section 404, the emphasis is to look at alternatives that avoid, then minimize, then compensate for any wetland impacts. Unavoidable impacts are compensated for by a system of replacement ratios that vary depending on the quality of wetlands being impacted.

4.5.4 ENDANGERED SPECIES ACT

Puget Sound and its tributary streams in the vicinity of the City provide habitat, or may provide habitat, for aquatic species listed as threatened or endangered under ESA. The ESA prohibits killing or harming an endangered species in any way, including significant modification of critical habitat for that species. Section 7 of the Act is the interagency cooperation mechanism by which Federal agencies ensure that the actions they take or fund do not jeopardize the existence of any listed species.

National Oceanic and Atmospheric Administration (NOAA) Fisheries is responsible for marine species. The U.S. Fish and Wildlife Service (USFWS) is responsible for resident aquatic species. In June 2000, NOAA Fisheries adopted a rule prohibiting the "take" (which includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, or collecting; or attempting any of these things) of 14 groups of salmon and steelhead listed as threatened under the ESA. Chinook salmon in Puget Sound and its tributaries (including the Green River) were federally listed as threatened species by the NOAA Fisheries in May 1999 (NOAA, 1999). Bull trout in Lake Washington and the Green River were listed as threatened species by USFWS in December 1999 (USFWS, 1999). NOAA federally listed steelhead as a threatened species in June 2007 (NOAA, 2007). Coho salmon are currently a species of concern in the Puget Sound (NOAA, 2006). These listings directly affect City practices. For instance, the City's routine road maintenance program must be approved by NOAA Fisheries as being consistent with the conservation of listed salmonids' habitat by contributing to the attainment and maintenance of properly functioning condition. If a project has a federal nexus (i.e., federal permit or federal funding), a Biological Assessment (BA), also known as a Biological Evaluation (BE),must be performed to determine what, if any, effects the project or action may have on a listed species (50 CFR 402.12). The purpose of a BA/BE is to review the biological requirements of a listed species to determine potential effects of the project or action on those species (50 CFR 402.12). After the consultation process is complete, the USFWS or NOAA Fisheries will issue a Biological Opinion (BO) (50 CFR 402.15). Formal consultation may last up to 90 days with the Services having 45 days after consultation to write the opinion. The BO will determine if the project or action would result in "jeopardy" or the destruction or modification of critical habitat (50 CFR 402.14[h][3]). If a project or action is determined to affect a species that has been proposed for listing, the federal lead agency must complete an informal consultation with either the USFWS or NOAA Fisheries, but the results of the subsequent conference are non-binding.

NOAA Fisheries requires the City to participate in recovery activities for listed species. Regional (Puget Sound area) recovery activities are supplemented by proactive interlocal agreements, such as WRIA-level habitat conservation planning.

The City facilitates ESA compliance at the local level by incorporating it into its critical areas ordinance (CAO). For example:

- The presence of a listed species is sufficient to classify a wetland as Category 1 (RMC 4-3-050[G][9][c][i]).
- The presence of listed species may be used as justification to enact enlarged wetland buffers on a case-by-case basis (RMC 4-3-050[G][9][d][iv]).

4.5.5 National Flood Insurance Program

As stated in Section 4.4.3, Chapter 86.16 RCW Floodplain Management establishes statewide authority through regulations promulgated by Ecology for coordinating the floodplain management regulation elements of NFIP. Under Chapter 173 158 WAC, Ecology requires local governments to adopt and administer regulatory programs compliant with the minimum standards of NFIP, which is administered through the Federal Emergency Management Agency (FEMA). Ecology provides technical assistance to local governments for identifying the location of the 100-year (base) floodplain. By enacting restrictions and requirements on development in the floodplain, residents of Renton get reduced flood insurance rates in return. Renton's participation in the NFIP allows residents and businesses to obtain flood insurance through the NFIP against potential flooding losses.

4.6 Summary of Permits Required

Permits needed for construction projects are summarized in **Table 4-2**. The most common permits have been discussed in Sections 4.2 through 4.4.

Table 4-2:
Permits Needed for Projects

Trigger	Permit or Approval	Agency	Processing Time	Comment	Report Section
Federal nexus	NEPA	NOAA Fisheries or USFWS	Depends on whether an EIS, EA, or categorical exclusion is required. If an EIS is required, it usually takes 3-7 years.	Independent of SEPA, but a joint review can be arranged on a case-by-case basis	4.5.1
	ESA Consultation or Take exemption		Varies widely, but 6 months is typical.	Does not apply if project will have no impact on listed species	4.5.4
Discharge or fill to waters of the U.S.	CWA Section 404	Army Corps of Engineers	30-180 days total	"Waters" includes rivers, streams, lakes, wetlands, swamps, marshes, and bogs. Apply using JARPA. Processed concurrently. Submit a pre-filing meeting request 30 days in advance for 401 certification	4.5.3
Work in navigable waters	CWA Section 10				--
Federal nexus and discharge to navigable waters	CWA Section 401	Washington State Department of Ecology			4.4.7

TABLE 4-2:
PERMITS NEEDED FOR PROJECTS

Trigger	Permit or Approval	Agency	Processing Time	Comment	Report Section
Nonexempt construction, comprehensive plans, zoning, and development regulations that are licensed, funded, or approved by a government agency	SEPA	Local agency approving authority (usually Renton), licensing or funding agency	6-8 weeks for projects undergoing Administrative Review.		4.4.1
Disturbance of at least one acre of soil and disturbance on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more.	NPDES Construction Stormwater Permit	Washington State Department of Ecology	30 days after submitting NOI	An Individual Permit will take considerably longer to process than a General Permit.	4.4.8
Activity that could cause pollution to an isolated wetland	Isolated Wetlands Administrative Order		About 90 days	Wetlands that aren't connected to recognized water bodies are regulated here, instead of under CWA Section 404	--
Activity that temporarily produces air pollution above allowed levels	Air Quality Permit		At least 30 days	Common trigger activities include land-clearing burns and demolition of asbestos-containing structures.	--
Drilling	Soil Boring NOI		No review delay--just send in the form	Includes monitoring wells and geotech borings.	--
Shoreline or in-water work that temporarily increases turbidity	Temporary Exceedance of Water Quality Standards				--
Activity that could use, divert, obstruct, or change the flow of state waters	Hydraulic Project Approval	Washington Department of fish and Wildlife	Up to 45 days	Common trigger activities are pipeline crossings, culvert installations, and outfall placements.	4.4.2

TABLE 4-2:
PERMITS NEEDED FOR PROJECTS

Trigger	Permit or Approval	Agency	Processing Time	Comment	Report Section
Construction or staging on state-owned land	Easement on Public Lands	Washington Department of Natural Resources			--
Shoreline development valued at $5000 or greater	Shoreline Substantial Development Permit	Renton Community and Economic Development Department	6-8 weeks for projects undergoing Administrative Review. Up to 16 weeks for projects undergoing Shoreline Hearing Board Review and DOE Review.	Several exemptions apply	4.3.2
Tree-cutting or grading	Building and Grading Permit	Renton Community and Economic Development Department			4.3.4
Any development	Site Plan Review, SEPA and Civil Construction Permit				4.4.1 4.3.3
Development activity not allowed under the CAO	Variance			Variances are generally granted when necessary to use a property reasonably, provided the variance would not be detrimental to public welfare or land in the project vicinity.	4.3.1
Development activity not allowed within Shoreline Jurisdiction	Shoreline Variance and SEPA	Community and Economic Development Department, Shoreline Hearings Board	16 weeks	When an activity or development is proposed that does not comply with the bulk, dimensional, and/or performance standards of the program, such development or use shall only be authorized by approval of a shoreline variance even if the development or use does not require a substantial development permit.	4.4.1, 4.3.2

CAO: Critical Areas Ordinance
Corps: U.S. Army Corps of Engineers
CWA: Clean Water Act
EA: Environmental Assessment
EIS: Environmental Impact Statement
Ecology: Washington State Department of Ecology
ESA: Endangered Species Act
HPA: Hydraulic Project Approval
JARPA: Joint Aquatic Resource Permit Application
NEPA: National Environmental Policy Act
NOAA Fisheries: National Oceanic and Atmospheric Administration, Department of Fisheries
NOI: Notice of Intent
NPDES: National Pollutant Discharge Elimination System
SEPA: State Environmental Policy Act
WDFW: Washington Department of Fish and Wildlife
DNR: Department of Natural Resources

4.7 PROGRAM POLICIES

This section addresses how the Utility meets the sustainability objective set in the City's business plan. It also summarizes program policies, which are generally set forth by the City's Comprehensive Plan. This section also discusses new policy directions evaluated during the development of this Plan.

4.7.1 SUSTAINABILITY

The basic definition of sustainability is the ability to meet the needs of the present without compromising the ability of future generations to meet their needs. A more complex view of sustainability revolves around what is commonly referred to as the triple bottom line: the economy, society, and the environment. The latter representation would define sustainability as the ability for a project or a program, to continuously provide, to the most extent possible, economic, social and environmental benefits. The triple bottom line is generally used to define corporate or institutional level sustainability. Because the Surface Water program is institutional in nature, this section evaluates how sustainable this program is from the lens of institutional sustainability, not just from an environmental perspective.

4.7.1.1 Economic Benefits

The Surface Water program provides various economic benefits to the City and the public. This financial sustainability component also relates to resiliency, or the ability of the Surface Water program to absorb, address and recover from challenges and unforeseen events. Economic benefits include:

a. Structuring surface water fees to fund Surface Water operations and the Capital Improvement Program and maintaining a Surface Water fund balance which acts as a reserve to cover emerging priorities or unforeseen emergencies.

b. Securing grants from the Department of Ecology, King County Flood Control Zone District, and FEMA, when necessary and as opportunities arise, to provide supplemental funding for the Surface Water Utility projects and programs, which reduces the need to increase utility rates to customers.

c. Preservation of jobs through flood control projects that protect the facilities of major employers and large industries such as The Boeing Company, Renton Municipal Airport, commercial businesses, and the Renton School District.

d. Improvement of property values along corridors in the City where drainage improvement and 'Green Streets' projects are constructed. Green streets couple water quality treatment with the addition of trees and vegetation to create safer, greener, and more inviting neighborhoods.

e. Reduction of flood risk to private property through the implementation of drainage improvement and flood risk reduction projects. Flood Control projects and feasibility studies account for climate change in alternatives analyses and decision making to order to increase system resiliency against changing precipitation patterns.

f. Instituting an asset management program and prioritizing the repair and replacement of pipes and structures in critical condition to avoid catastrophic failure and significant costly damages.

g. Enabling properties in Renton to obtain discounted federal flood insurance by participation in the Community Rating System and implementation of policies and practices that exceed the minimum requirements of the National Flood Insurance Program. Currently, Renton has achieved a class rating of 5 which allows for a 25% discount.

4.7.1.2 Social Benefits

The Surface Water program provides various social benefits to the public. This component of sustainability encompasses an equity or social justice subcomponent. Examples of social benefits provided by the Surface Water program include:

a. Increasing motorist and pedestrian safety through drainage improvement and flood risk reduction projects.

b. Maintaining ability to safely recreate in local waterbodies by treating and controlling surface water runoff from public streets and private developments.

c. Constructing projects in historically underserved and underinvested communities (for example, the Sunset Area in the Renton Highlands) and accounting for equity and social justice when evaluating alternatives as part of flood risk reduction projects.

d. Offering reduced Surface Water fees to low-income senior citizens (61 years of age and over) and low-income disabled customers.

e. Offering visitors of the Surface Water Utility website the ability to display content in multiple languages using a website translation feature, and fostering inclusion by leveraging the Language Line interpreters, a service that the City subscribes to, and using translators to better communicate with and serve customers who not fluent in English.

f. Engaging communities affected by projects built in their neighborhoods, using public input to inform programs and design priorities, and educating the public about stormwater and the protection of water resources.

g. Maintaining a highly skilled workforce trained in equity and engagement and capable of offering exemplary customer service to all Renton residents.

4.7.1.3 Environmental Benefits

The Surface Water program provides numerous environmental benefits. This third component of corporate sustainability is commonly termed as environmental sustainability. In certain contexts, sustainability is only defined through this environmental component. However, at the institutional level, a Surface Water program cannot be sustainable if it prioritizes environmental benefits at the expense of social and economic benefits. For example, if a Surface Water utility created a program that consists of projects that condemn and buy out properties in the floodplain of a river to promote off-channel flood storage and fish habitat, that program would have a high environmental score. However, it would likely have high costs, and would forcefully displace families from their homes, which would create severe opposition by the public. Thus, such a program would not be socially acceptable and therefore unsustainable. Nonetheless, the environmental component of sustainability mainly revolves around the protection of the environment and maintaining balance between human activity and environmental resources. There are numerous ways the Surface Water program protects environmental resources, water

quality and fish habitat. The policies and programs that serve this purpose are listed in Tables 4-3 to 4-8 in 4.7.2 and will not be restated in this section. Additional environmental benefits of the Surface Water program, not explicitly stated in 4.7.2 include:

a. Administration of the NPDES permit and Clean Water Act regulations to protect Surface Water from pollution and mitigate the effects of urbanization.

b. The development, adoption, and implementation of surface water design standards for new developments, redevelopment projects and other civil projects to minimize environmental impacts to surface water quantity and quality and impacts to natural resources.

c. Mitigating for environmental impacts of projects that affect fish habitat in compliance with state and federal permits. Currently, the City maintains two habitat channels along the Cedar River.

d. Water quality retrofit projects that treat runoff from pollution generating surfaces (i.e., roads). The Utility has implemented four retrofit projects between 2010 and 2020, and at the time of writing has five retrofit projects in progress or being constructed.

e. Watershed or ecosystem restoration plans in coordination with other jurisdictions such as the Green/Duwamish Ecosystem Restoration Program and the Panther Creek Watershed restoration.

f. Springbrook Creek Wetland and Habitat Mitigation bank (see description in 5.10.1.1).

g. Participation in the regional WRIA 8 Salmon Recovery Council and the WRIA 9 Watershed Ecosystem Restoration Forum to collaborate with other jurisdictions on fish habitat protection and restoration and implement projects in coordination with them.

Habitat and water quality deficiencies identified are shown in tables 6-5 and 6-6.

In conclusion, the Surface Water program provides adequate balance between economic, social, and environmental benefits to achieve institutional sustainability and contribute to the City Business Plan mission and goals.

4.7.2 CITY OF RENTON COMPREHENSIVE PLAN GOALS AND POLICIES

The City's SWM Program carries out the policy direction set in the City's Comprehensive Plan, as well as directions expressed by elected officials, and the public. The City's 2015 Comprehensive Plan (City of Renton, 2015) and subsequent amendments adopted goals and policies that expressed the community's desires related to surface water management. The Land Use Protecting the Natural Environment and Ensuring Natural Resources for the Future and Utility Elements describes goals and policies that are directly relevant to the SWM Program and provides direction, along with meeting regulatory requirements that have resulted in the services that the City currently provides to ratepayers.

The goal of Utility is to implement a SWM Program that provides a high level of service for flood risk reduction, water quality compliance, and habitat preservation in accordance with the needs of the City and in a manner that is sustainable as explained in Section 4.7.1. To provide background on how 2015 Comprehensive Plan goals and policies have provided direction to the City's current program**, Tables 4-3**

through **4-8** summarize relevant goals and policies found in the different comprehensive plan elements that intersect with surface water management.

TABLE 4-3:
2015 COMPREHENSIVE PLAN LAND USE ELEMENT – PROTECTING THE NATURAL ENVIRONMENT AND ENSURING NATURAL RESOURCES FOR THE FUTURE GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Goals	Protecting the Environment.				
Goal L-P	Minimize adverse impacts to natural systems, and address impacts of past practice where feasible, through leadership, policy, regulation, and regional coordination.	X	X	X	a. b. c. e.
Goal L-R	Maintain extractive industries where their continued operation does not impact adjacent residential areas, the City's aquifer, or critical areas.		X	X	c
Goal L-S	Maintain Urban Separators to provide visual and physical distinction to the edges of Renton, protect critical areas, and provide a transition to the rural area.		X	X	
Goal L-U	Preserve, protect, and enhance the quality and functions of the City's sensitive areas including: lakes, rivers, major and minor creeks, intermittent stream courses and their floodplains, wetlands, ground water resources, wildlife habitats, and areas of seismic and geological hazards.	X	X	X	c
Goal L-V	Protect the natural functions of 100 year floodplains and floodways to prevent threats to life, property, and public safety associated with flooding hazards.	X			
Goal L-X	Support and sustain educational, informational, and public involvement programs in the City over the long term in order to encourage effective use, preservation, and protection of Renton's resources.	X	X	X	a. b.
Policies	**Protecting the Environment**				
Policy L-21	Apply conditional use permits, or other approvals as appropriate, for extractive industries including timber, sand, gravel, or other mining to ensure that potential impacts are confined, limited, or mitigated.	X	X	X	
Policy L-24	Manage urban forests to maximize ecosystem services such as stormwater management, air quality, aquifer recharge, other ecosystem services, and wildlife habitat.		X	X	c
Policy L-27	Manage water resources for multiple uses including recreation, fish and wildlife, flood protection, erosion control, water supply, energy production, and open space.	X	X	X	a
Policy L-28	Minimize erosion and sedimentation in and near sensitive areas by requiring appropriate construction techniques and resource practices, such as low impact development.		X		

TABLE 4-3:
2015 COMPREHENSIVE PLAN LAND USE ELEMENT – PROTECTING THE NATURAL ENVIRONMENT AND ENSURING NATURAL RESOURCES FOR THE FUTURE GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policy L-29	Protect the integrity of natural drainage systems and existing land forms, and maintain wildlife habitat values by preserving and enhancing existing vegetation and tree canopy coverage to the maximum extent possible and by restoring hydrological flows and improving the condition of shorelines.	X	X	X	
Policy L-30	Maintain or increase the quantity and quality of wetlands. Development activities shall not decrease the net acreage of existing wetlands.	X	X	X	
Policy L-31	Protect buffers along wetlands and surface waters to facilitate infiltration and maintain stable water temperatures, provide for biological diversity, reduce amount and velocity of run-off, and provide for wildlife habitat.	X	X	X	
Policy L-32	Emphasize the use of open ponding and detention, vegetated swales, rain gardens, clean roof run-off, right-of-way landscape strips, open space, and stormwater management techniques that mimic natural systems, maximize water quality and infiltration where appropriate, and which will not endanger groundwater quality.	X	X	X	c
Policy L-33	Acquire the most sensitive areas such as wetlands, flood plains, and wildlife habitat for conversion to parks and greenbelts. Pursue an overall net gain of natural functions and values by enhancing sensitive areas and providing incentives.	X	X	X	
Policy L-35	Re-establish self-sustaining fisheries resources in appropriate rivers and creeks through habitat improvement projects that encourage and enhance salmonid use.			X	
Policy L-36	Land uses in areas subject to flooding, seismic, geologic, and coal mine hazards should be designed to prevent property damage and environmental degradation before, during, and after construction.	X			
Policy L-37	Emphasize non-structural methods in planning for flood prevention and damage reduction.	X			
Policy L-38	Dredge the Cedar River bed within the existing engineered channel as one method of flood control.	X			
Policy L-39	Provide information for and participate in informing and educating individuals, groups, businesses, industry, and government in the protection and enhancement of the quality and quantity of the City's natural resources and to promote conservation.	X	X	X	b. c.

TABLE 4-3:
2015 COMPREHENSIVE PLAN LAND USE ELEMENT – PROTECTING THE NATURAL ENVIRONMENT AND ENSURING NATURAL RESOURCES FOR THE FUTURE GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policy L-41	Conduct all City operations to minimize adverse environmental impacts by reducing consumption and waste of energy and materials; minimizing use of toxic and polluting substances; reusing, reducing, and recycling; and disposing of waste in a safe and responsible manner.		X		
Policy L-42	Encourage environmentally friendly construction practices, such as Leadership in Energy and Environmental Design, Built Green, Salmon Safe, and Living Building Challenge.		X		
Policy L-43	Support and implement the Mayor's Climate Protection Agreement, climate pledges and commitments undertaken by the City, and other multi-jurisdictional efforts to reduce greenhouse gases, address climate change, sea-level rise, ocean acidification, and other impacts to global conditions.				e.

1 Other falls into the following categories:
- a Public use/recreation
- b Public education
- c Groundwater protection, recharge for water supply, to minimize flooding, and/or to maintain stream flow during the dry season
- d Funding sources
- e Coordination with public agencies and neighboring jurisdictions

TABLE 4-4:
2015 COMPREHENSIVE PLAN TRANSPORTATION ELEMENT - GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Goals	General				
Goal T-B	Balance transportation needs with other community values and needs by providing facilities that promote vibrant commerce, clean air and water, and health and recreation.		X	X	
Policies	**General**				
Policy T-3	Develop a transportation system that preserves and protects natural resources and complies with regional, state, and federal air and water quality standards.		X		

TABLE 4-5:
2015 COMPREHENSIVE PLAN ECONOMIC DEVELOPMENT ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policies	**General**				
Policy ED-17	Promote the efficient use of services and resources, including conserving water and energy, reducing waste, and protecting resource lands. Work cooperatively with local businesses to help protect the natural environment in a manner that is efficient and predictable.	X	X	X	

1 Other falls into the following categories:
- a Public use/recreation
- b Public education
- c Groundwater protection, recharge for water supply, to minimize flooding, and/or to maintain stream flow during the dry season
- d Funding sources
- e Coordination with public agencies and neighboring jurisdictions

TABLE 4-6:
2015 COMPREHENSIVE PLAN PARKS, RECREATION, NATURAL AREAS, AND TRAILS ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policies	**General**				
Policy P-5	Ensure long-term economic and environmental sustainability in system planning, design, operation, maintenance, and decision making.		X	X	
Policy P-7	Protect, conserve, and enhance the area's diverse natural resources for the long-term health of ecosystems, and for the benefit and enjoyment of future generations.		X	X	a.

1 Other falls into the following categories:
- a Public use/recreation
- b Public education
- c Groundwater protection, recharge for water supply, to minimize flooding, and/or to maintain stream flow during the dry season
- d Funding sources
- e Coordination with public agencies and neighboring jurisdictions

TABLE 4-7:
2015 COMPREHENSIVE PLAN UTILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Goals	**General**				
Goal U-G	Provide and maintain surface water management systems to minimize impacts of land use development and storm water runoff on natural systems, fish and wildlife habitat, water supply, public health, and safety.	X	X	X	
Goal U-H	Implement a stormwater management program that optimizes Renton's water resources and promotes low impact development that combines engineering with the preservation of natural systems.		X	X	
Goal U-I	Preserve and protect fish and wildlife habitat, riparian corridors, and wetlands for overall surface water system functioning.	X	X	X	

TABLE 4-7:
2015 COMPREHENSIVE PLAN UTILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Goal U-J	Protect the natural functions of 100 year floodplains and floodways to prevent threats to life, property, and public safety associated with flooding hazards.	X			
Goal U-K	Increase the participation by the City of Renton in resolution of regional surface water and ecological issues that may impact Renton residents.	X	X	X	e.
Policies	**Stormwater Management System**				
Policy U-28	Design storm drainage systems to minimize potential erosion and sedimentation problems, and to preserve natural drainage, watercourses, and ravines.	X	X	X	
Policy U-29	Control runoff from new development, redevelopment, and construction sites through the implementation of development design standards and construction techniques that promote the use of best management practices to maintain and improve storm water quality and manage stormwater flow.	X	X	X	
Policy U-30	Provide incentives and regulations appropriate to an urban environment that reduce impervious surfaces, promote natural and distributed stormwater techniques, and incorporate native and naturalized vegetation.		X	X	
Policy U-31	Maintain, protect, and enhance natural drainage systems and natural surface water storage sites to protect water quality, reduce public costs, and prevent environmental degradation.	X	X	X	
Policy U-32	Work to protect surface and groundwater resources from pollutants entering the storm drainage system.		X		c.
Policies	**Natural System Protection**				
Policy U-33	Manage water resources for multiple uses including recreation, fish and wildlife, flood protection, erosion control, water supply, recreation, and open space.	X	X	X	a. c.
Policy U-34	Through public programs and new development, naturalize degraded channels, streams, creeks, and banks.		X	X	
Policy U-35	Prohibit filling, culverting, and piping of natural watercourses that are classified as streams, except as needed for a public works project where no other option is feasible and mitigation is provided to replace lost functions.	X	X	X	

TABLE 4-7:
2015 COMPREHENSIVE PLAN UTILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policy U-36	Where feasible, promote the return of precipitation to the soil at natural rates near where it falls through development design that minimizes impermeable surface coverage and maximizes infiltration, through the exposure of natural surfaces, tree retention, and the use of LID techniques (such as flow dispersion, bioretention facilities, and permeable pavements).		X	X	
Policy U-37	Preserve and protect wetlands for overall system functioning.	X	X	X	
Policy U-38	Protect buffers along wetlands, streams, rivers, and other water bodies to facilitate infiltration and maintain stable water temperatures, provide for biological diversity, reduce amount and velocity of run-off, and provide for fish and wildlife habitat.	X	X	X	
Policy U-39	Ensure water level fluctuations in wetlands used as part of storm water detention systems are similar to the fluctuations under natural conditions. The utilization, maintenance, and storage capacity provided in existing wetlands should be encouraged.	X	X	X	
Policy U-40	Minimize erosion and sedimentation by requiring appropriate construction techniques and resource practices.		X		
Policy U-41	Limit discharges of pollutants such as chemicals, insecticides, pesticides, and other hazardous wastes to surface waters.		X		
Policy U-42	Reduce the impact of new development on the environment by encouraging sustainable design techniques in public and private development, through LID and other sustainable development methods.		X	X	
Policies	**Public Health and Safety**				
Policy U-43	Prohibit permanent structures from developing in floodways and manage development within the 100 year floodplain. Where development is permitted in the floodplain, ensure compliance with FEMA floodplain development regulations and the National Marine Fisheries Biological Opinion regarding the National Flood Insurance Program.	X			
Policy U-44	Emphasize non-structural methods in planning for flood prevention and damages reduction.	X			
Policy U-45	Continue to maintain levees and floodwalls and perform maintenance dredging of the Army Corps of Engineers constructed Lower Cedar River Flood Hazard Reduction Project to protect the Renton Municipal Airport, other essential public facilities, industrial, and residential areas in the urban center, educational and recreation investments, and other facilities.	X			

TABLE 4-7:
2015 COMPREHENSIVE PLAN UTILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policies	**Regional Coordination**				
Policy U-46	Actively participate in regional efforts to improve fish habitat and water quality that also contribute to the recovery of Endangered Species Act listed salmon in WRIA 8 and WRIA 9, which include May Creek, Cedar River, and Green River Basins.		X	X	e.
Policy U-47	Actively participate in the King County Flood Control District regional efforts to implement flood hazard reduction projects and programs on the major river basins in King County, including the Green River and Cedar River basins.	X			e.
Policy U-48	Coordinate with adjacent cities, counties, state, and federal agencies in the development and implementation of NPDES Phase II Stormwater Permit, flood hazard management plans, and storm and surface water management programs.	X	X	X	e.
Policies	**Utility Management**				
Policy U-49	Provide high quality surface water utility services. Continue to develop policies, design standards, basin plans, and capital projects to maintain and restore the quality of Renton's waterbodies, improve drainage, protect fish and wildlife habitat, and reduce flood hazards to protect people and property.	X	X	X	
Policy U-50	Protect, restore, and enhance environmental quality through land use plans, surface water management programs, park master programs, urban forestry programs, transportation planning, development review, and incentive programs; work with citizens, land owners, and public and private agencies.	X	X	X	e.
Policy U-51	Establish regulatory standards for sustainably developed public and private projects, to include standards for site design and layout, construction, and on-going maintenance and operation.		X		
Policy U-52	Continue to assume maintenance of stormwater facilities in subdivisions that manage runoff from public streets.	X	X		
Policy U-53	Continue to implement a program to detect and remove illicit connections and contaminated discharges.		X		

TABLE 4-7:
2015 COMPREHENSIVE PLAN UTILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Policy U-54	Continue to implement public education and outreach activities to inform residents, businesses, and developers about ways they can prevent stormwater pollution.		X		b.

1 Other falls into the following categories:
- a Public use/recreation
- b Public education
- c Groundwater protection, recharge for water supply, to minimize flooding, and/or to maintain stream flow during the dry season
- d Funding sources
- e Coordination with public agencies and neighboring jurisdictions

TABLE 4-8:
2015 COMPREHENSIVE PLAN CAPITAL FACILITIES ELEMENT – GENERAL GOALS AND POLICIES

Goals and Policies	Direction Given to Surface Water Program	Flood Risk Reduction	Water Quality	Habitat	Other[1]
Goals	**General**				
Goal CF-A	Establish policies that enable the development and implementation of the Capital Investment Program in order to provide high-quality, well-maintained facilities and services that support the social, economic, cultural, safety, transportation, environmental, communication and other needs of the community, that are available at the time of development to serve new growth, and are equitably distributed.	X	X	X	
Policies	**General**				
Policy CF-7	Protect public health, enhance environmental quality and promote conservation of man-made and natural resources through appropriate design and installation of public facilities.	X	X	X	
Policy CF-10	Coordinate with federal, state, regional and local jurisdictions, private industry, businesses and citizens in the planning, design and development of facilities serving and affecting the community.	X	X	X	d. e.

1 Other falls into the following categories:
- a Public use/recreation
- b Public education
- c Groundwater protection, recharge for water supply, to minimize flooding, and/or to maintain stream flow during the dry season
- d Funding sources
- e Coordination with public agencies and neighboring jurisdictions

4.7.3 POLICY AND RECOMMENDED GUIDELINES

As a part of development of this Plan, City staff evaluated a policy for maintaining stormwater facilities and recommended guidelines for hiring additional staff. The policy involved taking over maintenance responsibilities for some residential plat stormwater facilities. This policy was specifically reviewed by the City Council in October 2010, adopted, and is being implemented. More information about the policy and its implications is presented in Section 5. The recommended guidelines included adding staff resources in the future when annexations occur and adding staff resources as infill development occurs. Annexations place new demands on Utility and the capital improvement program and require additional staff and equipment resources to maintain the level of service currently provided by Utility. Likewise, infill development results in additional Utility infrastructure to be maintained. These recommended guidelines are discussed in Section 5.4. The policy issue paper and recommended guidelines contained within are in Appendix A.

SECTION 5
FUTURE PROGRAM NEEDS

5.1 INTRODUCTION

The City's SWM Program has undergone significant changes in the past several years due to:

- New responsibilities to comply with NPDES permit requirements.
- City policy to assume maintenance responsibility for some private stormwater facilities.
- Increased workload associated with large annexations and vegetation maintenance for water, surface water, and wastewater facilities easements and streets ROW.

Additional O&M staff have been added to address these needs. Other future needs to address urban growth, Utility processes, and potential regulatory issues over the next six year planning period are described in the sections below and include:

- Additional staff and resources to address infill development, which expands stormwater infrastructure (i.e., conveyance and flow and water quality facilities) that is inspected and maintained by the City.
- Implementation of an asset management and system reinvestment program.
- Inventory of culverts and streams with fish passage issues to prioritize for repair and/or replacement in preparation for the possibility that Cities and Counties are included in future court cases that require repair of fish passage barriers in Washington State.
- Update of this Surface Water Utility System Plan.

This section also describes ongoing activities that are recommended for continuation, including Utility coordination with outside agencies for major projects associated with transportation corridors or the major rivers in the City and other surface water initiatives and that are important to City residents.

5.2 NPDES PERMIT COMPLIANCE

The City is on its third NPDES Phase II MS4 permit cycle. The most current permit became effective on August 1, 2019 and expires on July 31, 2024. Each successive permit includes modifications designed to improve water quality in the MS4 and results in additional City requirements. New NPDES requirements have created the following needs for the City: resources to develop and implement a source control program, additional MS4 mapping and documentation, and stormwater planning, including development of a Stormwater Management Action Plan for a high priority watershed (see Programmatic Fact Sheet, Appendix E). Implementation of projects and strategies identified in the Stormwater Management Action Plan will not be expected to occur before the 2024 permit expiration, but will be expected in future years. Once set-up, the source control program will be an ongoing program that will require staffing and resources of up to one additional FTE. **Table 5-1** presents a summary of NPDES permit elements and estimates of existing budget for continuing programs and a range of potential increases, if any, in resource needs. The result is that new NPDES permit requirements could increase resource demands from between 3.7 to 5.7 FTEs. No new equipment and materials impacts are assumed except for the addition of an eductor truck for the cleaning and inspection of catch basins and inlets.

TABLE 5-1:
SUMMARY OF KEY NPDES PERMIT ELEMENTS AND BUDGET REQUIREMENTS (BASED ON PERMIT EFFECTIVE 8/19)[1]

Item	Permit Section No.	Brief Description	Range of Resource Needs				Range of Costs[2]	
			Low Range		High Range			
			Increase in FTE Resources[3]	Equipment & Materials	Increase in FTE Resources[3]	Equipment & Materials	Low Range[4]	High Range[4]
Stormwater Management Program (SWMP)	*S5.A. 1 through 4*	On-going implementation and annual documentation of planned activities and actions taken to comply with applicable TMDLs, permit conditions, and monitoring requirements.	Continuation of existing program					
Coordination Among Permittees	*S5.A.5*	In an effort to eliminate barriers to compliance with the terms of the permit, the City will need to coordinate among departments and document internal compliance in the Annual Report no later than March 31,2021	Minimal					
Coordination with Long-Range Plan Updates	*S5.C.1.b*	City must describe how stormwater management needs and protection/improvement of receiving water health are (or are not) information the planning update processes. Documentation is included in the Stormwater Annual Report.	Minimal					
Low Impact Develop Code	*S5.C.1.c*	Ongoing program to require LID BMPs and LID principles and to make LID the preferred and commonly used approach for site development. City must provide an annual update on progress and/or barriers.	Minimal					
Stormwater Management Action Planning/Watershed Planning	*S5.C.1.d.*	City must develop a Stormwater Management Action Plan for one high priority watershed no later than March 31, 2023. Interim permit deliverables in support of the Stormwater Management Plan include a watershed inventory and receiving water assessment by March 31, 2022, receiving water prioritization by June 30, 2022.	Minimal		0.5		$125,000	$300,000[5,6]

TABLE 5-1:
SUMMARY OF KEY NPDES PERMIT ELEMENTS AND BUDGET REQUIREMENTS (BASED ON PERMIT EFFECTIVE 8/19)[1]

Item	Permit Section No.	Brief Description	Range of Resource Needs				Range of Costs[2]	
			Low Range		High Range			
			Increase in FTE Resources[3]	Equipment & Materials	Increase in FTE Resources[3]	Equipment & Materials	Low Range[4]	High Range[4]
Public Education and Outreach	*S5.C.2*	Ongoing education program aimed at the general public, businesses, engineers, contractors, developers, land use planners, residents, landscapers, property managers/owners, and school age children to build general awareness about stormwater impacts and affect behavior change to reduce or eliminate behaviors that contribute to adverse stormwater impacts. Conduct an evaluation of effectiveness of ongoing behavior change campaign no later than July 1, 2020. Develop a strategy to implement actions to address lessons learned from effectiveness study no later than February 1, 2021 and begin to implement outreach strategy based on lessons learned no later than April 1, 2021. Public education and outreach results must be documented no later than March 31, 2024.	Minimal					
Creating Stewardship Opportunities	*S5.C.2*	Ongoing program to provide and advertise stewardship opportunities and/or partner with other organizations to encourage residents to engage in surface and stormwater activities, storm drain marking and other events.	Continuation of existing program					
MS4 Mapping and Documentation	*S5.C.4.b.ii*	Ongoing program to map and document MS4. No later than August 1, 2023, complete mapping of all known connections from the MS4 to a privately owned stormwater system.	Minimal		0.2		$10,000	$29,000[6]
Detect and Identify Illicit Discharges and Illicit Connections	*S5.C.5.d.*	City must conduct field screening of at least 12% of the MS4 annually and track total percentage of MS4 screened beginning August 1, 2019. Train municipal field staff.	Continuation of existing program					

TABLE 5-1:
SUMMARY OF KEY NPDES PERMIT ELEMENTS AND BUDGET REQUIREMENTS (BASED ON PERMIT EFFECTIVE 8/19)[1]

Item	Permit Section No.	Brief Description	Range of Resource Needs				Range of Costs[2]	
			Low Range		High Range			
			Increase in FTE Resources[3]	Equipment & Materials	Increase in FTE Resources[3]	Equipment & Materials	Low Range[4]	High Range[4]
Address Illicit Discharges and Illicit Connections	*S5.C.5.e*	Implement procedures to characterize, trace sources, and eliminate illicit discharges and connections within specified deadlines.	Continuation of existing program					
Ordinance Addressing Runoff from New Development, Redevelopment and Construction Sites	*S5.C.6.b*	Adopt and make effective a local program, no later than June 30, 2022 that addresses runoff from new development, redevelopment and construction site projects consistent with a Phase I program approved by Ecology and amended to include Appendix 10.	Minimal					
Site Plan Review, Inspection and Enforcement	*S5.C.6.c*	Review of stormwater site plans and inspection of development sites before, during and after construction per the permit conditions. Process also includes inspection of BMPs and facilities in new residential developments every 6 months until 90% of the lots are constructed, recordkeeping and enforcement.	Minimal					
Annual Inspection of Stormwater Treatment and Flow Control BMPs/Facilities that discharge to MS4	*S5.C.7.b.i.b*	Ongoing program to annually inspect all stormwater treatment and flow control BMPs that discharge to the MS4, unless otherwise exempted from this permit condition.	Continuation of existing program					

TABLE 5-1:
SUMMARY OF KEY NPDES PERMIT ELEMENTS AND BUDGET REQUIREMENTS (BASED ON PERMIT EFFECTIVE 8/19)[1]

Item	Permit Section No.	Brief Description	Range of Resource Needs				Range of Costs[2]	
			Low Range		High Range			
			Increase in FTE Resources[3]	Equipment & Materials	Increase in FTE Resources[3]	Equipment & Materials	Low Range[4]	High Range[4]
Annual Inspection of Municipally Owned Stormwater Treatment and Flow Control BMPs/Facilities	*S5.C.7.c.i*	Ongoing program to annually inspect all municipally owned or operated stormwater treatment and flow control BMPs/facilities and conduct maintenance activities.	1.0		2.0		$126,500	$253,000
Inspect and clean catch basins	*S5.C.7.c.iii*	Inspection of catch basins and inlets is required once every two years. This requirement may be changed based on maintenance records of double the length of time of the proposed inspection frequency. The City meets this requirement through an alternative of cleaning all pipes, ditches, and catch basins and inlets in a circuit once during the permit cycle. Additional staff will be evaluated during the 2023-2024 budget cycle based on ability to meet permit requirements.	2.0	$400,000	2.0	$600,000	$653,000	$853,000
Pollution Prevention and O&M	*S5.C.7.d. and f*	Ongoing program to document and implement an operations and maintenance program to prevent or reduce pollutants in runoff on lands owned by the City. Implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned by the City that do not have coverage under the Industrial Stormwater General Permit. Update the SWPPP(s) no later than December 31, 2022.	Minimal					

TABLE 5-1:
SUMMARY OF KEY NPDES PERMIT ELEMENTS AND BUDGET REQUIREMENTS (BASED ON PERMIT EFFECTIVE 8/19)[1]

Item	Permit Section No.	Brief Description	Range of Resource Needs				Range of Costs[2]	
			Low Range		High Range			
			Increase in FTE Resources[3]	Equipment & Materials	Increase in FTE Resources[3]	Equipment & Materials	Low Range[4]	High Range[4]
Source Control and Business Inspection Program	*S5.C.8*	Adopt and make effective an ordinance or enforceable document to require source control BMPs for pollutant generating sources associated with existing land uses no later than August 1, 2022. Develop an inventory of sites that have potential to generate pollutants to the MS4 no later than August 1, 2022. No later than January 1, 2023, implement an inspection program to annually inspect 20% of sites in the City's inventory of pollution generating sites. No later than January 1, 2023, implement a progressive enforcement policy that requires sites to comply with stormwater requirements.	0.7		1.0		$88,200	$126,500
Reporting and Staff Training	*S5.C.5, S5.C.6, S5.C.7, S5.C.8*	Submit annual reports and report on inspections, adaptive management response, stormwater planning, and behavior change programs. Implement staff training for illicit discharge, controlling runoff, operations and maintenance, and source control programs.	Continuation of existing program					
Monitoring and Assessment	*S8.A and S8.B*	The City participates in regional status and trends monitoring and stormwater management program effectiveness and source identification studies.	Continuation of existing program				$240,160	$240,160
Totals			3.7	$400,000	5.7	$600,000	$1,242,860	$1,801,660

Notes:
1. This estimate includes only significant changes in the resource needs and is not intended to capture all changes that have cost impacts.
2. Assumes $126,500k per Maintenance Worker 3 FTE (Salary and Benefits). Costs include existing costs for continuation of existing programs based on actual budgets, and new costs that show increases in FTE resources. Unless noted, resources are assumed to be maintenance staff.
3. FTE resources assume increases in staff resources only.
4. Totals are annual costs and do not include one-time costs, except where noted.
5. Cost includes staff time and consultant costs to develop SMAP.
6. Engineering staff assumed at $145k per year.

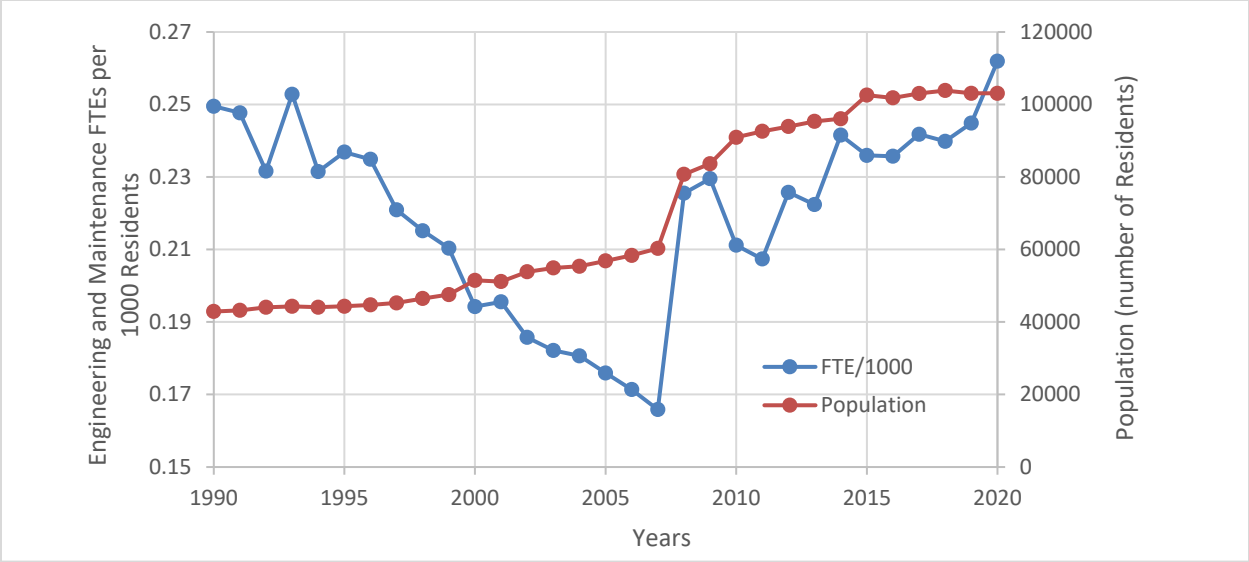
5.3 CITY MAINTENANCE OF RESIDENTIAL FACILITIES

The City began assuming maintenance responsibility for private residential stormwater management facilities adjacent to public streets in 2012. A policy decision was made on October 18, 2010 to assume maintenance responsibility of these facilities to be consistent with King County policy, from which many of these facilities were being transferred to the City during annexation, and to improve equity among residents that pay SWM fees. Additionally, the City determined that City maintenance would improve system reliability and reduce enforcement staff time spent on enforcement actions for facilities that are not adequately maintained.

The City has assumed maintenance of up to 115 residential facilities, and there are another 37 facilities that meet the City's standards to assume maintenance responsibilities. Some of these facilities are pending transfer. Between the residential facilities and City-owned facilities, the City maintains 435 stormwater facilities. There are 787 private stormwater facilities in Renton; 209 are residential facilities. Besides the facilities that are pending transfer, it is not anticipated that many of these facilities will be transferred to the City for maintenance, because they were either (1) constructed prior to the NPDES permit requirement for inspection and maintenance and therefore exempt, or (2) are not under management of an HOA and have no entity with which to negotiate a transfer agreement.

5.4 ANNEXATIONS

Over the years, numerous small annexations have occurred that have increased the size of the City, and the amount of stormwater management infrastructure that the City owns and operates. In general, most annexations were accommodated without any specific increase in Utility staffing, equipment purchases, or rate increases. Individually, the small annexations did not require hiring any new staff to accommodate the new infrastructure. Cumulatively, however, the effect is large. **Figure 5-1** shows the per capita Utility engineering and maintenance staffing from 1990 through 2019. From 1990 through 2007, staffing generally remained constant, and the effect of infill development and annexations reduced staffing on a per-resident basis by nearly 20%. The increase in staffing that accompanied the Benson Hill annexation in 2008 helped bring staffing back near 1990 levels. Since then, staffing ratios have generally kept pace with population growth to the current levels in 2019- 2020, with slight dips during the recession years (2009–2010).



1. FTE data is from Adopted Budgets and does not reflect position vacancies. Population data from City of Renton Community and Economic Development Department, Economic Development Division.

Figure 5-1. SWM Maintenance and Engineering FTEs per 1000 Residents by Year and Population

In response to trends of annexations that result in significant growth in City population and additional Utility responsibilities, the City evaluated potential policies that describe thresholds for adding new staff, capital improvement needs, and equipment when annexations occur. A draft recommended guideline paper developed in 2012 is included in Appendix A and discusses options for meeting Utility demand that results from annexations. The recommended thresholds, on a per-square-mile basis are shown below, updated to 2020 cost estimates:

- $117,600 per year for maintenance staff (MWIII, Step C, 1 FTE including benefits).
- $94,250 per year for 0.65 FTE engineering division staff (CEII, Step C, 0.65 FTE including benefits).
- One-time cost for equipment and/or vehicle purchases (to be evaluated on an as needed basis).
- Ongoing annual cost for equipment and vehicle maintenance (to be evaluated on an as needed basis).
- Ongoing annual capital improvement needs of $150,000 per square-mile of annexation increase.

No additional large annexations are anticipated during the next six-year planning horizon; however, staff and budget increases may be warranted because of system expansion and population growth pressures that result in additional workloads for Utility engineering and maintenance staff. Some of these conditions, such as infill development and vegetation maintenance, are discussed below.

5.4.1 Benson Hill Annexation

The Benson Hill area was annexed on April 1, 2008. The 4.2-square-mile annexation increased the City's area by approximately 24% to 21.5 square miles.

Upon annexation, the City increased its maintenance staff and dedicated an eductor truck crew to address the needs of this area. After annexation, the City observed a lot of deferred maintenance of

Utility infrastructure due to the poor condition and extensive maintenance needs of the annexation area. After 12 years, the Benson Hill annexation area still requires more maintenance than other areas of the City. Future annexations should consider potential Utility rate increases to offset maintenance needs if revenue generated from the annexation is not sufficient to manage asset conditions in newly annexed areas. The draft issue paper in Appendix A suggests potential Utility resource needs for annexations.

5.5 VEGETATION MAINTENANCE

In 2018, a policy decision was made by the Maintenance Services Director to have the Utility Maintenance Section conduct vegetation management for all right-of-way, Public Works facilities (water, wastewater, and surface water), and easements. Previous to the policy decision, each maintenance section (e.g., water, wastewater/surface water, streets) had their own part-time seasonal staff. This shift to City-wide vegetation maintenance, along with the addition of new facilities through infill development (discussed in Section 5.6), has increased workload for Utility maintenance staff. Another consequence of the increased vegetation maintenance is the crew is not able to continually operate one of the eductor trucks during the growing season due to staff demands for vegetation maintenance.

5.6 INFILL DEVELOPMENT

The City prepared a draft recommended guideline to add maintenance staff, because infill development results in additional Utility infrastructure (included in Appendix A). Infill development generally refers to development or redevelopment within the City limits to currently established zoning and often results in expansion of roads or road improvements. New Utility infrastructure resulting from infill development can include new storm drain pipes, catch basins, and detention and water quality treatment facilities. The City's infill development analysis uses miles of storm drain pipe to characterize all types of infrastructure, because storm drain pipe is thought to be a reasonable metric to describe the storm drainage system.

Several land development projects are anticipated in the six year time frame.

- ST3 Transit Center: The former Sound Ford site at 750 Rainier Ave S is planned for development with a 700 stall parking garage and new transit center by Sound Transit. There is potential for a mixed use multi-story Transit Oriented Development (TOD) onsite.
- Sam's Club: The former Sam's Club at 901 S Grady Way has an interested party discussing redevelopment for single story retail. There was previous interest for a mixed use or multi-story development that is now not currently planned.
- TOD subarea: The City hired a consultant to develop a TOD subarea plan with the purpose of setting up improvements and development regulations, creating a multimodal center that evolves into a pedestrian-oriented neighborhood, and leveraging and identifying public investments for private investments to follow.
- Southport area near the Landing/Gene Coulon Park: The office buildings are currently vacant. The location will be easier to access with the extension of Park Ave. Top Golf in partnership with a hotel that is moving forward with a development on vacant commercial land at 745 Park Ave N.

- Bryant Motors property: The former Bryant Motors property at 1300 Bronson Way N is planning for a one-story redevelopment project.
- Sunset Terrace: Two mixed use projects - 400 units next to the Renton Highlands Library and 800 units on the Highland Shopping Center site - will add housing to the Sunset neighborhood.
- Old City Hall: A mixed use development with two market-rate apartment buildings, underground parking and a hotel is planned at the 200 Mill Ave S.
- Redevelopment near the VMAC: There is interest to develop assisted living facilities in this area.

Analysis conducted in 2012 indicated the need to add one new maintenance worker for every 27 miles of added storm pipe and one engineer for every 41 miles of storm pipe that is added to the system via infill development. The current ratio of maintenance workers to miles of storm pipe is one worker per 15 miles of storm pipe. The City estimates that the cost to add one maintenance worker is approximately $126,000 per year, which would cover wages, benefits, necessary equipment, and necessary vehicle expenses.

To maintain its maintenance level of service as infill development occurs, the City will need to track the amount of new drain pipe resulting from infill development. It is not possible to predict how much infill development will occur, especially with recent housing boom and recession periods, but long-term running average historical data can be used to provide some context. For example, between 1987 to 2006, the City reported that 55 miles of drain pipe were added to the system. At this rate, one additional maintenance worker would be added every 9 years, and one additional engineer would be added every 14 years to manage stormwater system growth due to infill development.

5.7 Asset Management

Managers of municipal infrastructure assets must make technical decisions regarding when and how to maintain, repair, or renew their assets. Examples of these technical decisions include:

- How much annual maintenance is required?
- Is it more cost-effective to maintain, repair, or replace a certain component of the system?
- How can the remaining service life of a component or system meet the calculated?
- Will the maintained, repaired or replaced component meet the desired performance requirements?
- What are the probabilities of failure for individual components and what are the consequences of failure?
- How can an asset manager make a logical, cost-effective and objective decision with many unknowns?

Investing in long-term decision making has historically been difficult for the City due to competing resource needs (e.g., solving flooding problems) and lack of physical data about the system. As a consequence, system replacements have tended to be reactive (e.g., replacing a system after it has failed) or opportunistic (e.g., replacing a system at the same time that another City project is working in the area). This is an increasing concern for the City. For example, the City has many older corrugated

metal pipe (CMP) systems that are subject to rusting out over time, already resulting in some system failures.

Asset management is a body of management practices that maximizes the cost-effective use of capital assets over the life of the asset (Sivalingam, 2001). Its purpose is to get the most use out of each asset over the life of the asset for the least long-term cost. For pipeline management, asset management can be defined as managing infrastructure capital assets to minimize the total cost of owning and operating them, while delivering the City's target level of service. Several large municipalities have implemented asset management planning using sophisticated information systems and extensive personnel resources. Such municipalities are responsible for making sure that its system stays in good working order, regardless of the age of components or the availability of additional funds. Asset management programs with long-range planning, life-cycle costing, proactive operations and maintenance, and capital replacement plans based on cost-benefit analyses can be the most efficient method of meeting this challenge. Use of asset management will help protect the system integrity by (GASB, 1999):

- Making sure components are protected from premature failure through proper operations and maintenance.
- Facilitating proactive capital improvement planning and implementation over longer cycles to reduce annual and overall costs.
- Reducing the cost of new or planned investments through economic evaluation of options using life-cycle costing and value engineering.
- Focusing attention on results by clearly defining responsibility, accountability, and reporting requirements.
- Key elements of more sophisticated asset management programs include (USEPA, 2002):
- Level of service definition
- Selection of performance goals
- Information system
- Asset identification and valuation
- Failure Impact evaluation and risk management
- Condition assessment
- Rehabilitation and replacement planning
- Capacity assessment and assurance
- Maintenance analysis and planning
- Financial management
- Continuous improvement

The City is currently using a combination of CityWorks, GIS, and GraniteNet for its asset management strategy. CityWorks is used to track maintenance work orders. GraniteNet is used for condition assessment data and prioritization of asset replacement or rehabilitation. GIS, integrated with CityWorks and GraniteNet, is used to display information and track projects and maintenance activity.

One of the key elements of asset management is understanding asset condition. The City has an existing program to assess CMP pipes and prioritize maintenance, repair, and replacement. This program should

be enhanced to include condition assessment of all pipes, starting with those deemed high priority (see Programmatic Fact Sheet, Appendix E).

5.8 CULVERT INVENTORY

On March 29, 2013, the US District Court for the Western District of Washington issued a permanent injunction requiring state roads owned WSDOT, DNR, WDFW, or the Washington State Parks and Recreation Commission to operate culvert crossings that are suitable for fish passage. The decision reinforces treaty fishing rights granted by the federal government to Native American tribes in Washington State dating back to the 1860s. The permanent injunction required the State to prepare a list of all culverts in Western Washington with barriers to fish passage within 6 months of the ruling. By October 31, 2016, WDFW, DNR, and State Parks were required provide for fish passage at each culvert listed as a barrier. WSDOT must also provide fish passage for culverts with barriers by 2030. Although the court ruling focused on State-owned culverts, it is possible that it could be broadened in the future to include other governmental entities, such as counties and cities. In an effort to proactively address the potential liability that the City may face in the future, Utility will begin the process of conducting a stream inventory of all culvert crossings. This information will be used to field survey each culvert crossing in an effort to identify fish passage issues and develop solutions with priority rankings to be incorporated in the utility's CIP program (see Programmatic Fact Sheet, Appendix E).

5.9 SURFACE WATER UTILITY SYSTEM PLAN UPDATE

This Surface Water Utility System Plan will need to be updated in the next 6–10 years to document and identify new surface water program issues, strategies, resource needs, and implementation schedules.

5.10 SURFACE WATER UTILITY COORDINATION

The Utility often coordinates with outside agencies, including the WSDOT, KCFCD, Ecology, and neighboring jurisdictions on issues of common concern such as discharges to streams, rivers, and Lake Washington, or geographic overlap, such as transportation corridors, and large rivers.

5.10.1 WSDOT PROJECTS AND COORDINATION

The City frequently partners with WSDOT to administer and implement mutual benefit projects, including habitat and surface water management improvements involving WSDOT highways that lie within the City.

The Utility reviews WSDOT projects that may impact the downstream drainage system in the City of Renton. Impacts may involve downstream ditches, basin land use and flows, water quality and detention requirements, or pipe capacities. Utility reviews also focus on whether proposed WSDOT improvements would create problems in the future. The City reviews WSDOT documentation including drainage reports and environmental reports. The City reviews WSDOT projects for environmental protection consistent with City polices related to wetlands, floodplain, stream buffer, and shorelines and works with WSDOT to modify plans, easements, or maintenance in order to achieve mutually beneficial goals for the City and WSDOT.

5.10.1.1 WSDOT Projects

The Utility has a long history of collaboration with WSDOT and expects to maintain this collaboration on future projects. Such collaboration may include technical reviews, cost-sharing or both. Within the last decade, several major WSDOT construction projects were completed in the City. These projects are highlighted below:

- The Stage 1 Widening Project was completed in 2010 and includes the removal of the Springbrook Creek box culvert under I-405 and the construction of several flow control ponds and media filter drains for water quality treatment.
- The Stage 2 Widening Project was completed in 2011 and includes renovation (slip-lining) of the Renton coal mine drainage culvert under I-405. Prior to the Stage 2 project, WSDOT also installed a new culvert under I-405 to replace the failed Thunder Hills Creek culvert.
- The Thunder Hills Creek Mitigation Fish Barrier Retrofit Project was completed in 2012 and provides mitigation for the Thunder Hills Creek culvert under I-405 that was damaged and subsequently replaced in 2008. Mitigation included the replacement of the SW 23rd Street culvert under SR 167 and the plugging of cross culverts across SR-167 to direct Panther Creek to the north in a new channel. The subsequent 5-year monitoring period ended in 2017, meeting all performance standards.

The following are current and future mutually beneficial projects where Surface Water and WSDOT are collaborating or coordinating on:

The Springbrook Creek Wetland & Habitat Mitigation Bank Project: This project enhances 110 acres of wetlands and buffer and restores/creates a larger connected 20 acres of wetland; totaling approximately 130 acres of wetlands. The project is a collaboration between the City and WSDOT to create wetland credits that can be used for project the require wetland mitigation. Once all performance standards are met, a total of 45.12 mitigation credits are expected to be available and shared equally between the City and WSDOT. One credit compensates for one acre of Category II wetland. All credits have been released from Units A, B, D, and E. All credits are anticipated to be released from Unit C by the end of 2020. Following the 10-year monitoring period and release of all credits, the bank will enter its Long-term Management Phase. Long-term management will include annual inspections, monitoring of hydrologic conditions and targeted wooded species, weed control, trash removal, and repair of signage and structures due to vandalism and natural wear. The City is in the process of determining credit value and what type of projects (e.g., commercial, residential, etc.) would be eligible to use the credits. Sale of credits will be used to establish an interest-bearing account to fund long-term management indefinitely.

- I-405/SR 167 Express Toll Lane and Direct Connector was completed in 2019 and provides dedicated HOV/HOT direct access between SR167 and I-405.
- I-405 Renton to Bellevue Widening and Express Toll Lanes began construction in 2020 and is anticipated to end construction in 2024. This project will add a dual express toll lane system from SR 167 in Renton to NE 6th St in Bellevue, improvements at the N Southport Drive and NE 44th St interchanges, construction of portions of the Eastrail, and a new direct access ramp and inline transit station at NE 44th St to help support Bus Rapid Transit operations.

Panther Creek Watershed Restoration Plan: Panther Creek Wetlands are a 58.5-acre category II wetland that encompasses an area east of SR 167 that parallels SR 167 from I-405 (toe of Talbot Hill) to just south of Panther Creek. This potential future project between the City and WSDOT is the Panther

Creek Watershed Restoration Plan that provides benefits to Panther Creek and its wetlands. The Panther Creek Watershed Restoration plan jointly collaborates and achieves the goals set within the City's East Side Green River Watershed Plan. The mutual environmental benefits between WSDOT and the City are that the project establishes off-channel fish refuge and rearing habitat in the wetland, promotes water aeration, provides enhanced water quality treatment of highway runoff, enhances 33 acres of floodplain habitat, provides riparian plantings to increase shade and reduce water temperatures, and removes three fish passage barriers in Panther Creek. This potential project provides a unique opportunity to improve surface water management and reduces flooding along the East Valley Road and the SW 34th Street drainage system in the City. Several elements of this project have been already addressed as part of the Thunder Hills Creek Mitigation Fish Barrier Retrofit Project including the construction a fish passable culvert across SR-167 at the SW 23rd Street channel and the realignment of Panther Creek south of SW 34th St. The Panther Creek partnership provides an unconventional focus on stream mitigation and stormwater management by providing potential economic efficiencies with the partnership, improves environmental mitigation beyond the immediate project site, and provides the greatest environmental benefit without compromising project and Utility goals.

The most pressing segment of this project involves connecting fish-passability from Rolling Hills Creek to Springbrook Creek through Panther Creek. At SW 19th St where Rolling Hills Creek enters a culvert under SR 167, there is a berm preventing flow south into the adjacent Panther Creek wetland area. By creating a new fish-passable channel across this berm and through the Panther Creek wetland area, Rolling Hills Creek can continue south then west to enter the fish-passable culvert under SR 167 at SW 23rd St. In order to ensure fish-passability and prevent flooding to adjacent and influent areas, capacity improvements will be made to the existing Panther Creek channel along SE 23rd. The existing culvert under SR 167 at SW 19th St will be retained for overflow during major storm events. The level of collaboration on this effort consists of executing a cost-sharing agreement and likely forming an inter-agency design team.

Johns Creek Outfall: This project includes WSDOT's proposed stormwater treatment facility north of N Southport Drive and east of Lake Washington Boulevard N. WSDOT has conducted early coordination with Utility engineering staff in the N 8th HOV project area. The Johns Creek system is near full capacity and no additional storm flows can be allowed through the creek system. A Letter of Understanding between WSDOT and the City was developed for the Johns Creek system, which stated that an outfall pipeline must be built to directly discharge into Johns Creek with proposed improvements. Johns Creek is known as a remnant backwater of Lake Washington, so hydraulic and hydrologic analyses must consider summer water elevations from Lake Washington that might affect all hydraulic systems upstream of Johns Creek. Specific design objectives have been established between the City and WSDOT, which include:

- Providing adequate outfall treatment for runoff from the I-405 Corridor Project from MP 4.59 to MP 6.09 near N 8th Street HOV, portion of North Renton segment in the N Southport Drive interchange area, and the Sunset Boulevard underpass area.
- Providing adequate culverts for off-site drainage from the east side to the west side of I-405 from MP 4.59 to MP 6.09.
- Designing outfall and culverts assuming ultimate development conditions for off-site areas.

Culverts at 08.LW-7.7 and 08.LW-7.8 crossings: (the numbers 7.7 and 7.8 refer to the designated milepost of I 405) New fish-friendly culverts (or other structure) are proposed by WSDOT with the ultimate discharge into the small stream located at the northernmost area of the City that drains through a residential area north of the Misty Cove Condominiums. The collaboration level consists of

providing technical review as needed to make sure that the City's drainage system downstream is not impacted.

5.10.2 King County Flood Control District Coordination

KCFCD was established in April 2007 by the King County Council to protect public health and safety, regional economic centers, public and private properties, and transportation corridors. KCFCD is instrumental in addressing the backlog of maintenance and repairs to levees and revetments, acquiring repetitive loss properties and other at-risk floodplain properties, and improving countywide flood warning and flood prediction capacity.

Overarching countywide strategies and objectives include:

- Improving levee protection through major commercial, industrial, and residential areas.
- Improving flood water conveyance and capacity.
- Reducing hazards by removing flood-, erosion-, and landslide-prone residential structures.
- Providing safe access to homes and businesses by protecting key transportation routes.
- Minimizing creation of new risks to public safety from development pressure.
- Providing grant funding to local jurisdictions for flood control projects.

The King County Council governs KCFCD as a "District Board of Supervisors." An advisory committee advises the Board of Supervisors on regional flood risk reduction issues by providing recommendations on the district's work program and budget, including CIP projects. The advisory committee is composed of both permanent and rotating (two-year) members. The 10 permanent seats on the committee are held by each mayor (or council member alternate designated by the mayor) of Tukwila, Auburn, Kent, Renton, Snoqualmie, North Bend, Carnation, Seattle, and Bellevue. The King County Executive is also a permanent member of the committee.

Basin technical committees, which are responsible for ensuring that basin-scale issues and technical information are factored into countywide district decision-making processes, are comprised of city staff from jurisdictions within each basin. This includes the Green/Duwamish and Cedar River basins, which the City of Renton lies within. These committees have the following objectives:

- Provide input to KCFCD staff regarding annual and longer term capital improvement project priorities.
- Share relevant information across areas of the KCFCD that would influence implementation of the district's work program.
- Review and help guide project implementation, as appropriate.
- Develop policies and issues papers as required.
- Coordinate jointly with state and federal partners on relevant issues.

King County employees are responsible for implementing flood hazard management programs and projects, staffing the advisory and basin technical committees, providing technical and engineering assistance to cities, and reporting progress back to the KCFCD's Board of Supervisors, advisory committees, and basin technical committees.

5.10.3 Other Coordination Associated with Major Rivers

In addition to KCFCD coordination, the City also coordinates with FEMA and USACE with respect to emergency response and flood hazard reduction on the Green and Cedar rivers. Most of the work with FEMA either involves pre-disaster coordination or post-disaster assistance. Post-disaster assistance may include emergency coordination during an event (as well as with the City's internal emergency management group), documentation of flood events and damage assessments, and assistance with cost estimates for repairs. Coordination with USACE is most often associated with projects that were designed by USACE and that need to be coordinated with the City as a local sponsor and to provide input into the design and possibly provide assistance to the project.

5.10.4 Future TMDL Implementation

There are currently twelve listed water bodies within Renton that could be potential candidates for TMDL implementation. In addition, as described in Section 4.4.6, Ecology has begun the process of developing a multi-parameter TMDL to address water temperature, dissolved oxygen, and aquatic organisms for the Soos Creek watershed, which may affect parts of Renton within the watershed (Ecology, 2020d).

This effort will require City staff to attend meetings, review studies, and be involved in decisions and provide input during the development of the TMDL. Although it is uncertain what the TMDL requirements will be, it is likely that City will require additional resources to implement TMDL strategies that will reduce targeted pollutants to within state water quality standards. Some possible TMDL strategies may include structural controls such as regional detention and water quality treatment facilities or changes in development regulations that increase stream buffer widths.

5.11 Continuation of Existing Surface Water Initiatives

Existing surface water initiatives or programs that take resources, but are important to the health of residents or functionality of the surface and stormwater system include the following:

- Mosquito Abatement Program – This program involves treating the uplands east of Panther Creek Wetland and stormwater ponds during the spring and summer to control mosquito infestations.
- Stormwater Facility Fencing Program – This program involves bringing existing stormwater facilities up to current standards and alleviating potential safety issues from public access to drowning hazards.
- City-Wide Drainage Maintenance Program – This program involves conducting routine maintenance such as vegetation and sediment removal at culverts discharging to streams and creeks under programmatic permit authorizations.
- Stream flow/Water Quality Monitoring Program – This program involves collection of stream gage data at the Black River pump station.

5.12 Summary

A summary of on-going and future program needs, including estimated costs and FTE resource needs associated with NPDES Permit Conditions is provided in **Table 5-2.** Annexations are not expected to be a resource driver for the Utility in the coming years as potential annexation areas have voted against

annexation and those areas will continue to be outside of the City boundary. Infill development is continuing and will add infrastructure and burden to the Utility and maintenance staff; however, current staffing levels are keeping pace with the rate of infill development and no additional resources are expected specifically for infill development over the next 6 years. The City should continue to monitor the increased resources relative to maintenance staff levels and make adjustments as needed. Additional maintenance staffing resources are needed to meet new NPDES requirements as noted in **Table 5-1**. With additional staff resources for NPDES surface water facility inspection and maintenance the ability to meet the demands of vegetation management during the growing season will be improved for Utility staff. As discussed previously, the City is, and will continue, coordinating with WSDOT and other jurisdictions associated with the KCFCD. The amount of effort spent on these coordination efforts has increased in recent years and may continue to do so. The City should monitor these coordination activities and associated efforts and determine if additional budget is necessary in the coming years.

Table 5-2:
Summary of On-Going and Future Program Needs

Program Need	Description/Potential Program Changes	Conceptual Solution	New FTEs	Estimated Cost (2020)
NPDES Compliance	Details of compliance elements described in Table 5-1	Continue with existing NPDES program and enhance program with new permit requirements.	4 (high end)	$1,801,660 (high end)
Residential Plat Stormwater Management Facility Maintenance and Operation- continuation	The City assumed operation and maintenance of 115 existing stormwater facilities on residential plats following a policy decision on October 18, 2010.	Continue maintenance of 115 residential stormwater facilities. Transfer up to 18 additional facilities to Renton.	0.0	$685,000 annually
Mosquito Abatement Program (Talbot Hill Area)- continuation	The Panther Creek wetlands east of SR-167 and between I-405 and Valley Medical Hospital, are a large breeding ground for mosquitoes. Adult mosquitoes emerge from the wetlands in the late spring to feed in the residential neighborhoods in and around Talbot Hill. In addition to controlling adult mosquitoes, the City also treats for mosquito larvae in all City owned stormwater facilities including ponds and vaults. These mosquito abatement efforts help to reduce mosquito bites and subsequent risk of West Nile virus infection.	The City implements an annual contract with pest control contractor to control mosquito populations through adulticiding of upland areas adjacent to the wetlands and treatment of City maintained stormwater ponds using larvicide during the spring and summer months. The budget may need to be adjusted annually to account for additional ponds that are acquired by the City through new construction.	0.0	$90,000 annually

Table 5-2:
Summary of On-Going and Future Program Needs

Program Need	Description/Potential Program Changes	Conceptual Solution	New FTEs	Estimated Cost (2020)
Stormwater Facility Fencing Project-continuation	Past and current design standards (taken largely from King County Surface Water Design Manual) require stormwater ponds to have a perimeter fence only when interior side slopes are greater than 3 horizontal to 1 vertical. However, some existing ponds with flatter interior side slopes (i.e., that did not require perimeter fencing) and having standing water several feet or more deep can create a potential safety hazard, particularly for small children.	The City has adopt a new policy of requiring all current and future ponds to be fenced which required changes to the City's stormwater code and stormwater design manual. The City is currently responsible for the maintenance of 28 residential facilities and 6 non-residential facilities that either do not have perimeter fencing or do not have a perimeter fence that meets the design standards. There are an additional 17 privately maintained stormwater facilities that will be eventually transferred to the City and will need to be fenced.	0.0	$100,000 annually
Asset Management-enhancement	Prioritize non-CMP pipes for condition assessment Develop protocols for using condition assessment data to identify maintenance, repair and replacement needs.	The Surface Water utility has developed an asset management program that helps the utility with short, medium and long term planning of pipe replacement and repair, proactive inspection and maintenance of the City's storm system and prioritizing replacement projects based on cost-benefit analysis and severity of defects. The program relies on a CCTV Truck with two operators, GraniteNet for viewing CCTV inspections, NASSCO PACP standards, and coordination between Surface Water Engineering and Maintenance sections. The utility will continue to advance this program to include non-CMP pipes.	0.0	$100,000 annually

Table 5-2:
Summary of On-Going and Future Program Needs

Program Need	Description/Potential Program Changes	Conceptual Solution	New FTEs	Estimated Cost (2020)
Culvert/Stream Inventory	Identify all stream crossings with culverts Field inventory fish barrier culverts Prioritize fish barrier culverts and program into 6-yr CIP	The Surface Water Utility began the process of conducting a stream inventory of all culvert crossings. This information was used to eventually field survey each culvert crossing in an effort to identify fish passage issues and develop solutions with priority rankings which can be incorporated in the utility's CIP program. The establishment of a fish passage improvement program is currently under consideration.	0.0	$95,000 annually
Surface Water Utility Plan	The Surface Water Utility's last comprehensive planning effort was conducted almost 20 years ago. A new surface water utility management plan is needed to reflect current capital needs and programs.	Develop a comprehensive city-wide surface water planning document to provide guidance for programmatic and capital needs for the next 6 years and for future years. Update every 6 years. Last update as of the writing of this system plan was in 2020.	0.0	$120,000
Citywide Drainage Maintenance Program	The City has many culverts discharging to streams and creeks that require routine maintenance including vegetation and sediment removal.	The City has completed SEPA review and was issued a critical areas and shoreline exemption for vegetation and sediment removal at culverts within in the City. Fisheries has also issued an HPA that authorizes routine maintenance of 25 culverts and channels. City staff will still be required to obtain individual state and federal permits for each culvert.	0.0	$66,000 annually
Surface Water Utility GIS	The City's infrastructure mapping needs continual updates as new storm water facilities, pipes and structures are taken into plats or acquired through annexations.	Surface water utility GIS mapping to include new storm water systems, as-built information, recently annexed areas, and continual maintenance of GIS mapping.	0.0	$115,000 annually
Stream Flow/WQ Monitoring Program		Stream flow and water quality monitoring program. Currently collecting stream gage date at the Black River pump station.	0.0	$13,000 annually

Table 5-2:
Summary of On-Going and Future Program Needs

Program Need	Description/Potential Program Changes	Conceptual Solution	New FTEs	Estimated Cost (2020)
CMP Storm System Replacement Program	This program consists of assessing the condition of all corrugated metal pipes (CMP) whose diameter is 18 inches or larger, located in high risk areas (i.e. under major roads). This program was driven by a failure of a CMP pipe along Rainier Ave S in 2018, which caused a major cavity to form underneath the road, and required an emergency repair project. This program is intended to address deficiencies in CMPs, which are more susceptible to deterioration than plastic and concrete pipes, before a catastrophic failure becomes imminent.	Minor deficiencies are typically repaired through coordination with the surface water maintenance section, while replacement projects resulting from significant structural issues (e.g. deterioration of the pipe wall, pipe collapse) require the replacement or rehabilitation of the pipe and may require hiring a contractor. This program repairs and replaces corrugated metal pipes showing signs of deterioration in high risk areas to avoid catastrophic failures and emergency repairs. This project supports the city's goal of protecting public safety.	0.0	$580,000
Cedar River Flood Risk Reduction Feasibility Study	The Lower Cedar River Flood Risk Reduction Feasibility Study intends to assess the feasibility of improving the level of flood protection and evaluate future flood risk mitigation projects along the Cedar River from River Mile 0 to River Mile 2.7.	This feasibility study would identify potential measures or construction projects that would increase resiliency to floods greater than the 100-year event and identify the most feasible level of flood protection that could be achieved along this reach of the Cedar River, a critical area of development and economic activity within King County. The King County Flood Control Zone District (KCFCZD) placed the Feasibility Study on its 6-year Capital Improvement Project funding plan in 2018 and a funding agreement was executed with the City in April 2020. This study is expected to begin in 2020 and be completed by 2023. This study evaluates the feasibility of increasing the level of flood protection along the Lower Cedar River, and reducing the risk of flooding to the surrounding area in Renton. It supports the city's goal of protecting public safety.	0.0	$485,000

Table 5-2:
Summary of On-Going and Future Program Needs

Program Need	Description/Potential Program Changes	Conceptual Solution	New FTEs	Estimated Cost (2020)
WSDOT Limited Access ROW Runoff Impact Mitigation Program	The city currently charges surface water fees to WSDOT for the SR-167 and I-405 right of way within Renton city limits. RCW 90.03.525 allows local municipalities to charge stormwater fees for state limited access highways and was modified when Senate bill 5505 was passed in 2019. The bill clarified the objectives of the Stormwater Management Funding and Implementation Program for highway related runoff problems and required charges paid by the state to local jurisdictions to be used solely for stormwater control facilities that directly reduce state highway runoff impacts or implementation of best management practices that will reduce the need for such facilities. A plan and progress report are required to be submitted annually so that WSDOT pays their stormwater fee to the City.	This program consists of studies and improvements to city facilities downstream of limited access right-of-way implemented to remain in compliance with RCW 90.03.525. This program enables the city to keep collecting surface water fees from WSDOT for limited access right of way, and prioritizes improvements beneficial to both the City and WSDOT. It supports the city's goals of public safety and quality of life.	0.0	$96,000

SECTION 6
CAPITAL IMPROVEMENT PROJECT NEEDS

6.1 GENERAL

This section includes a summary of the drainage system flooding, water quality, and habitat problems along with proposed project solutions for Utility. This section also describes the process that was used to identify the problems. Most of the information on solutions to these problems and associated costs was obtained from previous studies and documented in this Plan without further analysis. Conceptual project solutions and planning-level cost estimates were developed for a few additional problems identified during the 2007 planning effort. No additional conceptual project solutions or planning level cost estimates were identified or developed for the 2020 update. A prioritization scheme for implementation of capital improvement projects is also discussed.

This section also includes a summary of the capital projects that have been identified by Utility as being needed on an annual basis.

6.2 FLOOD RISK REDUCTION

The stormwater system in the City includes pipe systems, ditches, culverts, creeks, and detention facilities. Over the years, the Utility has addressed many flooding problems through solutions ranging from simple system maintenance to design and construction of complex capital projects. However, several flooding problems still exist. The Utility's policy typically has been to address major trunk drainage system problems first, and then address localized problems that affect fewer people and cause less property damage. In addition, activities to reduce flood risk are focused on improving public safety, preventing damage to structures (including commercial buildings and private homes), and reducing the frequency of flooding.

Several steps were completed during the 2007 planning effort to identify flooding problems in the City. Available drainage studies, basin plans, and other related reports were reviewed along with the list of drainage complaints downloaded from the City's GIS database. City staff interviewed maintenance personnel and King County maintenance staff in areas that had been annexed. A preliminary list of flooding problems was compiled and reviewed to confirm which of the problems still exist and to add other problems that had not been previously included. Most of the problems within the City involve localized flooding due to the lack of a collection system, old age of the system, or an undersized conveyance system.

Flooding solutions were developed to different levels of detail. For flooding problems identified from drainage complaints or by City staff that were not documented in a previous report or study, or for those that did not have a previously developed recommended solution, field reconnaissance was conducted to better evaluate the problem so that a planning-level conceptual solution and cost estimate could be developed. In these cases, the conceptual solution and cost estimate are considered very preliminary, because the solution was developed without detailed analysis (such as hydraulic analysis or survey). For flooding problems that had been documented in previous studies, project solutions were also developed and documented in most cases.

The problems that were identified through the data review and collection process became projects within Utility's CIP and are summarized in **Tables 6-4a** through **6-4f** and organized by basin. In 2020,

these tables were reviewed and updated by City Staff, and completed projects were removed. These tables give the project number, project name, approximate location, a description of the problem, a description of the conceptual solution, and cost estimate. The approximate location of each problem is shown in **Figure 6-2**.

For projects where a planning-level cost estimate was available, or if project costs were previously developed in an earlier study or design project, those costs were escalated to 2020 dollars[1]. Detailed cost breakdowns for some of the projects are included in Appendix C. The cost estimates that were developed from the field reconnaissance work include allowances for the following items as appropriate (see Appendix C for details): dewatering and bypass, erosion and sedimentation control during construction, construction management, surveying, permitting, engineering, administration, traffic control, mobilization, and contingencies. Some cost estimates also include allowances for land acquisition, easements, and state sales tax, if appropriate. Note that state sales tax would apply to drainage projects that are not within a road right-of-way or do not convey public road runoff (known as "Rule 171," WAC 458-20-171).

Overall, a total of 48 flooding problems were identified (see **Table 6-1** for locations).

TABLE 6-1:
LOCATIONS OF FLOODING PROBLEMS

Basin	No. of Flooding Problems Identified
May Creek Basin	4
East Lake Washington Basin	10
West Lake Washington Basin	1
Cedar River Basin	11
Black River Basin	21
Soos Creek Basin	1
Total	**48**

In addition, two smaller categories of flood problems shown in **Table 6-4g** were added to the list of flooding problems at specific locations. One is associated with small drainage projects to account for correcting small problems like small system replacements. These projects are generally under $500,000 in construction costs and do not require extensive permitting such as Section 401, 404 permitting, and WDFW HPA. Project locations for this category are shown in **Figure 6-2**. The other category which is general in nature and does not include specific projects is associated with miscellaneous storm and emergency projects that are also small and relate to various emergency storm duties such as flood response work during the wet season or responding to spills. This category is shown as a single line item that includes a description and an estimated 6-year budget.

In addition to the flooding problems identified above, the City's GIS Drainage Complaint data was reviewed. As of July 1, 2020, there are 299 drainage complaints logged in the system, primarily on

[1] Cost escalation was based on 2.5% per year through 2007, 0% in 2008, 2009, 2010, 2011, and 2012 and 3.5% per year from 2012 to 2020.

private property. Of the 299 drainage complaints in the City's database, 33 drainage complaints have an "open" status and have not been resolved, 3 drainage complaints have a "closed" status but are missing a closed date, and 7 drainage complaints have a blank status and no closed date. A list of these drainage complaints and their locations are summarized in Appendix F.

6.3 WATER QUALITY

Utility includes a program to maintain or improve water quality of the surface water bodies within the City to the extent needed to protect existing or proposed beneficial uses. Utility's efforts to improve surface water quality are prioritized with NPDES Permit compliance being the highest priority. Utility's highest priority strategy to protect water quality is to use source control BMPs and stormwater development and redevelopment requirements to prevent untreated stormwater from entering the City's groundwater aquifer.

Numerous basins in the City are at the downstream end of upstream tributary areas that lie outside the City's boundary and jurisdiction. Some of these upstream areas have water quality that is already impaired before it reaches the City. Therefore, water quality in these basins is difficult to control due to background water quality standards being poor.

Table 6-2 lists the beneficial uses of the more significant water bodies in the City based on a questionnaire mailed out to all utility customers in 1995 (HDR, 1995). Highest priority is given to water bodies with swimming, given the potential health implications. These water bodies are: Johns Creek, which flows through Coulon Park; the Cedar River; and the near shore of Lake Washington.

TABLE 6-2:
EXISTING BENEFICIAL USES

Water Body	Viewing	Boating	Swimming	Fishery	Wildlife
Johns Creek	Yes	No	No[1]	No	No
Lake Washington	Yes	Yes	Yes	Yes	Yes
Cedar River	Yes	Yes	Yes	Yes	Yes
Maplewood Creek	Yes	No	No	Yes	Yes
Tiffany Creek	No	No	No	No	Yes
May Creek	Yes	No	No	Yes	Yes
Honey Creek	Yes	No	No	Yes	Yes
Springbrook Creek[2]	Yes	No	No	Yes	Yes
Panther Creek Wetland	Yes	No	No	Yes	Yes
Panther Creek	Yes	No	No	Yes	Yes
Black River PS Pond	Yes	No	No	Yes	Yes
Soos Creek	Yes	No	No	Yes	Yes

1. Although swimming does not occur in Johns Creek, its quality can affect conditions of the swimming beaches in Coulon Park located at the mouth of Johns Creek.
2. A spring at the headwaters of Upper Springbrook Creek, which is tributary to Springbrook Creek provides 17% of the City's water supply.

The existing water quality conditions for these water bodies and other basins and subbasins are presented in Section 2. This section summarizes existing water quality problems. Some of these

problems are also recognized on Ecology's 303(d) list of impaired water bodies (see **Table 4-1**). As noted previously in Section 4, waters on this list require a TMDL study, which determines the allowable pollutant loading for the receiving waters for the water quality parameter causing the water quality impairment. It is the responsibility of the state to perform the TMDL studies. Waters on the 303(d) list are prioritized for TMDL studies, but the state has limited resources and the timing for implementation of TMDL studies is likely several years off.

The following section summarizes water quality problems within the City by basin (generally summarizing information contained in Section 2).

6.4 Existing Water Quality and Its Effects on Beneficial Uses

The following paragraphs give a brief summary of the existing water quality in each of the City's significant water bodies and its possible effect on existing beneficial uses.

6.4.1 Johns Creek

Johns Creek is a small tributary of Lake Washington located in WRIA 8. The Johns Creek basin covers approximately 1,236 acres and is located east of Cedar River, in the northeastern portion of Renton. The upper subbasins are dominated by residential and commercial land use, and the lower sub-basins are dominated by industrial and commercial uses. Summer is the period of most interest, because of swimming and other water activities at Coulon Park. Water quality during dry weather is generally good with some exceptions due to fecal coliform bacteria. The ten-state standard, used to determine whether fecal coliform poses a risk to public health, has been exceeded at the swimming area of Gene Coulon Park in Lake Washington in the past (Herrera, 2006). It is known that waterfowl and other wildlife are the primary source of high fecal coliforms in the Johns Creek system via the bacteroides PCR testing method as stated in the Gene Coulon Park Microbial Source Tracking Study conducted in 2006 (Herrera, 2006).

A small portion of the problem may be caused by discharges of sewage into the storm drains by older exfiltrating and/or improperly connected sanitary sewers. If they exist, sewage discharges should be eliminated, given the importance of Coulon Park.

6.4.2 Lake Washington

Ecological function in Lake Washington is facilitated primarily by water quality alterations in tributary basins and water quality and physical alterations along the shoreline (Parametrix, 2008). Most Lake Washington tributaries are highly developed, which limits restoration potential. May Creek and the Cedar River are the least developed basins draining to Lake Washington and also support a high degree of watershed function. These watersheds have the greatest potential for management actions to protect and restore ecological functions in the lake. These are discussed in greater detail below.

Lake sediments are a sink for pathogens and toxins, and sediment quality can influence lake ecology. As noted in Section 2, due to the limited transport and mixing of sediments, poor sediment quality is usually localized in stream deltas and at old industrial sites (Parametrix, 2008).

6.4.3 Cedar River

The Cedar River is approximately 45 miles long and originates in the Cascade Range. It generally flows west and northwest, eventually emptying into the southern end of Lake Washington. The Cedar River is

on Ecology's 2016 303(d) list for violation of temperature, dissolved oxygen, and pH water quality standards. The lower Cedar River has good water quality with the highest quality water in the upper reaches and decreasing water quality as the river flows through developed urban and suburban areas. Ecology has two water quality monitoring stations along the Cedar River, one near Landsburg and the other in Renton at Logan Street. The WQI score at these locations for water years 2016, 2017, and 2018 were above 85 for the Logan Street station and above 93 for the Landsburg station (Freshwater Information Network, 2020). Both scores are above the threshold value of 80 for "good" water quality, per the Washington DOE river and stream water quality index, indicating that the water quality at these locations meet expectations and these areas are of lowest concern for water quality issues. As noted previously, the upper portions of the watershed are largely undeveloped and provide more pristine runoff to the Cedar River. The upper watershed is a protected area of about 90,000 acres and is owned by the City of Seattle. The upper watershed is called the Cedar River Watershed and provides drinking water to the greater Seattle area at the Landsburg diversion.

The lower Cedar River watershed has been extensively altered and was re-routed in 1912 from draining into the Black River to draining into Lake Washington. By 2001, approximately 64% of the lower Cedar River was modified on at least one bank, which, coupled with decreased flows, had narrowed the river from a historic average of 250 feet in width to 110 feet (Kerwin, 2001). The loss of floodplain and riparian connectivity in the lower Cedar River has affected storage, sediment, and contaminants, and it has simplified in-stream habitat.

6.4.4 Maplewood Creek and Tiffany (Ginger) Creeks

There is limited recent data available for Maplewood and Tiffany creeks, but they likely have good water quality during dry weather. Limited data indicate that pollutant concentrations become elevated during storms, in particular metals and nutrients and probably petroleum products. It is likely that the water quality standards for some metals are exceeded during storms. The Cedar River Basin Current and Future Conditions Report (King County, 1993) documented a septic failure rate of approximately 13% within the Maplewood Creek subbasin, but it is believed that many of these failures have been corrected since 1993.

6.4.5 May Creek

The May Creek watershed covers about 8,960 acres in Renton, Newcastle, and unincorporated King County and includes 26 miles of mapped streams, two small lakes, and over 400 acres of wetlands. Headwaters are mostly forested ravines and include a significant portion of the undeveloped parkland on Cougar Mountain. The lower, western portion of the basin is inside the UGA and is a fairly dense urban residential development area with some undeveloped forested areas. Trend results (discussed in Section 2) indicated that water temperature, conductivity, and ammonia-nitrogen have increased significantly, while pH, TSS, and nutrient concentration (ortho-phosphorus, nitrate, and total nitrogen) have decreased. May Creek's 2018 water year WQI score was 70 out of 100. May Creek is listed as impaired for temperature, fecal coliform bacteria, and bioassessment on Ecology's 2016 303(d) list. Input of waste to the creek from livestock and septic systems on the upland plateau likely contribute to the presence of fecal coliform within the creek.

6.4.6 Honey Creek

Honey Creek drains approximately 962 acres of mixed commercial and residential land. Limited data on Honey Creek indicates that water quality is good during dry weather and that turbidity and metals

conditions worsen during storms. The fishery is degraded, but most likely due to excessive stormwater flows and the lack of habitat structure rather than the temporary degradation of water quality during storms. Part of the reason for the lack of habitat structure is a sanitary sewer line running down portions of the creek, which affected the creek bed and some of the banks many years ago.

6.4.7 SPRINGBROOK CREEK

Springbrook Creek is the largest subbasin in the lower Green River Basin with a watershed of about 24.6 square miles. Springbrook Creek is 12 miles long, with about 3.5 miles located in the City. Within the City, the creek was extensively modified and straightened for agricultural drainage in the 1920s by King County Drainage District No. 1.

Springbrook Creek has the most degraded water quality in the City. Water quality is degraded during both dry and wet weather, which is unique compared with other streams in the City, except possibly May Creek. In contrast, the water quality of other water bodies in Renton appears to be degraded only during storms. It is likely that poor water quality during the summer has severely degraded rearing conditions for salmonids.

Water quality is severely degraded as Springbrook Creek enters Renton from Kent. Water and sediment quality do not appear to change significantly as Springbrook Creek flows through the City. Contaminated sediment was removed in the early 1990s from 1,600 feet of creek bottom in Kent. A comparison to stream sediment in Renton indicates that its quality is similar to that removed in Kent, suggesting the possibility that some sediment in Springbrook Creek within Renton could be contaminated enough to require removal.

The Springbrook Springs Watershed is of one of the City's water supply sources, and is a point of concern for contamination. The watershed is located at the headwaters of one of the Springbrook Creek tributaries, called Upper Springbrook Creek. This watershed, however, is above the areas experiencing sediment contamination and the more highly degraded water quality of Mill Creek (Kent) and Springbrook Creek (Kent). Nevertheless, appropriate BMPs should be implemented within the vicinity of this watershed to protect the quality of the spring water.

The extent of development in the Black River/Springbrook Creek watershed severely limits the potential for restoration. In addition, the stream gradient is virtually flat and morphologic complexity is lacking due to straight channels, no large woody debris (LWD), and loss of forested riparian features. There exists restoration potential for the stream buffer in any existing undeveloped open space along the mainstem with wetland restoration and re-creation. On-going wetland enhancement and restoration is currently occurring as part of a joint effort by WSDOT and the City to create a wetland mitigation bank. WSDOT and the City implemented a joint, multi-site wetland mitigation bank that includes 130 acres of wetland restoration, rehabilitation, and enhancement. Three of the wetland mitigation sites are contiguous to Springbrook Creek, and two other sites may be associated with the City shoreline planning jurisdiction. The mitigation bank sites are located in the Renton valley between SW 27th Street and the city limits at SW 43rd Street.

6.4.8 BLACK RIVER PUMP STATION

Most of the pollutant loading carried by Springbrook Creek is probably deposited in the pond that acts as the forebay for the BRPS. Further, the Naches Avenue drain, which discharges directly into the pond, drains a large commercial area, much of which was developed prior to when the City required water quality treatment. Therefore, this drain likely carries a substantial pollutant load during wet weather

conditions. The data are too limited to allow firm conclusions on the risks to beneficial uses in the pond. Of particular concern is the health of the heron rookery and the biological community upon which it depends.

6.4.9 Panther Creek Wetland

There are no data for the Panther Creek Wetland. The wetland likely removes a significant fraction of the stormwater pollutant loading coming from the Panther Creek watershed and from Rolling Hills Creek during high flows when the creek backs up into the wetland. During low flows, Rolling Hills Creek does not back up into the wetland.

6.4.10 Panther Creek

There is no available information for Panther Creek. However, the watershed for this creek is less developed and the creek generally has a good riparian corridor that could provide shade and filter sediments. Based on this, it is anticipated that the water quality is good.

6.4.11 Big Soos Creek

There is no available data for Big Soos Creek within the city limits; however, just south and within unincorporated King County, Big Soos Creek is listed on Ecology's 2016 303(d) list for dissolved oxygen and bacteria. Ecology is in the process of developing two TMDLs for the Soos Creek watershed including Big Soos Creek in coordination with other jurisdictions with the watershed, including the City.

6.4.12 Other Water Bodies

- **Gypsy Sub-Basin (unnamed creek):** There is no water quality data for this creek. The creek has little or no flow during the summer. It is likely that the water quality is very good during dry weather. Because of development, pollutant concentrations during storms are elevated in some metals, nutrients, and petroleum products. It is possible that the standards for some metals are exceeded during storms.
- **Kennydale Creek:** Kennydale Creek and several storm drains discharge to Lake Washington in the vicinity of Kennydale Beach Park, where swimming occurs. This area is sewered and is therefore unlikely to contaminate the beach along the park with fecal coliform bacteria from humans. Given the importance of the park, some testing during and immediately following summer storms may be appropriate in the future.
- **Rolling Hills Creek:** Water quality during dry weather is probably fair to good. Limited data collected during storms indicate high concentrations of metals and nutrients. It is likely that the standards for some metals are exceeded during storms.

6.4.13 Water Quality Solutions

Water quality problems are being addressed primarily by water quality programs described in Section 3 to meet compliance with the NPDES Permit. The City does not generally construct stand-alone water quality projects; however, three water quality retrofit capital projects and a retrofit study are proposed that would significantly improve water quality within the City. Because these projects are considered retrofit projects, they are eligible for water quality grants from Ecology. The City applied for and

received approximately $2.74 million in grants from Ecology to fund at least 75% of the eligible design and construction costs. Project name, descriptions, number, approximate location, and cost estimates for these projects can be found in **Table 6-5** (located at the end of this section). **Figure 6-3** shows the project locations.

6.5 HABITAT RESTORATION AND PROTECTION

The City is interested in habitat restoration and protection, and there have been numerous efforts both locally by the City and regionally with WRIA planning efforts. The WRIA planning efforts have focused on local and regional efforts to identify habitat and resource problems and needs. As previously mentioned, the May Creek, Cedar River, and East and West Lake Washington Basins are all part of WRIA 8. The Springbrook/Black River and Soos Creek Basins are part of WRIA 9. The following paragraphs provide a brief background of these WRIA planning efforts. Section 2 provides a general description of the habitat resources and conditions within the City.

WRIA planning is in response to the State Salmon Recovery Planning Act, which in turn was in response to the ESA listings. The Washington State Legislature established the Salmon Recovery Act (RCW 77.85) through House Bill 2496 for the improvement and recovery of salmonid fish runs throughout the state. This act established a Salmon Recovery Office within the Office of the Governor to coordinate a state strategy for salmon recovery to healthy sustainable population levels with the purpose of coordinating and assisting the development of salmon recovery plans.

The Salmon Recovery Act authorizes a lead entity (e.g., county, city) in a WRIA to establish a steering committee to develop local watershed projects that address habitat concerns. The role of the committee is to compile a list of projects, prioritize project implementation, establish priorities for individual projects, and submit the list to the Salmon Recovery Funding Board (SRFB) for funding.

Salmon conservation plans for WRIAs 8 and 9 were completed in 2005. These plans, together with other plans prepared throughout the Puget Sound region, became part of the official Puget Sound Salmon Recovery Plan, which was approved by NOAA Fisheries in 2007. The WRIA 8 plan was updated in 2017. These plans contain recommendations for protecting and restoring salmon habitat, from general land-use recommendations applicable throughout the watershed to small and large, site-specific habitat restoration projects.

FIGURE 6-1. SOCKEYE IN CEDAR RIVER (YR. 2010)

The responsibilities of the WRIA steering committees, which operated generally from the late 1990s to 2008, was passed on to the Watershed Ecosystem Forum, which began operating at the beginning of

2009. The Watershed Ecosystem Forum combined the membership of different WRIA steering committees and the membership of the forum of local governments.

The City committed to help implement the recommendations of these plans through a variety of methods: partial funding, local sponsorship, expedited permitting, and engineering/planning coordination. The level of local support varies between projects.

Based on the WRIA planning information and other local habitat studies and prior investigations, the City identified a total of 26 potential habitat projects, which are summarized in **Table 6-6**. No cost estimates are included in the table at this time because detailed costs have not been developed and the City's potential contribution to the cost of each project could vary significantly. For planning purposes, a preliminary range of cumulative costs for all habitat projects was assumed to be $4 million to $8 million. The locations of these potential habitat projects are shown in **Figure 6-3**.

6.6 MISCELLANEOUS PROGRAMS AND REGULATORY PROJECTS

Table 6-7 lists miscellaneous programs and regulatory compliance projects that have been identified by the City as being needed on an annual basis (through the six-year CIP planning period). These reflect a wide range of activities such as NPDES permit compliance, mosquito abatement, facility fencing, system mapping, inventory and monitoring, and the City-wide drainage maintenance program, and asset management program. The total cost for these programs is approximately $18.2 million, to be spread out over the six-year planning period. Note that in this table, the costs included for the various NPDES compliance elements is consistent with the high range from **Table 5-1**.

6.7 CAPITAL PROJECT PRIORITIZATION

Many of the capital projects identified in **Tables 6-4** through **6-7** will take many years to implement. As such, a prioritization scheme was developed with City staff to help guide when projects should be implemented. The prioritization scheme focused on flooding-type problems within the City and includes three levels of priority. A prioritization scheme for habitat projects was not developed, because these projects will often be driven by factors outside the City's control, including input from WRIA planning activities, resource agencies, and joint funding agreements. The prioritization scheme for flooding projects is as follows:

- **Priority 1 Projects:** Highest priority projects considering public safety; flooding of arterials that potentially close emergency vehicle access; the number of buildings flooded (numerous buildings vs. one or a few) and the extent of flooding and potential cost of flood damage; and the recurrence of flooding (how often an area gets flooded).
- **Priority 2 Project:** Projects that may include many of the same factors as the Priority 1, but are not considered a significant safety hazard. They may flood one or a few buildings compared to several, or may be subject to flooding on very rare occasions.
- **Priority 3 Projects:** Third priority projects temporarily flood local streets or public/private yards, but do not result in significant safety hazards or property damage.

Additionally, a fourth category of flooding projects was identified. This category involved flooding projects with emphasis on habitat benefit. These projects did not fit well within the priority ranking scheme, and their implementation will often be driven by multi-jurisdictional involvement.

In general, it is the City's goal to implement the Priority 1 projects during the next 6-year CIP planning period, or as funding allows. The specific order and timing of project implementation for the currently 6-year CIP developed as a part of this plan is discussed in Section 7. However, it is noted that the order in which the projects will be implemented within both the 6-year CIP and the priority groups will be updated annually as part of Utility's annual CIP planning process. Priority 2 and 3 projects could be funded in later years as funding becomes available and other projects get completed. Other factors also are considered on a case-by-case for projects across the three priorities. On occasion, this may change the relative position between projects. One important consideration is whether a project could be implemented early to take advantage of "opportunistic" factors such as funding or scheduling opportunities. Funding opportunities periodically arise when a grant becomes available. Grant programs often target different types of projects. For example, if a particular grant program targets salmon recovery, projects with habitat elements may be bumped ahead of flooding projects in an effort to obtain grant funding to offset the project costs. Scheduling opportunities become available when surface water projects can be combined with other City projects to reduce construction costs. An example is when a conveyance system upgrade is implemented at the same time that a street, water, or sewer improvement project is being built, so that a portion of the project's cost, such as the costly roadway restoration, mobilization, and demobilization, is shared between Utility and the other City department.

Another factor in prioritizing projects is the fact that some projects may provide additional habitat benefits or may be counted as mitigation for another project. For example, when comparing two flooding projects that may otherwise provide equivalent flood risk reduction benefit, but one also benefits habitat, the priority should be given to the latter.

Using these prioritization considerations, the City developed a priority ranking as presented in **Table 6-8**. The Priority 1 projects total $46.6 million. The total costs of Priority 2 and 3 projects are approximately $12.3 million and $9.2 million, respectively. The total cost of the flooding projects with habitat emphasis is approximately $922,000.

Table 6-3 provides an overall summary of the CIP and program cost breakdown over the 6-yr CIP planning period, including the flooding projects by priority category, as well as annual projects, habitat projects, and water quality projects.

TABLE 6-3:
6-YEAR CIP SUMMARY

Projects	Cost (2020 Dollars)
Programs and Regulatory Compliance (estimated cost during 6-year CIP period) (from Table 6-7)	$18,174,960
Water Quality Retrofit Projects[1] (from Table 6-5)	$4,421,000
Priority 1 Projects for Flood Control (from Table 6-8)	$46,581,000
Priority 2 Projects for Flood Control (from Table 6-8)	$12,287,000
Priority 3 Projects for Flood Control (from Table 6-8)	$9,249,000
Projects for Flood Control with Habitat Emphasis (from Table 6-8)	$922,000
Annual Capital Projects for Flood Risk Reduction[2]	$176,000
Habitat Projects (from Table 6-6)	$4 million to $8 million[3]

1. Several flood control projects and habitat projects will have elements that improve water quality.
2. Average annual maintenance costs of Projects 303 and 302 (from Table 6-8). Total project costs for 303 and 302 are included in Priority 1 Project Costs.
3. Cost for Habitat Projects provided is a range. Many projects will be partially funded from other sources and City's participation will vary between projects.

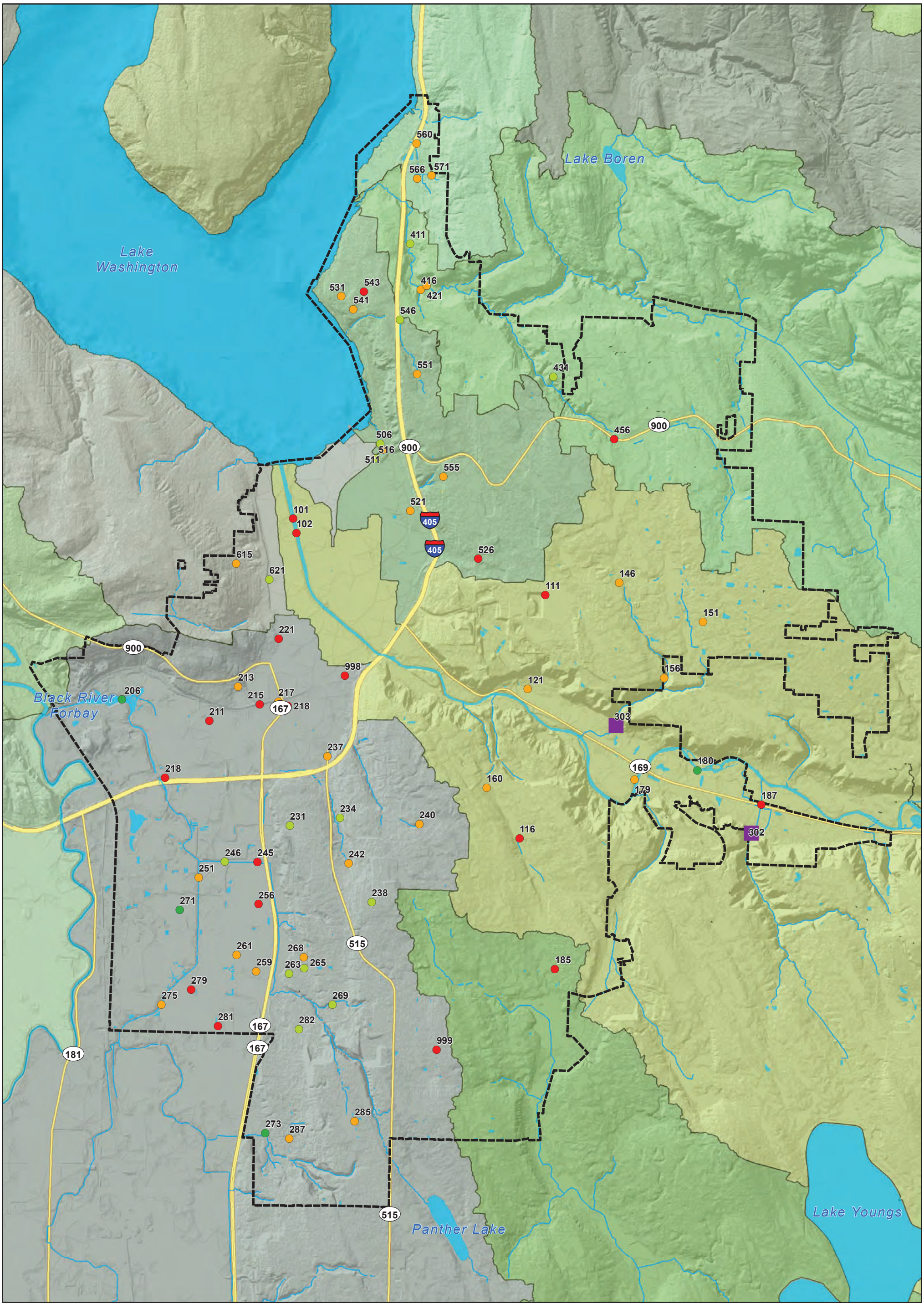


Figure 6-2: Flooding Problems and Annual Maintenance Project Locations

0 0.25 0.5 1 Miles

CITY OF Renton

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Project Types

- Priority One Flooding Project
- Priority Two Flooding Project
- Priority Three Flooding Project
- Flooding Projects with Habitat Emphasis
- Annual Maintenance Project
- Renton City Limits

N W E S

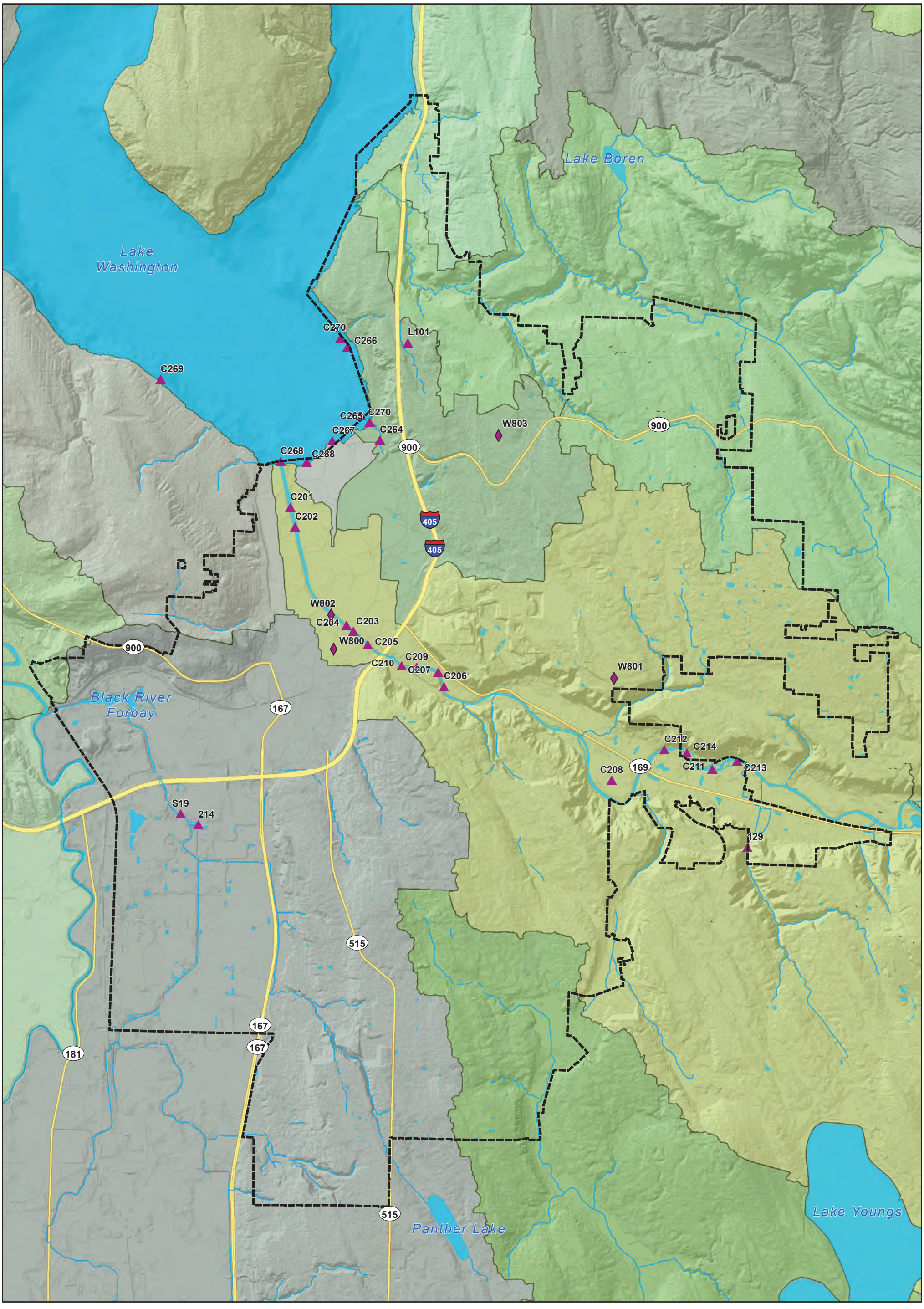

Figure 6-3: Water Quality Retrofit and Habitat Project Locations

0 0.25 0.5 1 Miles

Project Types

- Habitat Project
- Water Quality Retrofit Project
- Renton City Limits

CITY OF Renton

Surface Water Utility - GIS | Printed Date: 12/11/2020

N W E S

TABLE 6-4A:
FLOODING PROBLEMS: MAY CREEK BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
411	May Creek Outfall @ NE 36th Street	NE 36th Street Outfall to May Creek (near Lincoln Avenue NE)	Runoff from the upstream basin drains down-slope via NE 36th Street and discharges at the top of the steep slope at Lincoln Avenue NE and NE 36th Street. Continued erosion into May Creek results and may cause future steep slope failures.	Historical runoff from this development should have split development flow with a project that directs half of the upper development flows down toward May Creek (from East to West direction) on NE 36th Street. A conceptual solution that is part of the May Creek Outfalls Master Plan is needed.	$658,000
421	May Creek Outfall @ NE 30th Street	Outfall at NE 30th Street into May Creek	The NE 30th Street outfall pipe draining into May Creek is undersized and cannot pass future condition flows. No upstream complaints from nearby residents have been noted, but future upstream condition flows has a high potential to exceed discharge capabilities of the outfall pipe.	The pipe is approximately 320 feet in length and would need to be upsized and modified to HDPE and anchored into the slope to accommodate future conditions runoff from the upstream basin. The existing outlet into the riprap outfall pad (the riprap pad was upgraded as part of the May Creek Site #1 Project) shows an existing 12-inch to 18-inch CMP discharge pipe size. One conceptual solution would be to replace it with an above ground, heat fused, HDPE helical anchored pipe. The existing outfall does not need to be improved because it was modified as part of the May Creek Bank Stabilization Project (Site #2) in 2006. This project would be outside of the OHWM, therefore an HPA may not be needed.	$658,000
431	Honey Creek Outfalls Plan	Honey Creek Slope Outfalls (Various Locations)	Various outfalls discharge to unarmored steep slopes that drain into Honey Creek and cause erosion and downstream sedimentation problems.	Develop a Honey Creek Master Plan that would address stormwater runoff on top of steep slopes. If the problems are allowed to continue, a potential for slope failure can develop due to increased runoff rates and volumes on steep slopes.	$263,000
456	NE Sunset Blvd at Union Avenue NE	NE Sunset Boulevard (Union Avenue NE to Duvall)	Honey Creek runs in a series of ditches and pipe systems that flow under parking lots, under buildings, and in public rights-of-way. Much of the system is poorly mapped, and the sections on private property may not have easements. Development has increased runoff into the drainage system. The drainage system may be near full capacity, and portions of the pipe system may be deteriorating. Honey Creek also flows under a shopping center, Sunset Blvd, and Union Ave NE in two old CMP arch culverts. The capacity of the CMP arch culverts and sections of open channel needs to be evaluated since they appear to be near full capacity during large storm events.	Identify and survey the location and elevation of the existing storm system that conveys Honey Creek. Inspect various sections of the storm system for problems, structural integrity, and estimated service life. Identify existing ownership, easements, and maintenance responsibility of various sections of the system. Perform a Hydrologic and Hydraulic Report for the storm system to determine the peak runoff from the basin and flow capacity of the existing system. Phase 1 would involve developing a planning report to identify deficiencies in the drainage system, identify conceptual solutions, and plan for future design projects. High risk problem areas should be identified in the Phase 1 report. Phase 2 would involve design and construction of selected improvements. Potential improvements may include bypassing the existing system and/or obtaining easements to correct and upgrade the existing storm system with new pipe or pipe liner. Phase 3 of the project would involve design and construction of any remaining improvement, as needed.	$2,250,000

TABLE 6-4B:
FLOODING PROBLEMS: EAST LAKE WASHINGTON BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
506	John's Creek Culverts Sediment Cleaning	John's Creek Sediment (Park Avenue / Lake Washington Boulevard)	Sediment has accumulated within a series of detention ponds and inside the creek culverts (the ponds look like wide swales). Increased development runoff from public and private properties drain into the John's Creek stormwater system and may cause flooding in this area. The John's Creek culverts are either full or partially full of sediments decreasing conveyance flow capacity and may cause upstream flooding. This system is connected to the upstream Landing's storm system. Reduction of capacity on the John's Creek facilities will result in backwater and flooding issues. The total tributary area that currently drains to the Johns Creek outfall is approximately 1200 acres. Some of the culverts are privately owned.	The proposed solution includes excavation of the sediment deposits in the ponds upstream of the culverts. Permitting for work in stream and possibly wetlands may be required. The following are some additional considerations/options associated with the private culverts: 1. City cleans the culverts and bills the property owner who owns the culverts. 2. City cleans the culverts and does not bill the property owner. However, this may establish a precedence that the City will maintain the culverts. 3. Work with the property owner to clean the culverts jointly via a cost share and future agreements.	$165,000
511	John's Creek Culvert Crossings	Located near entrance to Gene Coulon Park	The culverts located at the entrance of the park are at or near full capacity even after cleaning of the sediments in the ponds and culverts. Additional upstream development may cause future problems that would require the culverts to be upgraded to a box culvert system.	The culverts are a mix of public and private facilities. The public culverts located under BNSF and Lake Washington Blvd N. may need to be improved and the private culvert system was improved in 2016 by a private development. Any new developments upstream will require this system to be evaluated and improved.	$1,200,000
516	South Lake Washington Roadway Improvement Discharge to John's Creek	Pipe Replacement Project from the Landing Project to John's Creek Outfall	400 feet of an existing 48-inch CMP pipe needs to be replaced with 60-inch pipe. This pipe was not replaced as part of the South Lake Washington Road Improvement Project due to the late timing of the road project and inability to secure an HPA in time for construction during the summer construction months. The existing 48-inch pipe does not have enough capacity and its capacity may be further reduced due to sediment buildup from recent upstream construction.	The project includes replacing an existing 48-inch CMP with 60-inch pipe. The Transportation Department will provide funding on this project due to its being part of the South Lake Washington Roadway Improvement (SLWRI) Project that was not included within SLWRI construction because of project's timing and permitting issues.	$988,000
521	Johns Creek Outfall - NE 8th Street to Houser Way N.	NE 8th Street to Houser Way N. (I-405 to Johns Creek Outfall)	Frequent localized flooding of streets and private properties occurs on Houser Way North with ponding occurring during large storm events near the I-405/Park Avenue/Houser area. The Houser Way N. street storm system lacks adequate capacity to convey storm runoff due to flat grades. The lack of downstream capacity may exacerbate the problem in this system along with increased upstream runoff from new developments and WSDOT.	The proposed Houser Way North storm system improvements include replacement of 2,500 linear feet of storm drain. As part of the WSDOT improvements along this area there is future interest from WSDOT to expand the I-405 limits and upgrade this downstream system in order to prevent flooding and backwater on Houser Way. The John's Creek H&H report, by WSDOT, has analyzed this system and suggests improvements if the I-405 expansion project is approved for construction.	$1,450,000

TABLE 6-4B:
FLOODING PROBLEMS: EAST LAKE WASHINGTON BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
531	Kennydale Master Drainage Plan	Kennydale Master Drainage Plan (Example: N 30th Street and Burnett Avenue N.)	The North/Lower Kennydale area (west of I-405) has sheet-flow runoff that crosses private properties due to lack of a defined street collection and conveyance system. This lack of a defined street and conveyance system will result in more frequent future flooding as increased upstream development occurs. In addition, no major storm conveyance 'trunk-lines' exists to convey runoff to Lake Washington. With increasing development, this problem is increasing downstream flooding onto private properties and has a potential to flood Lake Washington Boulevard in the future. For example, new home construction with footing drains and large impervious roof structures now discharge runoff onto the streets. An identified problem is at Burnett Avenue N. that has a history of garage flooding due to lack of a defined drainage system to convey flow around the property.	Develop a Kennydale Master Drainage Plan to address all problems in the North/Lower Kennydale area, develop a risk assessed project priority list, and potential alternatives for each project. The Plan would suggest storm system improvements for the problem area, provide a high level cost estimate for each project, coordinate with the Transportation and other City departments on sidewalk, street, utilities, and other future composite improvements with known asphalting schedules. In addition, all outfalls and Lake Washington Boulevard storm crossings should be analyzed for this area and include recommendations for a trunk-line collection system that crosses Lake Washington Blvd at certain areas. Development of a neighborhood local improvement district is a potential option for this project area.	$395,000
541	East Lake Washington Blvd and NE 28th Street Drainage	East Lake Washington Blvd and NE 28th Street	This local flooding issue is related to the Lower Kennydale problem description (see also ID 531). City street runoff and other upstream areas contribute runoff onto this lower private property due to lack of street curb and gutter system and storm system trunk-line.	This problem, that is typical for the Kennydale area, should be addressed as part of the Kennydale Master Drainage Plan (KMDP). Design and construction should evaluate alternatives and suggest feasible recommendations via the KMDP study.	$329,000
546	Meadow Avenue North Culvert on Kennydale Creek	Kennydale Creek Culvert Crossings (at Meadow Avenue N. & N. 28th Street and Jones Avenue NE Culvert Crossing)	The Meadow Avenue North culvert needs to be replaced due to capacity issues associated with increased upstream development runoff.	As part of the I-405 expansion and increased impervious surface runoff, WSDOT may design and construct this replacement project as part of the I-405 expansion work.	$2,630,000
551	Jones Avenue NE and NE 20th Street	Old Blueberry Farm at NE 20th Street and west of Aberdeen	Ditches, culverts, and pipe system have had problems in the past with capacity issues that cause flooding of roadway and private properties. Upstream runoff is a mixture of public and private runoff. Much of the existing ditch system has inadequate capacities to convey upstream runoff. Additional development upstream will cause future downstream flooding problems in this area. The existing ditch system north of NE 20th Street is on private property.	Develop a storm-water collection and conveyance system to direct runoff within the existing City right-of-ways from NE 19th Place to Jones Avenue NE. The proposed system along Jones Avenue NE and NE 20th Street should be evaluated for existing and future land use conditions for the contributing upstream basin.	$336,000

TABLE 6-4B:
FLOODING PROBLEMS: EAST LAKE WASHINGTON BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
566	Jones Avenue NE/ NE 43rd Street Culvert and Storm System Improvements	Jones Avenue NE and NE 43rd Street	Flooding of the culvert system occurs across NE 43rd Street due to flat grades in the area, sediment accrual at the inlet, backwater, and the undersized ditch system along NE 43rd Street. Flooding of street occurs during higher rainfall events and limits access into Presbyterian Church and Jones Avenue NE residents. Overflow of existing ditch, due to lack of culvert and downstream system capacity, results in ponding across the street and at the Church during higher rainfall events.	Preliminary study needed of this problem that includes hydrologic and hydraulic analyses to define solutions. Recommendations and alternatives should include replacing existing 24-inch CMP at NE 43rd Place with a 4-foot wide by 6-foot high concrete box culvert. In addition, the NE 43rd Street ditch needs to be analyzed and recommendations developed to alleviate flooding problems. One potential solution is described below. Ditches carrying sediments from a steep uphill area backs water up and floods area due to flat grades downstream, undersized culvert crossing at NE 43rd Street. Potential solution is to reroute to May Creek system 1400 feet to the south which may need to 'buck' road grades 13 feet to drain to May Creek ($700,000 for this option). Cost of solution provided in estimate is for this option.	$922,000
571	Lincoln Avenue NE Culvert Improvements	Lincoln Avenue NE and NE 43rd Place	The Lincoln Avenue NE culvert, at NE 43rd Place, has runoff overtopping across the road during high rainfall events. Flooding causes traffic safety issues on Lincoln Avenue NE. The upstream culvert inlet debris cage needs to be cleaned out each year and after each large storm event. The adjacent property to the south of the culvert has had erosion and flooding problems from culvert overflow that was redirected. High sediment loadings from the upstream tributary area, located in the City of Newcastle, plug the culvert inlet frequently and greatly reduce the inlet capacity.	Lincoln Avenue NE and NE 43rd Place Culvert Improvements – Some conceptual solutions include re-grading the existing ditch, installing log weirs upstream of the culvert (along with a maintenance access road adjacent to the log weirs), replacing the existing grate with a new trash rack type, and installing a new overflow manhole at the culvert inlet. A Tt/KCM report stated that the ditch and pipe conveyance system improvements or other alternatives need to be designed to ensure the system is not subject to constant maintenance issue during high rainfall events.	$198,000

TABLE 6-4C:
FLOODING PROBLEMS: WEST LAKE WASHINGTON BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020 costs)
621	Black River Box Culvert Maintenance	Black River Box Culvert – Major Maintenance	This box culvert receives runoff from Renton Avenue and the airport area. Its capacity is limited due to years of sediment buildup within the culvert. Potential for contaminated sediment exists in this box culvert.	This project should be coordinated with funding from the City Airport due to potential hazardous waste material generation and Airport drainage runoff being sent to this culvert. Runoff for this box culvert is carried directly to Lake Washington.	$1,320,000

TABLE 6-4D:
FLOODING PROBLEMS: CEDAR RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
101	Cedar River Gravel Removal Project	(From Williams Avenue Bridge to N. Boeing Bridge)	The project is a continuation of the Cedar River Section 205 Flood Damage Reduction Project. The regionally significant project solved major river flooding from Williams Avenue to Lake Washington that resulted in flooding of the Renton Municipal Airport, Boeing facilities and the north Renton. River flooding has caused extensive damages in the past. Additionally, natural sediment transport and deposition in the Cedar River, a highly aggradational river, gradually buildups sediment in the lower Cedar River from avulsed upstream basin areas. Sediment accumulation in Lower Cedar River from Lake Washington to Williams Ave S (Section 205) causes the reduction in flood protection level of the floodwalls and levees in that reach which flows through Boeing and the Renton Municipal airport.	Programmed funding is for the design, permitting, and completion of the gravel removal from Section 205 river bed, as well as required project mitigation activities, monitoring of spawning channel fish use, and yearly monitoring of sediment accumulations in the lower 1.25 miles of the Cedar River.	$14,966,000 (Funds to be provided by the King County Flood Control Zone District)
111	Monroe Avenue NE and NE 2nd Street	301 Monroe Avenue NE	The 245-acre subbasin influent to the existing storm system currently drains untreated runoff to a 670-foot-long 36-inch perforated infiltration pipe along NE 2nd street and a 200-foot-long 48-inch perforated infiltration pipe along the King County Access Road, both with insufficient capacity. Therefore, during large storm events, stormwater currently overflows via two outfalls from the trunkline on Monroe Ave NE to 301 Monroe Ave NE, a property commonly referred to as the Upper Balch Pit. Here, stormwater ponds and infiltrates into the native soil. Before the construction of the temporary outfalls to the Upper Balch Pit in 1996, there were several incidences of flooding at the intersection of NE 4th St and Monroe Ave NE. As the property owner of the Upper Balch Pit, Segale Properties, LLC, is in the process of filling the pit for future development of multifamily residential lots, termination of the easement that allows for the City's existing stormwater overflow system is expected by 2023. Therefore, the City must construct a new drainage outlet for the subbasin.	This project will design and construct a permanent drainage and water quality treatment solution to replace the expiring temporary stormwater overflow from Monroe Ave NE into a private property at 301 Monroe Ave NE. In the proposed design, stormwater runoff from the Monroe Ave NE Basin will enter the Upper Balch Pit site from the storm system along Monroe Ave NE. Runoff will be conveyed via storm pipe to the northwest corner of the site to a hydrodynamic separator and flow splitter, which then outlets the stormwater to open channels via a level spreader. Stormwater will then pass through a surficial facility for enhanced basic water quality treatment, before entering a Stormtech Chamber gallery for infiltration into the native soil. Newly treated and infiltrated stormwater will recharge the groundwater table, and feed the Cedar River approximately 3,800 feet southwest of the Upper Balch Pit site.	$6,350,000
116	Ginger Creek/Cascade Park Basin Plan	SE 162nd Street to Cedar River Pipeline (Cascade Park) (Tiffany Park Culvert)	Cascade Park drains north through a neighborhood via an old concrete pipe and open channels. The runoff eventually reaches the Cedar River Pipeline ROW, via an old steel pipe, and is routed under the Tiffany Park area. The existing pipe system surcharges during moderate events flooding Cascade Park. House #12512 located at SE 164th Pl. also experiences flooding from backwatering from the Cascade Park storm system. Based on a cursory site visit, it appears that sediment buildup in the open channel section between SE 160th Street and the Cedar River Pipeline ROW as well as storm pipe grade issues downstream maybe contributing to the backwater conditions and consequential flooding in the park and neighborhood to the south.	A study is proposed to determine the primary cause of the problem, evaluate alternative solutions and develop a design of the preferred solution. The proposed solution should include an HPA due to work within potential wetlands and ditches.	$350,000

TABLE 6-4D:
FLOODING PROBLEMS: CEDAR RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
121	Lower Maplewood Conveyance Improvements	Lower Maplewood Creek (Behind Maplewood Glen, north of Maple Valley Highway)	Flooding of homes and property in the plat of Maplewood Glen during extreme rain events. Existing culverts may be undersized and pipe conveyance capacity to the Cedar River may be inadequate. Erosion and sediment deposited into the ditch is also an issue during high flow events downstream of the Sunnydale Outfall structure.	Lower Maplewood Conveyance Improvements – Ditch, culvert, and storm drain system improvements from the Maplewood plat to the discharge at the Cedar River is needed.	$557,000
146	NE 4th Street Crossing at Maplewood Creek Study	NE 4th Street Culvert Crossings (at Union Avenue NE, East of Duvall, 5400 Block of NE 4th Street) – (Headwaters of Maplewood Creek)	Concerns with capacity of several culverts under NE 4th Street between Union and Duvall due to increasing upstream development. Upstream developments north of NE 4th Street floods private properties during significant storm events. Downstream storm systems need to be analyzed along NE 4th between Union and Duvall, near Union, east of Duvall, at the 5400 Block of NE 4th Street and at 5400 NE 3rd Place. These locations have had flooding in the past.	A preliminary study to identify extent of storm drainage pipe upgrades and anticipated crossing improvements is needed.	$336,000
151	East Fork Maplewood Creek at NE 2nd Street	Along NE 2nd and between 10th Place SE and 142nd Avenue SE	Flooding of yards and homes that could impact septic systems due to an inadequate localized storm drainage system. The culvert under NE 2nd Place appears to be undersized, which causes flooding along the ditch that runs along the east side of 142nd Avenue SE.	East Fork Maplewood Creek – Preliminary Study, Design and Construction – Culvert replacement at NE 2nd Place and clearing the existing channel of overgrown vegetation and debris.	$421,000
156	Maplewood Creek Basin Improvements	Maplewood Creek Basin Improvements (From Heather Downs to the Maplewood Sediment Basin)	Erosion occurs in the Maplewood Creek ravine where three outfalls discharge near the top of the ravine and into Maplewood Creek to cause erosion on the slope and eventual sediment deposition into the Maplewood Sediment Basin Facility. City surface water staff investigated the pipe outfalls in February of 2012 and discovered that there was significant undercutting of the slope beneath the outfalls resulting in broken and separated sections of pipe.	Maplewood Creek Basin Storm System Improvements to improve outfalls and erosion problems to Maplewood Creek. This project is identified in the Cedar River Basin Plan to solve existing and future surface water management problems (flooding, water quality, and habitat). The project will help reduce and solve existing sediment problems and future flooding and erosion issues, as well as improve water quality and habitat in the Cedar River Basin. The project includes improving the storm systems that conveys Maplewood Creek drainage across roadways, and storm system outfalls that discharge near the top of the ravine and cause erosion in the Maplewood Creek ravine. This will also reduce sediment input into Maplewood Creek and the Maplewood Creek Sedimentation Basin, and may reduce the maintenance frequency of the basin. Specific improvements to the outfalls include replacing the three outfalls from the manholes in Chelan Ave SE and SE 4th Pl to the bottom of the slope with energy dissipater structures at their outlets. So far two outfalls were replaced in 2016, and one outfall remains. The remaining outfall is located in private property which makes the project more challenging, The City attempted to engage King County on this project due to the outfalls discharging into their jurisdiction.	$1,030,000
		SE 136th Street & 138th Avenue SE	Washout is evident at a pipe outfall. Pipe length may be lacking as well as an energy dissipater.	Extend pipe to bottom of slope and build a rock outfall to prevent further erosion of materials from being transported downstream. City maintenance crews will replace the in-street CBs and pipe system at the corner.	

TABLE 6-4D:
FLOODING PROBLEMS: CEDAR RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
302 (and 187)	Madsen Creek Sedimentation Basin Cleaning	Madsen Creek (upstream of Renton-Maple Valley Road)	The Madsen Creek Sediment Basin located south of the Maple Valley highway requires yearly sediment removal.	Part of the solution also includes annual maintenance to remove sediment. Removal of sediment buildup is needed in the creek and culvert to prevent flooding in King County properties. Every one-to-two years several truckloads of sediment need to be removed to prevent flooding upstream of the culvert. The City's current nationwide permit (NWP) allows for the maintenance of the basin till 2023.	$926,000 (Annual Maintenance Cost = $75,000 to $84,000)
187 (and 302)	Madsen Creek Improvement Project	Lower Madsen Creek Reach (Madsen Creek Sedimentation Basin to the Cedar River)	In 2008, the New Life Church and Aquabarn was annexed into the City of Renton and included the responsibility of maintaining the Madsen Creek Sedimentation Basin. Subsequently in 2011, an agreement between King County and the City transferred maintenance of the Madsen Creek facilities, within City of Renton limits, to the City. The agreement requires constant maintenance of the facilities, else there is a high potential for flooding. The existing site deficiencies include: inadequate pond design, loss of fish spawning and habitat due to silt accumulation in the low flow channel and culverts, sediment buildup within the high flow bypass channel causing flood waters to overtop the banks and inundate the low flow channel, and loss of a defined channel through the Ron Regis Park wetland area to the Cedar River. Flooding complaints within King County properties have been reported; specifically properties located on the east side of 149th Ave SE and just north of Maple Valley Highway. The flooding has been a result of channel capacity loss due to: sediment buildup, shallow slopes, beaver damming within the Ron Regis Park wetland area, a loss of a defined channel due to rerouting of the Cedar River from the Nisqually earthquake landslide, an increase in flow from upstream development, and inadequate drainage along 149th Avenue. The Madsen Creek high flow bypass channel will require periodic dredging and vegetative maintenance put in place, and the low flow channel from 149th Avenue SE to the Cedar River will need to be reestablished and made sustainable. The channel through Ron Regis Park was originally constructed in 1989 with higher capacity than existing. The 1989 channel design was not sustainable and perpetuated sediment deposition. The existing Ron Regis channel has one-fourth of the 1989 channel capacity.	A consultant, Watershed Science & Engineering (WSE), was hired to investigate the cause of flooding through a hydrologic and hydraulic analysis of the lower Madsen Creek network. The consultant identified multiple feasible improvements, both short term and long term, to help prevent flooding along the reach and adjacent properties. The investigation, design, and construction are funded by the King County Flood Control Zone District grants. The improvements are summarized as follows: Short term solutions: Raising the banks of a portion of the upper high flow bypass channel to prevent specific floods from overtopping the banks and inundating to the low flow channel; constructing a berm along the left bank of the low flow channel to the south of SR 169 (Renton-Maple Valley Hwy) to provide further flood protection to the adjacent properties to the south; Improve and raise the existing ecoblock wall between SR 169 and 149th Avenue SE to provide further flood protection for the properties to the north along 149th Avenue SE; and restoring and maintaining the high flow bypass channel through periodic dredging and vegetation removal to maintain capacity. These improvements are currently under design and construction is proposed to start in fall 2020. Long term solutions: The Madsen Creek channel through Ron Regis Park will need to be redefined to maintain sustainability and connectivity from the 149th Avenue SE culvert to the Cedar River. Potential solutions are currently being analyzed by the consultant, WSE. Improvements along this reach would be within regulated shoreline, floodway, floodplain, wetlands, and a Type F stream. This would require extensive permitting and comprehensive coordination with local, state, private, and federal agencies including: WDFW, Muckleshoot Indian Tribe, and USACE.	$1,221,000
303	Maplewood Creek Sediment Facility Maintenance	Maplewood Creek Sedimentation Facility Maintenance	The Maplewood Creek Sedimentation Facility is located behind the Maplewood Golf Course and traps sediment that is transported downstream via upper Maplewood Creek. This pond facility prevents sediment from being deposited on the golf course or downstream channel during larger storm events and reduces flooding of the golf course and SR-169. Frequent cleanout of the sedimentation pond is needed to maintain the facility.	The funding is programmed for project management, permitting and construction to routinely remove the accumulated sediment from the facility. The facility was constructed in 1996 in conjunction with a fish passage channel across the Maplewood Golf Course to the Cedar River. The accumulated sediment in the facility needs to be removed once every 2-3 years, depending upon flood events and how fast sediment accumulates in the facility. The City plans to obtain 5 year HPA and Army Corps Nationwide Permits to address maintenance activities needed for these annual projects and plan out projects for future major maintenance.	$1,233,000 (Annual Maintenance Cost = $95,000 to $100,000)

TABLE 6-4D:
FLOODING PROBLEMS: CEDAR RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
299	Downtown Storm System Improvements	Along S 2nd Street, S 3rd Street and their cross streets between Rainier Ave S and Mills Ave S.	This area is currently serviced by undersized and aging stormwater pipes that cannot support the re-development and new development in the Downtown core.	These utility improvements are needed to support re-development and new development in the Downtown core and will provide better service for existing and future development. These projects are the first steps to support coordinated efforts by the City to improve intersections, add signals, and convert S 2nd St and S 3rd St to two-way operations, as guided by the Civic Core Vision and Action Plan. Construction of these utility improvements is expected to start in 2021 and continue through spring 2023.	$6,917,000

TABLE 6-4E:
FLOODING PROBLEMS: BLACK RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
211 (and 215)	Hardie Avenue S Underpass and SW 7th Storm System Improvements	SW 7th Street from Lind Ave. SW to Naches Avenue SW	Lack of capacity in storm drain system on SW 7th Street results in surcharging and subsequent flooding of tributary systems upstream including flooding of the Hardie Ave. underpass.	The proposed solution includes a new 72--inch-84-inch diameter parallel pipe from Lind Ave SW to Naches Ave SW and a new 72-inch pipe between Hardie Avenue SW and SW 7th Street. A new outfall will be constructed between Naches Ave SW and the Black River forebay. The project will be constructed in three phases. Phase I will install a new pipe in SW 7th Street between Naches Ave SW and Powell Ave SW. Phase II will continue east from Powell Ave SW and terminate at Lind Ave SW. Phase III will construct a new pipe between Hardie Ave. and SW 7th Street. The SW 7th Street Stormwater Retrofit Project includes installation of approximately 38 Filterra treatment units.	$1,735,000
213	SW 4th Place and Maple Avenue SW Drainage Analysis	SW 4th Place and Maple Avenue SW	A combination of inadequate drainage system in this area and excessive flows has resulted in flooding of a home. The drainage system upstream has excessive runoff during large storm events. Upstream properties are a mix of street runoff and private properties without a defined pipe conveyance system. There is potential that some SW Sunset Boulevard runoff may be draining towards this problem area.	A drainage system analysis is needed to determine the cause of the problem and recommend a solution. A potential tight-lined collection system may be needed with connection to the Maple Avenue SW drainage system. The cost estimate includes both the study and construction.	$395,000
217	Rainier Pump Station Upgrades.	Rainier Avenue South - just south of BNSF Railroad Trestle	Flooding at the low elevation on Rainier Avenue S below the railroad trestle underpass causes access problems into the pump station. The existing Chicago vertical shaft drive pumps (2x) were last refurbished in 1992 and 2010. The existing wet well vault is very small and causes constant 'on/off' cycling of the pumps. Access lift hatches for the station top are difficult to use during flooding conditions and require two people to operate safely. The pump station is difficult to access when flooded and a generator needs to be carried into the station. The biggest problem is the vault is neither deep enough nor large enough to accommodate the pumps.	The City has planned a two phased project approach to this problem. Phase 1 (which has been completed): Temporarily refurbish the existing Chicago pumps to ensure system does not fail during a larger storm event; Phase 2: The complete system should be modified to include; better access for maintenance parking; modify the vault underneath the station by increasing Rainier street drainage pipe sizes by potentially using a larger pipe size to store runoff in street as well as the vault storage if possible; provide generator upgrade and means for a generator to be hauled into the station or lowered from above to reduce electrocution hazard; deepen vault bottom to better utilize the pumps and reduce cavitation; and, improve ceiling access hatches and revise wet well setup to accommodate more storage and reduce pump startup/stop cycling.	Completed (Phase 1) $700,000 (Phase 2)

TABLE 6-4E:
FLOODING PROBLEMS: BLACK RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
231	North Talbot Hill Drainage Improvements	North Talbot Hill Drainage System (Lake Avenue S, S 19th Street, Davis Avenue S and Shattuck Avenue S.)	Erosion of private property occurs in this vicinity with no defined outfall. This problem area receives runoff from Lake Avenue S, Davis Avenue S and Shattuck Avenue S. Shattuck Avenue South street and upstream runoff discharges onto private properties.	Further study of this problem is needed to define a proposed solution. The study, including hydrologic and hydraulic analysis is needed to perform future land use conditions to characterize the problems and develop appropriate improvement recommendations. This cost estimate includes the study and a planning level construction cost assumes upsizing and adding new storm drains along Davis Avenue S and Lake Avenue S. with a main truck system originating from Shattuck. A steep slope discharge outfall is needed to reduce erosion westward down the steep slope. A potential solution is to work with WSDOT to address outfall impacts as well as coordinating with their future I-167 plans.	$1,210,000
234	Puget Drive South and Benson Road Outfalls Study	Puget Drive South and Benson Road: Various Outfalls	This problem includes overland discharges from the top of slope along Puget Drive South. This system handles runoff with very high energies discharging into a very steep ditch system with a downstream culvert that crosses the intersection of Benson Road South and Puget Drive South. There is a system of five Puget Drive South road discharges onto overland surfaces that cause erosion and other problems to be transported downstream towards the Talbot Road South and Puget Drive South intersection culvert. The receiving culvert at Talbot and Puget Drive is a major concern due to high potential for sediment and other debris clogging that could eventually undermine the roadway and/or cause flooding at the intersection.	A study needs to be developed to evaluate problems and solutions at this location. Some considerations are to redesign the culvert across Benson Road South to address runoff from Puget Drive South and Benson Road south; the system needs to be upgraded with headwalls and its pipe conveyance capacity checked; and, the project should evaluate the five outfalls to the bottom of swale and provide energy dissipation structures.	$198,000
237	Talbot Road Culvert Improvements	Talbot Road between Grady Way and I-405 near southwest corner of Sam's Club	A 48-inch CMP culvert under Talbot Road is failing as a result of corroded bottom. The culvert is located on the southwest corner of Sam's Club and conveys Thunder Hills Creek under the road before discharging into a pipe system located in the parking lot of the Triton Tower complex. From the parking lot, Thunder Hills Creek continues in a pipe system in S. Renton Village Place prior to discharging into Rolling Hills Creek adjacent to I-405.	Replacement of this damaged culvert is proposed. Preliminary engineering and analysis will be needed to evaluate alternative culvert replacement designs. Because a portion of culvert is located in WSDOT limited access, City and WSDOT will need to work together to design, permit and construct the project. Depending on WDFW permit requirements, culvert may need to be fish passable.	$527,000
240	Puget Drive SE at Rolling Hills Avenue Culvert Crossing	Puget Drive SE (between SE 19th St. and Jones PL SE)	A culvert crossing at Puget Drive SE (low elevation of roadway) that collects runoff via ditches is at full capacity.	The proposed solution is to replace the existing aged culvert system. Easements need to be acquired. Currently the runoff drains thru private properties. Also, the downstream system needs to be analyzed to fully understand the problem.	$388,000

TABLE 6-4E:
FLOODING PROBLEMS: BLACK RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
245	SW 23rd Street Drainage and Fish Passage Improvements	SW 23rd Street between SR-167 and Springbrook Creek	Panther Creek flows into the SW 23rd St channel prior to connecting into Springbrook Creek. The outlet elevation of two 48-inch CMP at East Valley Road culverts were set 4 feet below the grade of the Panther Creek channel creating a submerged condition which impairs fish passage and creates undesirable hydraulic conditions. Additionally, two - 9' by 14' CMP arch culverts that convey the Panther Creek channel across Lind Ave SW are reaching the end of their useful life and are set below grade. Also of concern is the increase in vegetation in the 23rd St channel between Lind Ave and East Valley Road which has reduced its hydraulic capacity. It is likely that channel improvements are needed along with culvert replacements to ensure adequate hydraulic connectivity along Panther Creek from SR-167 to Springbrook Creek. Furthermore, WSDOT approached the City in 2020 with a proposal to connect Rolling Hills Creek to the Panther Creek channel at SW 23rd St, to meet their fish passage injunction obligation by 2030. WSDOT had connected Rolling Hills Creek to the SW 19th St storm system which is not fish passable. Connecting Rolling Hills Creek into the SW 23rd St channel would require further upsizing of the culverts and further channel improvements.	The proposed solution is to replace the culverts at East Valley Road and Lind Ave SW with new fish passable culverts. The new culverts will probably be single cell three sided box culverts lined with spawning gravel. Channel improvements would consist of excavating the channel bottom and widening the cross section. Such improvements may be comparable to those identified in the P9 channel report. Since these improvements are also beneficial to WSDOT due to their obligation to provide fish passage from Springbrook Creek to Rolling Hills Creek, the Surface Water Utility will evaluate the possibility of partnering with WSDOT. Connecting Rolling Hills Creek to the SW 23rd St channel would require breaching a berm that separates Rolling Hills Creek from the Panther Creek Wetland, relocation of a City water line, and resolution of multiple utility conflicts. Improvements to the SW 23rd St channel would also need to accommodate flows from Rolling Hills Creek, and that may have a significant effect on the scope and size of these improvements.	$1,780,000
251	Springbrook Creek Old Bridge Removal at SW 27th Street	Springbrook Creek North of SW 27th Street	A private old bridge (not used as a bridge any more) north of SW 27th Street on Springbrook Creek creates backwater condition that results in higher creek water surface elevations that contribute to upstream flooding (e.g., at SW 43rd Street).	The proposed solution is to remove the bridge and replant the stream channel side slopes.	$105,000
256	East Valley Road Storm System Improvements	East Valley Road Between SW 30th Street and SW 23rd Street	Localized areas of flooding along East Valley Road between approximately SW 30th Street and SW 23rd Street resulting from insufficient capacity in the existing storm system during large rainfall events.	The project includes replacing 3400 LF of existing storm system along the East Valley Road between approximately SW 30th St. and SW 23rd St. with a new 60/54-inch storm system. The new storm system will discharge into the SW 23rd St. culvert on E. Valley Road, which discharges to Springbrook Creek. WSDOT is responsible for partial or all funding due to mitigation for the P9 channel as was documented in the P9 Report.	$550,000
263	Shattuck Avenue South and S 37th Street Outfall	Shattuck Avenue S and S 37th Street Outfall (Runoff from Talbot Road S.)	Drainage facilities in Shattuck Avenue are lacking or insufficient. Sub-surface seepage is causing deterioration of road pavement and sidewalks. The problem is related to increased flows from upstream development and erosion of the steep slopes due to lack of defined outfall westward.	The proposed solution includes conveyance improvements that are coordinated with a future street repair project (10+ years per the existing City TIP) and include anchoring the outfall, installation of new storm drain piping, new outfall, and ensuring all future flows to this system can be adequately managed. In addition, a trunk collection system is proposed to collect surface runoff that is draining onto private properties to the west via Talbot Road South.	$101,000

TABLE 6-4E:
FLOODING PROBLEMS: BLACK RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
265	Talbot Road South Drainage Study	Talbot Road South (at S. 37th Street and Talbot Creek Drive South)	Parallel to Talbot Road South is an existing steep slope drainage system that has capacity issues at the Talbot Road South culvert entrance, South 38th Street, and along the length of the channel along Talbot Road South due to erosion. Also runoff from the top of slope (via Talbot Road South) at Talbot Crest Drive South, South 37th Street, and north of S. 177th St. drains to this location and may cause additional erosion at the downhill portion of the slope.	Talbot Road South Master Drainage Plan: Outfalls and pipe systems along this problem area need to be upgraded with outfall piping, outfall energy dissipation structures, and culvert upgrades at the Talbot Road S. and north of S. 177th St. area. Other outfalls south of the Talbot Road South & north of S. 177th St. area may need to be included as part of the Talbot Road South Master Drainage Plan to identify all problems.	$198,000
269	Talbot Road South @ Panther Creek Outfall	Talbot Road S. (Panther Creek Culverts)	Between Carr Road and Talbot Road South, there is a series of culverts that drain onto the top of the Panther Creek steep slopes and causes erosion and debris to be transported downhill.	Culverts and outfalls need to be inventoried, replaced with new outfalls to reduce runoff impacts/erosion downstream. Culvert and pipe system capacities need to be analyzed. The Panther Creek Watershed Plan should assist with this project with recommendations, hydrology/hydraulics, additional problem descriptions, etc.	$790,000
271	Springbrook Creek Wetland and Habitat Mitigation Bank	Adjacent to Springbrook Creek south of SW 34th Street	This project consisted of developing a plan, creating, restoring, and enhancing wetlands in partnership with WSDOT, on approximately 130 total acres in the valley adjacent to Springbrook Creek. The project allows an alternative to on-site mitigation for private and public projects (City or WSDOT) with wetland impacts that require mitigation per City Code to achieve a no-net loss of wetland functions and values. The project also improves flood storage capacity along Springbrook Creek, improves water quality, fish and wildlife habitat, and provides economic benefits by allowing private development to fill low quality wetlands on their property in exchange for purchasing credits from the Wetland Bank. These credits would cost developers less when compared with on-site mitigation, allowing private properties to develop more area, create higher valued developments, increase property values, and create more jobs, thereby increasing the City's general fund revenues. The funding is for the City's share to manage the Bank as defined in the Wetland Mitigation Bank Agreements.	This project was constructed in 2007-2008, but has require a 10-year monitoring period to verify whether performance standards have been met to allow for the release of wetland mitigation credits that can be used by the City and WSDOT. Once all performance standards are met, a total of 45.12 mitigation credits are expected to be available and shared equally between the City and WSDOT. One credit compensates for one acre of Category II wetland. All credits have been released from Units A, B, D, and E. All credits are anticipated to be released from Unit C by the end of 2020. Following the 10-year monitoring period and release of all credits, the Bank will enter its Long-term Management Phase. Long-term management will include annual inspections, monitoring of hydrologic conditions and targeted wooded species, weed control, trash removal, and repair of signage and structures due to vandalism and natural wear. The City is in the process of determining credit value and what type of projects (i.e. commercial, residential, etc.) would be eligible to use the credits. Sale of credits will be used to establish an interest-bearing account to fund long-term management indefinitely.	$922,000 (Total for 6-year CIP)
275	Oakesdale Avenue / SW 41st Street Culvert Replacement	Oakesdale Avenue SW and SW 41st Street	Flooding of roadway and adjacent properties due to insufficient culvert capacity at the Oakesdale Business Park, located immediately upstream of the SW 41st Street culvert.	Oakesdale Avenue Culvert Improvements – This is a project identified in the adopted East Side Green River Watershed Plan and the East Side Green River Watershed Technical Memorandum-2007. The project will solve existing and future flooding problems, improve water quality and fish habitat. The project includes installing a new 30-ft wide by 8.5-ft high box culvert. The project will increase capacity and prevent flooding of Oakesdale at the crossing and it will improve fish passage. A King County Metro sewer underneath Oakesdale Ave presents a challenge to increasing the size of the culvert.	$1,710,000

TABLE 6-4E:
FLOODING PROBLEMS: BLACK RIVER BASIN

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
279 and 281	SW 43rd Street/Lind Ave SW Storm System Improvements	SW 43rd Street and Lind Ave	Ponding of the intersection and portions of SW 43rd Street and Lind Avenue at high flow events caused by backwater created by the undersized downstream system that extends west from SW 43rd Street towards Springbrook Creek, and possibly made worse due to overflows from Upper Springbrook Creek that get into the SW 43rd system near Lind Avenue. Flooding along SW 39th St. occurs during larger storm events that prevent access into business parking lots.	SW 43rd Street System Improvements include proposed installation of 60-inch parallel pipe system between the intersection of Lind Ave./SW 43rd St. and Springbrook Creek. More specifically, the project includes constructing approximately 3,400 feet of a new, parallel 60-inch diameter storm system along Lind Ave. SW, from SW 43rd St. to SW 39th St., and then along SW 39th St. from Lind Ave. SW to a new outfall into Springbrook Creek.	$4,000,000
282	S 178th Street Drainage Connection	S 178th Street storm drain system north of S Carr Road	The existing system is not functioning or has failed. Runoff from South 178th Street drains to the south of the cul-de-sac and discharges into the failed pipe or flows overland. Eventually the private storm system to the south receives the runoff and drains toward the Talbot Road South storm system that ultimately discharges to Panther Creek.	If the pipe has not been crushed, utilize either slip lining or pipe bursting to remedy the problem in order to minimize business disruptions. Easements should be obtained as part of the project if no easements exist. TV inspection is highly recommended prior to developing construction plans.	$362,000
285	SE 190th Street Drainage Improvement	SE 190th Street (near 103rd Place SE)	Flooding and backwater occurs along an 82-foot dispersal trench and pond system in this area. Backwater is occurring in the system upstream of this facility and overflows onto the street system.	A drainage system analysis is needed to determine cause of problem and recommend a solution at SE 190th Street and 104th Place SE. The solution may include upsizing the system to handle increased storm-water conveyance capacities.	$108,000
287	S. 55th Street and Talbot Rd. S. Drainage Improvement Project	S. 55th Street and Talbot Rd. S.	Runoff from S. 55th Street enters roadside ditch and flows downhill where it makes a sharp bend to the south along Talbot Rd. S. While making the turn, the flow overtops the ditch and floods the roadway.	Replace ditch with a new storm drain system along S. 55th Street and Talbot Rd. South to convey ditch flow around south east corner of intersection.	$120,000
998	Wells Ave S Drainage Improvement Project	Mid block of Wells Ave S between Houser Way S and S 4th St	The 8-inch concrete stormwater main with Facility ID No. 106222 outfall could not be located and appears to be plugged. Also, the type II catch basin with Facility ID 113701 that outlets to the type II catch basin with Facility ID 113700 has had the outlet pipe mudded over in structure 113700 blocking any flow from the north. Also, the concrete stormwater conveyance pipes are in poor condition.	Replace the storm drain system along Wells Ave S from Houser Way S to S 4th St.	$300,000
299	Downtown Storm System Improvements	Along S 2nd Street, S 3rd Street and their cross streets between Rainier Ave S and Mills Ave S.	This area is currently serviced by undersized and aging stormwater pipes that cannot support the re-development and new development in the Downtown core.	These utility improvements are needed to support re-development and new development in the Downtown core and will provide better service for existing and future development. These projects are the first steps to support coordinated efforts by the City to improve intersections, add signals, and convert S 2nd St and S 3rd St to two-way operations, as guided by the Civic Core Vision and Action Plan. Construction of these utility improvements is expected to start in 2021 and continue through spring 2023.	See project cost in Table 6-3D.

TABLE 6-4F:
FLOODING PROBLEMS: SOOS CREEK BASIN

185	SE 172nd St & 125th Ave SE Green Stormwater Infrastructure Design Project	Half a block of 122nd Ave SE, 123rd Ave SE, 124th Ave SE and 125th Ave SE, north of SE 172nd St, and two blocks of SE 172nd St.	Surface water overtops the centerline of the road in a low area due to backwater condition of outfall to wetland which may also contribute to flooding of House at 12215 SE 172nd Street and House at 17003 125th Ave SE. Insufficient conveyance capacity of existing drainage systems along 125th Ave SE. and SE 172nd St. may also be contributing to localized flooding.	In order to improve existing conveyance capacities and mitigate for flooding concerns due to large drainage areas flowing through aging stormwater pipes crossing private parcels, the existing stormwater systems in the north-south streets (122nd Ave SE, 123rd Ave SE, 124th Ave SE, 125th Ave SE) that flow easterly toward 125th Ave SE will be disconnected from the system and plugged at the upstream end. The existing upstream flows from outside the project limits are rerouted and conveyed southerly along the north-south streets through proposed 18-inch bypass systems, that connect to a new 18-inch bypass system, which flows easterly, along SE 172nd St. These flows from the large upstream areas bypass the proposed water quality treatment systems. Additionally, permeable pavement is used throughout the project for the proposed sidewalks to provide mitigation and infiltration of stormwater runoff.	$3,476,000

TABLE 6-4G:
FLOODING PROBLEMS: CITYWIDE SMALL DRAINAGE PROBLEM PROJECTS

GIS ID #	Project Name	Approximate Location	Problem Description	Conceptual Solution	Estimated Cost (2020)
Various Locations	Miscellaneous and Emergency Storm Projects			Various emergency storm duties are completed within this program task including flooding response work during the wet season, spills, etc.	$527,000 (Total 6-Year CIP)
238	16501 Benson Rd S	16501 Benson Rd S	Customer complaint about street runoff from Benson Rd S flowing down driveway onto private property. Condition has existing for very long time. Nothing has changed to increase runoff. Low priority at this point.	Install new catch basins and storm pipe to intercept road runoff.	$66,000
268	Talbot Rd S and S 34th Pl Stormline Repair Project	3400 block of Talbot Rd. S.	A existing storm line that conveys runoff from the Cherie Lane subdivision to Talbot Rd. S. has root problems and poor access for maintenance.	Replace with new storm line and construct an access road.	$204,000
555	Sunset Blvd N/Aberdeen Ave NE /NE 10th St. Storm Repair Project	Sunset Blvd NE and NE 10th St intersection with NE 10th St.	A majority of storm system along Aberdeen Ave NE and NE 10th St consists of aging clay and CMP pipe and brick manholes. A portion of the storm system runs under homes and is in poor condition with no access for maintenance.	Solutions includes replacing the existing clay and CMP pipe as well as designing a new system to bypass flows around the failing storm pipe under homes.	$198,000
999	SE 182nd St Storm System	From 114th Ave SE to 112th Ave SE	The City's storm system that collects runoff at the intersection of SE 182nd St and 114th Ave SE outfalls to a ditch at 18223 114th Ave SE. The ditch has been historically difficult to maintain and gradually lost capacity over time. This has led to multiple incidences of overtopping and flooding along the said property. During the major storm event of December 2019, the property owner reported flooding in his basement and filed a claim against the City.	Construct a new storm system along SE 182nd St from 114th Ave SE to 112th Ave SE. Redirect drainage along 114th Ave SE from the existing outfall at 18223 114th Ave SE to the City's drainage system along SE 182nd St.	$300,000

TABLE 6-5:
WATER QUALITY RETROFIT: EAST LAKE WASHINGTON, BLACK RIVER, CEDAR RIVER AND MAY CREEK BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution	Estimated Cost (2020)
W800	Burnett Ave S and Williams Ave S Water Quality Retrofit Project	The Burnett Avenue S and Williams Avenue S drainage area consists of approximately 14-acres of mixed urbanized land use with an estimated 90% impervious area. The system directly discharges into the Cedar River with no water quality treatment. The Cedar River at this location is listed in the Department of Ecology 303(d) impaired water bodies as a Category 5 for pH, temperature, and dissolved oxygen (DO) and a Category 2 for mercury. The area also completely lies within the City of Renton's Wellhead Protection Area Zone 1 for one-year capture. The existing storm water system also requires upsizing; as the 8-inch storm water trunk lines running north and south through Burnett Avenue S and Williams Avenue S, just north of 2nd Street, are shown to have issues conveying the 10-year storm. A storm in May of 2017 caused the 8-inch main trunk line to become surcharged and flood a residential apartment complex along Burnett Avenue S. The finish floor elevation of the apartment building is lower than the catch basin rim elevation within the adjacent street (Burnett).	A water quality (WQ) grant was obtained through the Department of Ecology for evaluating and designing the runoff treatment best management practice (BMP) options for the project area. The City of Renton Downtown Utility Improvement Project Conceptual Design Report identified several deficiencies within the Burnett and Williams storm water system and feasible solutions. The Conceptual Design Report stipulated multiple alternatives requiring the trunk lines within Burnett and Williams be through the outfall at the Cedar River. The existing 8-inch pipes and 12-inch pipe would be upsized to a minimum of 18-inch and potentially up to 36-inch pipe This is also supported in a separate study prepared by the apartment complex development company; where a hydrologic and hydraulic assessment was completed for the system to determine the cause of the May 2017 flood. The Burnett and Williams Water Quality Retrofit Project is currently finalizing the grant agreement with the DOE and will then initiate consultant requests for qualifications to design the water quality treatment and upsizing the system.	**Design** DOE WQ Grant: $370,000 DOE Share: $277,500 COR Share: $92,500 **Construction** $2,000,000
W801	Heather Downs Detention Pond Water Quality Retrofit	The project will convert the Heather Downs detention pond to a combined detention pond/wetpond to provide water quality treatment. The stormwater runoff contains hydrocarbons, oils, and other pollutants from residential areas. This project will treat pollutants from a 29.8-acre tributary basin area and reduce water quality concerns in Maplewood Creek and Cedar River. The Cedar River is on Ecology's 303(d) list for violations in water temperature, dissolved oxygen, and pH standards.	The proposed project will convert the detention pond to a combined wetpond/detention pond. The new wetpond volume will be developed by excavating below the current pond bottom. A geotechnical investigation assessed the underlying soils and based on the analysis a low permeable liner will be provided. One-cell and two-cell wetpond configurations were evaluated.	$264,000 ($198,000 in grant funds; $66,000 City funds). Project will be completed by 12/31/2021
W802	Stormwater Facility Retrofit Study	This project will improve water quality for flow control facilities in the Black River, Cedar River, May Creek, Johns Creek, Maplewood Creek, Panther Creek, Springbrook Creek, Big Soos Creek and Rolling Hills Creek subbasins in the City of Renton, which drain to Lake Washington and the Green River. The study will identify existing City of Renton owned flow control facilities and inform decisions for future treatments. The most beneficial water quality improvement projects will be identified, and conceptual designs and cost estimates will be developed.	The study will provide a conceptual design for the three highest-priority potential future projects using Ecology's 2014 Stormwater Management Manual for Western Washington (or approved equivalent, as listed in Appendix 10 of the 2014 revision to the Phase I Municipal NPDES Stormwater Permit). Runoff treatment facilities such as bioretention, combined detention and wetponds, and TAPE GULD devices will be evaluated. The treatment option(s) selected will be catered specifically to each retrofit location, dependent on existing site criteria (available space, pollutants of concern, existing facility type, aquifer protection area, etc.).	$250,000 ($187,500 in grant funds; $62,500, City funds). Project will be completed by 12/31/2022
W803	Jefferson Ave NE Green Connection Project	This project was identified in the Sunset Area Surface Water Master Plan that was developed and approved as part of the Sunset Community Investment Strategy and Planned Action EIS to improve water quality in the surrounding area. This project supports the city's goals of economic development, public safety and quality of life.	This project will design flow reduction and stormwater quality treatment for approximately 1,300 linear feet of roadway to include bioretention facilities, a storm conveyance system and permeable concrete sidewalks on Jefferson Avenue NE (between NE 16th Street and NE 12th Street) in the Sunset Area community along the existing roadway where most feasible.	$2,506,000 (Partially funded by an Ecology Stormwater Financial Assistance Program grant of $2,075,095 awarded in 2018)

TABLE 6-6:
HABITAT PROBLEMS: CEDAR RIVER, MAY CREEK, LAKE WASHINGTON, AND BLACK RIVER BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution
129	West Fork of Madsen Creek	General habitat concerns and a culvert within the Fairwood golf course blocks fish passage.	Fairwood Golf Course culvert replacement.
214	Culvert removal at Raymond Avenue (along SW 19th Street)	The project improvement involves removing an existing culvert that carries Rolling Hills Creek between Springbrook Creek and Raymond Ave (along SW 19th St.) and restoring this section as an open channel. The culvert crossing was previously used for access over the creek, but it is no longer needed. This improvement is habitat related only and not required to solve a flooding problem.	This project is described within the East Side Green River Plan that provides recommendations and improvements to the Springbrook Creek system. The project is identified as element PS2-3 (Rolling Hills Culvert) in the City's East Side Green River Watershed Project.
L101	Port Quendall Site Cleanup (LW-S2-6)	Hazardous material on site.	Clean up hazardous material on site.
C201	WRIA 8 – ID C201 (CR-0-1.1-RB)	Extensive areas of industrial land use exist in Reach 1 from the mouth to Logan Street bridge (RM1).	If redevelopment occurs in the area, the Army Corps of Engineers will need to be consulted on any habitat restoration in this area. Alternatives include reducing channel confinement and increasing riparian function including the use of LWD. The WRIA 8 projects list includes a conceptual project for focus on knotweed control throughout the reach, as well as riparian restoration where possible, especially along the right bank. Explore additional opportunities to reduce the effect of artificial nighttime lighting beyond the mitigation requirements for the 2016 dredging project.
C202	WRIA 8 – ID C202 (CR-0-1.1-RB)	Dredging of this reach is anticipated in the future. Plantings will need to consider flood control requirements, airport safety issues, park and trail management and public access to the river. Recreational uses need to be balanced with an assortment of other uses.	Revegetate right and left bank of Reach 1 where possible. Overhanging vegetation in this area of the river that experiences inundation by the lake is beneficial. Plants will also need to be flood tolerant to flourish in the future. Plant selection will also need to consider that the airport has a clear zone over the park that affects type of vegetation that can be planted. The WRIA 8 projects list includes a conceptual project for focus on knotweed control throughout the reach, as well as riparian restoration where possible, especially along the right bank. Explore additional opportunities to reduce the effect of artificial nighttime lighting beyond the mitigation requirements for the 2016 dredging project.
C203	WRIA 8- ID C203 (CR-1.1-1.6-LB) (CR-1.1-RB)	Reach 2 re-vegetation projects. Any planting in this area needs to consider park and trail management as well as access to the river. Limited riparian plantings are possible due to the Cedar River trail.	Re-vegetate riparian areas where possible in Reach 2 at Logan Street Bridge (RM 1) to I-405 (RM 1.6). Explore options to add native riparian vegetation on the left and right bank of the river. Remove invasive vegetation and plant native riparian vegetation on left bank in areas where mature trees do not exist between Houser Way N and Logan Ave N. Potential for large wood placement at tow of bank in selected locations. Create a shallow alcove with LWD in the lawn area between the Renton Senior Center and the existing river bank (right bank). Plant the lawn with riparian vegetation.
C204	WRIA 8- IDs C204	Cedar River Reach 2 and Reach 3 improvements that include exploring re-development options and restoration. Land use issues would exist for any restoration project proposed in this area. There exists a high number of landowners, so feasibility of restoration is diminished.	Explore redevelopment and restoration projects in Reach 2 and 3, particularly in areas of industrial use in Reach 3 that are likely to be redeveloped in the near future. Reach 3, as defined in the WRIA 8 Plan, is within the City of Renton. The WRIA plan suggests that the City offers regulatory flexibility or other incentives to encourage buffer and floodplain improvements during redevelopment. This is part of the 'explore re-development' option. Habitat improvement in the reach could be encouraged through incentive programs such as offering density exchanges. Exploring the possibility of setting back levees and riparian buffer restoration is a challenge in this area. The WRIA 8 project list includes a conceptual project that seeks ways to improve riparian habitat on site such as purchasing easement for buffer, removing bank hardening and restoring riparian buffer. There is a conceptual design for approximately 1,000 linear feet of bank enhancements developed, which includes regrading the bank to provide shallow edge habitat, large wood installation, and riparian revegetation.

TABLE 6-6:
HABITAT PROBLEMS: CEDAR RIVER, MAY CREEK, LAKE WASHINGTON, AND BLACK RIVER BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution
C205	WRIA 8 – ID C205	Existing cottonwoods near the library area are nearing the end of their lifespan and replanting options will need to be explored.	Possibly underplant with conifer now and replant area when trees are removed in five to ten years. Permits to remove and manage trees would be required. Where possible, protection and maintenance of existing tree cover in this reach is highly recommended.
C206	WRIA 8- ID C206 (CR-2.1-2.4-RB)	Improve riparian habitat in area of industrial use. A bulkhead in this area is very large and removal is highly recommended.	Examples of these 'industrial' areas that could be restored include the areas adjacent to the old Stoneway site and the Riviera Apartments. Remove invasive vegetation and restore riparian buffer adjacent to Riviera Apartments. Explore opportunities to remove impervious surface area and bank hardening on site. Explore opportunities to remove impervious surface areas and bank hardening, and restore riparian buffer in areas of multifamily residential use in Reach 3. This includes areas like the multifamily redevelopment of Riviera Apartments. Explore opportunities to purchase easements for buffer, removing bank hardening and restoring riparian buffer. Bulkhead removal of a structure 16 feet high x 1,150 feet along river is needed.
C207	WRIA 8- ID C207	Bank sloughing along Cedar River in riparian corridor within areas of multifamily residential use in Reach 3. Apartment complex in this area has extensive impervious surface area.	Partial buyout would be necessary to achieve high benefits. Explore opportunities to remove impervious surface area and bank hardening on site, and restore riparian buffer. The WRIA 8 project list includes a conceptual project that seeks ways to improve riparian habitat on site such as purchasing easement for buffer, removing bank hardening and restoring riparian buffer. There is a conceptual design for approximately 1,000 linear feet of bank enhancements developed, which includes regrading the bank to provide shallow edge habitat, large wood installation, and riparian revegetation.
C208	WRIA 8- ID C208 (CR-3.4-4.3-RB)	Maplewood neighborhood flood buyouts and floodplain restoration. Restoration of floodplain is needed in this area.	Buyouts of various homes affected by flooding during high river events. These include, but are not limited to, the Lyon's home and two other neighboring parcels along the Cedar River affected by the flooding in the Wasmita Park area. Explore opportunities to restore riparian corridor by removing impervious surfaces and restoring riparian buffers with vegetation. Explore options for bioengineering and softening bank hardening (See recommendations for Maplewood Flood Hazard Reduction in Cedar River Basin Plan). The cost is high for this reach due to buyouts. Benefits would depend on scale of effort but at a minimum would need to reduce flood hazards. Buyouts alone do not usually provide significant fish benefits, but does allow for future floodplain restoration. For the greatest benefit, flood buyouts should be pursued in concert with comprehensive habitat restoration efforts.
C209	WRIA 8 – ID C209 (CR-1.6-5.2-BB)	The reach 3 area (between I-405 RM 1 to SR169 Bridge RM 4.2) is well vegetated. However, noxious weed control, underplanting, and exploring diversity of plants is needed.	Restore riparian areas in city owned parks upstream of I-405 bridge, particularly the left bank.
C210	WRIA 8 – ID C210 (CR-1.6-5.2-BB)	Protect the existing forested, riparian habitat in the City of Renton's parkland upstream of I-405 bridge on the left bank.	Renton's three riverside parks (Liberty, Cedar River Park, and Narco property) are going through new master planning process. Opportunities may exist to move some of the more active recreation uses of these parks to the former Narco site and protect habitat with more passive recreational uses at the other areas of the parks and restore existing riparian areas. A potential alternative for this region is to look at lowering the river to provide recreational uses in order to protect upstream habitat.

TABLE 6-6:
HABITAT PROBLEMS: CEDAR RIVER, MAY CREEK, LAKE WASHINGTON, AND BLACK RIVER BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution
C211	WRIA 8 – ID C211 (CR-4.6-4.9-RB)	Restoration of side channel may be possible as part of the Cedar River Basin Plan. This is for the right bank of the river on the property owned by Maplewood Heights Homeowners Association and the City of Renton across from the golf course and downstream of a landslide area.	Channel restoration should be a flow through channel to reconnect to the river at the upper end for juvenile Chinook benefit rather than a groundwater fed spawning channel that primarily benefits sockeye. A UW study was done on this potential restoration project. Due to the landslide having changed the area extensively, this location may no longer be a viable opportunity for side channel restoration. The landslide area is a source of fine soils and lacks access so restoration may be difficult. Control invasive plants and replant native vegetation and conifers in vicinity of side channel on the right bank on property owned by Maplewood Heights Homeowners Association and City of Renton, across from golf course an downstream of landslide. Benefits could be gained by the upstream end of the side channel being reconnected; investigate whether to reconnect or allow the river to reconnect it on its own.
C212	WRIA 8- ID C212	Cedar River Reach 4 improvements needed to prevent future bank sloughing in the riparian corridor. A concern was raised that conifer underplantings may not be appropriate in riparian areas along Cedar River. Historic conditions analysis indicates that forested riparian areas in lower Cedar River used to be deciduous. Other plant species or a mix of coniferous and deciduous species may be more in keeping with historic conditions.	Reach 4 restoration includes considering conifer underplanting in forested riparian areas within the reach, particularly in Ron Regis park, near a slide area. This project is on the WRIA 8 project list with a status of dormant.
C213	WRIA 8 – ID C213	Protect habitat in Reach 4 between SR 169 Bridge (RM 4.2) and Upstream of Landslide (RM 4.7)	Protect existing riparian habitat, instream habitat conditions and extensive LWD in reach. Most of reach is already in public ownership or protected by regulations (i.e. steep slopes).
C214	WRIA 8- ID C214 (CR-4.9-5.2-LB)	Protect habitat in Reach 4 and explore ways to reduce flooding and erosion in Ron Regis Park such as adding LWD and exploring a levee setback concept. It is unclear how much further the river is going to erode the bank and migrate into the Ron Regis Park in the landslide area. There may eventually be a conflict with park uses in the future.	Reconnect and enhance small creek mouths as rearing areas. Opening up new spawning and rearing habitat is key to enhancing spatial distribution and diversity that leads to increased productivity. Studying options to protect habitat in Reach 4 and reduce flooding and erosion in Ron Regis Park is recommended. Explore using LWD and levee setback to prevent excessive erosion and flood damage to the public lands associated with Ron Regis Park while protecting natural habitat forming processes in the reach. Explore ways to restore habitat forming processes to the left bank adjacent to Ron Regis Park. Project elements could include removing bank armoring and installing large wood. Restoration options should include lower Madsen Creek. An alternative may be to let the river find its own equilibrium in the area.
C264	WRIA 8 – ID C264 (Enhance Mouth and Lower Johns Creek) (LW-S1-1)	Predator habitat is present here. Water quality and flows are a problem as well as siltation within the lower John's Creek.	Enhance lower channel to reduce predator habitat, restore riparian vegetation, and protect water quality from stormwater flows. Past studies have identified water quality issues, primarily from avian sources. In the future, WSDOT has Ecology approval for a direct discharge of stormwater into Johns Creek for the I-405 expansion project. The I-405 project expansion should consider habitat issues related to water quality, and enhancement aimed to reduce predator habitat. Recreational usage of the site is important and needs to be considered when enhancement projects are proposed in this area.
C265	WRIA 8 – ID C265 (Enhance mouth of Kennydale Creek) (LW-S2-1)	Located in Gene Coulon Park, this area has seen juvenile Chinook at the mouth, but not in the stream.	The mouth has a good delta with good gradient. Planting was done in the past by the City. Park and recreational usage for the City needs to be considered when habitat enhancement projects are proposed. Removal of silt is recommended, and recruitment of gravels and sand is proposed. Protection of the shallow water delta is needed as part of the restoration.

TABLE 6-6:
HABITAT PROBLEMS: CEDAR RIVER, MAY CREEK, LAKE WASHINGTON, AND BLACK RIVER BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution
C266	WRIA 8 – ID C266 (South Lake Washington DNR Shoreline Restoration Project)	Shoreline restoration is needed on the Washington Department of Natural Resources Property. This project is called the South Lake Washington DNR Shoreline Restoration Project and is proposed separately from the Sam Chastain Park Shoreline Restoration. Removal of a flume is also needed along the lakeside.	Remove a portion of the flume along the lakeside, create a shallow water habitat, protect existing cove, and plant overhanging riparian vegetation along the shore. The Sam Chastain Trail is a project to connect the Cedar River trail to Gene Coulon Park. Mitigation with shoreline restoration should be done in concert with the trail project.
C267	WRIA 8-ID C267 (LW-S1-4)	Reconnect and enhance small creek mouths as rearing areas for Gene Coulon and Cedar River. This is for the private property owner areas where it is desirable to remove bulkheads.	Restoration of shallow water habitat and riparian vegetation is needed. Possible opportunities to work with Boeing and private property owners to remove bulkheads and restore shallow water habitat and riparian vegetation may exist in the future.
C268	WRIA 8- ID C268 (Cedar River Delta)	Predation at the mouth of Cedar River and backwater area in lower Cedar River is a problem. This lowering project would require regular maintenance. This is an area where high bird predation on Chinook fry exists.	Explore lowering/modifying the delta to create more shallow water habitat and reduce predation for juvenile Chinook by cutting trees lower. Address predation effects at the mouth of the Cedar River and backwater area in lower Cedar River. Any potential projects should consider the City of Renton's Shoreline Plan, ACOE, and the City of Renton Airport management requirements. [note there have been questions raised about the benefits of this habitat project because it is possible that creating more shallow water habitat may increase Chinook presence and consequently increase predation]. The project was cancelled in 2012 and the granting agencies were notified and the funds returned.
C269	WRIA 8-ID C269 (Shoreline restoration west of Cedar)	Overhanging riparian vegetation has been lost due to erosion of stream bank. Restoration would be for shoreline west of Cedar's mouth. Homeowner bulkheads are a concern and conversion of nearshore habitat to shallow beach and restoration of vegetation is desirable.	Incentive programs are needed such as PBRS to encourage participation on reducing number of docks used. Using community docks would be better for habitat. Conversion of nearshore habitat to shallow beach and restoration of riparian vegetation is desirable. Develop community docks as a replacement and restore mouths of small creeks at the same time. As of July 2010, this project required the reuse of clean sediments to be dredged from the Seaplane Base. Sediments to be used to build 1) a habitat island along the western edge of the growing Cedar River delta, and 2) a habitat bench in front of the vertical sheet pile wall located along the western half of the Airport's Lake Washington shoreline. New habitat is designed to incorporate large woody debris and to provide overhanging riparian vegetation to create high quality shallow water habitat for outmigrating juvenile Chinook. These habitat improvements depend upon the supply of clean sediments from the dredging project and are designed to complement previously negotiated mitigation work. This project was cancelled in 2012; granting agency notified and funds returned.
C270	WRIA 8-ID C270 (Explore opportunities to restore small creek mouths) (LW-S2-5)	Limited shoreline habitat has resulted in increased salmon predation at the mouths of creeks discharging into south Lake Washington.	Restore mouths of small creeks such as Kennydale and Johns Creek and remove bulkheads and construct community docks in place of individual docks along the shoreline between Kennydale Creek and west of the mouth of the Cedar River. Restore mouth and lower reach of May Creek. Increase beach, set back banks, plant riparian buffers, and add large wood to improve habitat for juvenile Chinook.
C288	WRIA8 – ID C288 (Sam Chastain Park Shoreline Restoration)	An existing bulkhead in the vicinity of Chastain Park limits near shore habitat.	The proposed Chastain Park Shoreline Restoration includes removing the bulkhead and placing gravels from Beaux Arts on 1100 feet of shoreline restoration, setback armoring, and improving vegetation.

TABLE 6-6:
HABITAT PROBLEMS: CEDAR RIVER, MAY CREEK, LAKE WASHINGTON, AND BLACK RIVER BASINS

GIS ID #	Project Name	Problem Description	Conceptual Solution
S19	Green River Ecosystem Restoration Projects (Lower Springbrook Reach Rehabilitation – LG-19 in WRIA 9 Plan/Site No. 7 in the Green/Duwamish River Basin Ecosystem Restoration Study Final Feasibility Report)	Lower Springbrook Creek Reach is characterized by poor water quality and limited riparian vegetation.	This project would rehabilitate habitat for rearing and off channel refuge on Springbrook Creek. Springbrook Creek cuts through the Renton Valley from the border with Kent at SW 43rd Street to the Black River Pump Station. The project would improve approximately 2.8 miles of habitat with riparian plantings, large woody debris, pool construction, channel branch excavation (dendrites), and channel modifications to create a two stage (low and high) flow channel. Although Springbrook Creek is spring fed, water quality is very poor and characterized by high temperatures and low dissolved oxygen. The Green River Ecosystem Restoration projects are part of a large effort (cost shared by jurisdictions within the WRIA 9 Forum) to restore habitat in the Green/Duwamish River Watershed. The projects will help in the City's response to the Endangered Species Act. The utility funds shown will be used to match Army Corps of Engineer's federal funds (65% federal, 35% local) to allow the design and construction of the projects. The City may consider submitting a project deviation to the Corps during the design phase to include replacement of the SW 43rd Street culvert. The project schedule is dependent upon priority relative to other projects and Congress appropriating the federal funds needed for the construction of the projects.

TABLE 6-7:
PROGRAMS AND REGULATORY COMPLIANCE

Project Name	Problem Description/Permit Reference	Solution/Compliance Approach	Estimated Cost (2020)
Coordination with Long-Range Plan Updates	NPDES Permit Condition S5.C.1.b	City must describe how stormwater management needs and protection/improvement of receiving water health are (or are not) information the planning update processes. Documentation is included in the Stormwater Annual Report.	Minimal
Low Impact Develop Code	NPDES Permit Condition S5.C.1.c	Ongoing program to require LID BMPs and LID principles and to make LID the preferred and commonly used approach for site development. City must provide an annual update on progress and/or barriers.	Minimal
Stormwater Management Action Planning/Watershed Planning	NPDES Permit Condition S5.C.1.d.	City must develop a Stormwater Management Action Plan for one high priority watershed no later than March 31, 2023. Interim permit deliverables in support of the Stormwater Management Plan include a watershed inventory and receiving water assessment by March 31, 2022, receiving water prioritization by June 30, 2022.	$300,000 (6-year CIP Cost)
Public Education and Outreach	NPDES Permit Condition S5.C.2	Ongoing education program aimed at the general public, businesses, engineers, contractors, developers, land use planners, residents, landscapes, property managers/owners, and school age children to build general awareness about stormwater impacts and affect behavior change to reduce or eliminate behaviors that contribute to adverse stormwater impacts. Conduct an evaluation of effectiveness of ongoing behavior change campaign no later than July 1, 2020. Develop a strategy to implement actions to address lessons learned from effectiveness study no later than February 1, 2021 and begin to implement outreach strategy based on lessons learned no later than April 1, 2021. Public education and outreach results must be documented no later than March 31, 2024.	Minimal
Stewardship	NPDES Permit Condition S5.C.2	Ongoing program to provide and advertise stewardship opportunities and/or partner with other organizations to encourage residents to engage in surface and stormwater activities storm drain marking and other events.	Continuation of Existing Program
MS4 Mapping and Documentation	NPDES Permit Condition S5.C.4.b.ii	Ongoing program to map and document MS4. No later than August 1, 2023, complete mapping of all known connections from the MS4 to a privately owned stormwater system.	$29,000 Annually
Detect and Identify Illicit Discharges and Illicit Connections	NPDES Permit Condition S5.C.5.d	City must conduct field screening of at least 12% of the MS4 annually and track total percentage of MS4 screened beginning August 1, 2019. Train municipal field staff.	Continuation of Existing Program
Address Illicit Discharges and Illicit Connections	NPDES Permit Condition S5.C.5.e	Implement procedures to characterize, trace sources, and eliminate illicit discharges and connections within specified deadlines.	Continuation of Existing Program
Ordinance Addressing Runoff from New Development, Redevelopment and Construction Sites	NPDES Permit Condition S5.C.6.b	Adopt and make effective a local program, no later than June 30, 2022 that addresses runoff from new development, redevelopment and construction site projects consistent with a Phase I program approved by Ecology and amended to include Appendix 10.	Minimal

TABLE 6-7:
PROGRAMS AND REGULATORY COMPLIANCE

Site Plan Review, Inspections and Enforcement	NPDES Permit Condition S5.C.6.c	Review of stormwater site plans and inspection of development sites before, during and after construction per the permit conditions. Process also includes inspection of BMPs and facilities in new residential developments every 6 months until 90% of the lots are constructed, recordkeeping, and enforcement.	Minimal
Annual Inspection of Stormwater Treatment and Flow Control BMPs/Facilities that discharge to MS4	NPDES Permit Condition S5.C.7.b.i.b	Ongoing program to annually inspect all stormwater treatment and flow control BMPs that discharge to the MS4, unless otherwise exempted from this permit condition.	Continuation of Existing Program
Annual Inspection of Municipally Owned Stormwater Treatment and Flow Control BMPs/Facilities	NPDES Permit Condition S5.C.7.c.i	Ongoing program to annually inspect all municipally owned or operated stormwater treatment and flow control BMPs/facilities and conduct maintenance activities.	$253,000 Annually
Inspect and clean catch basins	NPDES Permit Condition S5.C.7.c.iii	Inspection of catch basins and inlets is required once every two years. This requirement may be changed based on maintenance records of double the length of time of the proposed inspection frequency. The City meets this requirement through an alternative of cleaning all pipes, ditches, and catch basins and inlets in a circuit once during the permit cycle.	$853,000 Annually
Pollution Prevention and O&M -	NPDES Permit Condition S5.C.7.d. and f	Ongoing program to document and implement an operations and maintenance program to prevent or reduce pollutants in runoff on lands owned by the City. Implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned by the City that do not have coverage under the Industrial Stormwater General Permit. Update the SWPPP(s) no later than December 31, 2022.	Minimal
Source Control and Business Inspection Program	NPDES Permit Condition S5.C.8	Adopt and make effective an ordinance or enforceable document to require source control BMPs for pollutant generating sources associated with existing land uses no later than August 1, 2022. Develop an inventory of site that have potential to generate pollutants to the MS4 no later than August 1, 2022. No later than January 1, 2023, implement an inspection program to annually inspect 20% of sites in the City's inventory of pollution generating sites. No later than January 1, 2023, implement a progressive enforcement policy that requires sites to comply with stormwater requirements.	$126,500 annually
Reporting and Staff Training	NPDES Permit Conditions S5.C.5.d.iii; S5.C.5.f; S5.C.6.e; S5.C.7.e; and S5.C.8.b.v	On-going program to develop and implement procedures for keeping records of inspection and enforcement action by staff as well as a training program for employees whose construction, operation and maintenance job functions may impact stormwater quality.	Continuation of Existing Program
Monitoring and Assessment	NPDES Permit Condition S8.A Regional Status and Trends Monitoring and S8.B Stormwater Management Program Effectiveness and Source Identification Studies	The City participates in regional status and trends monitoring and stormwater management program effectiveness and source identification studies.	$240,160 Annually
Residential Plat Stormwater Management Facility Maintenance and Operation Program	The City assumed operation and maintenance of approximately 213 existing stormwater facilities on residential plats following a policy decision on October 18, 2010.	Ongoing program to maintain stormwater facilities for which the City has assumed maintenance responsibilities.	$685,000 Annually

TABLE 6-7:
PROGRAMS AND REGULATORY COMPLIANCE

Mosquito Abatement Program (Talbot Hill Area)	The Panther Creek wetlands east of SR-167 and between I-405 and Valley Medical Hospital, are a large breeding ground for mosquitoes. Adult mosquitoes emerge from the wetlands in the late spring to feed in the residential neighborhoods in and around Talbot Hills. In addition to controlling adult mosquitoes, the City also treats for mosquito larvae in all City owned stormwater facilities including ponds and vaults. These mosquito abatement efforts help to reduce mosquito bites and subsequent risk of West Nile virus infection.	The City implements an annual contract with pest control contractor to control mosquito populations through adulticiding of upland areas adjacent to the wetlands and treatment of City maintained stormwater ponds using larvicide during the spring and summer months. The budget will need to be adjusted annually to account for additional ponds that are acquired by the City through new construction and future annexations.	$90,000 Annually
Stormwater Facility Fencing Project	Past and current design standards (taken largely from King County Surface Water Design Manual) require stormwater ponds to have a perimeter fence only when interior side slopes are greater than 3 horizontal to 1 vertical. However, some existing ponds with flatter interior side slopes (i.e., that did not require perimeter fencing) and having standing water several feet or more deep can create a potential safety hazard, particularly for small children.	The City has adopt a new policy of requiring all current and future ponds to be fenced which required changes to the City's stormwater code and stormwater design manual The City is currently responsible for the maintenance of 28 residential facilities and 6 non-residential facilities that either do not have perimeter fencing or do not have a perimeter fence that meets the design standards. There are an additional 17 privately maintained stormwater facilities that will be eventually transferred to the City and will need to be fenced.	$100,000 Annually
Asset Management Enhancement	As the City's infrastructure ages, storm pipes and structures tend to perform poorly or fail, potentially causing flooding and endangering the public. Deciding when to maintain, repair and replace stormwater infrastructure is difficult without an asset management program that will manage infrastructure capital assets that will minimize the total cost of owning and operating them while providing the City's target level of service.	The Surface Water utility has developed an asset management program that helps the utility with short, medium and long term planning of pipe replacement and repair, proactive inspection and maintenance of the City's storm system and prioritizing replacement projects based on cost-benefit analysis and severity of defects. The program relies on a CCTV Truck with two operators, GraniteNet for viewing CCTV inspections, NASSCO PACP standards, and coordination between Surface Water Engineering and Maintenance sections. The utility will continue to advance this program to include non-CMP pipes.	$100,000 Annually
City Wide Drainage Maintenance Program	The City has many culverts discharging to streams and creeks that require routine maintenance including vegetation and sediment removal.	The City has completed SEPA review and was issued a critical areas and shoreline exemption for vegetation and sediment removal at culverts within in the City. Fisheries has also issued an HPA that authorizes routine maintenance of 25 culverts and channels. City staff will still be required to obtain individual state and federal permits for each culvert.	$66,000 Annually
Surface Water Utility GIS	The City's infrastructure mapping needs continual updates as new storm water facilities, pipes and structures are taken into plats or acquired through annexations.	Surface water utility GIS mapping to include new storm water systems, as-built information, recently annexed areas, and continual maintenance of GIS mapping.	$115,000 Annually
Stream Flow/WQ Monitoring Program		Stream flow and water quality monitoring program. Currently collecting stream gage date at the Black River pump station.	$13,000 Annually
Culvert/Stream Inventory	As a result of a permanent injunction issued by the US District Court reinforcing treaty rights, WSDOT and WDFW must replace culvert crossings that are fish barriers with fish passable culverts. With this ruling, it opens up the possibility that other government entities may also have to replace fish barriers within their jurisdiction	The Surface Water Utility began the process of conducting a stream inventory of all culvert crossings. This information was used to eventually field survey each culvert crossing in an effort to identify fish passage issues and develop solutions with priority rankings which can be incorporated in the utility's CIP program. The establishment of a fish passage improvement program is currently under consideration.	$95,000 Annually
Surface Water Utility Plan	The Surface Water Utility's last comprehensive planning effort was conducted almost 25 years ago. A new surface water utility management plan is needed to reflect current capital needs and programs.	Develop a comprehensive city-wide surface water planning document to provide guidance for programmatic and capital needs for the next 6 years and for future years. Update every 6 years. Last update as of the writing of this system plan was in 2020.	$120,000 (6-year CIP Cost)

TABLE 6-7:
PROGRAMS AND REGULATORY COMPLIANCE

CMP Storm System Replacement Program	This program consists of assessing the condition of all corrugated metal pipes (CMP) whose diameter is 18 inches or larger, located in high risk areas (i.e. under major roads). This program was driven by a failure of a CMP pipe along Rainier Ave S in 2018, which caused a major cavity to form underneath the road, and required an emergency repair project. This program is intended to address deficiencies in CMPs, which are more susceptible to deterioration than plastic and concrete pipes, before a catastrophic failure becomes imminent.	Minor deficiencies are typically repaired through coordination with the surface water maintenance section, while replacement projects resulting from significant structural issues (e.g. deterioration of the pipe wall, pipe collapse) require the replacement or rehabilitation of the pipe and may require hiring a contractor. This program repairs and replaces corrugated metal pipes showing signs of deterioration in high risk areas to avoid catastrophic failures and emergency repairs. This project supports the city's goal of protecting public safety.	$580,000 (6-year CIP Cost)
Cedar River Flood Risk Reduction Feasibility Study	The Lower Cedar River Flood Risk Reduction Feasibility Study intends to assess the feasibility of improving the level of flood protection and evaluate future flood risk mitigation projects along the Cedar River from River Mile 0 to River Mile 2.7.	This feasibility study would identify potential measures or construction projects that would increase resiliency to floods greater than the 100-year event and identify the most feasible level of flood protection that could be achieved along this reach of the Cedar River, a critical area of development and economic activity within King County. The King County Flood Control Zone District (KCFCZD) placed the Feasibility Study on its 6-year Capital Improvement Project funding plan in 2018 and a funding agreement was executed with the City in April 2020. This study is expected to begin in 2020 and be completed by 2023. This study evaluates the feasibility of increasing the level of flood protection along the Lower Cedar River, and reducing the risk of flooding to the surrounding area in Renton. It supports the city's goal of protecting public safety.	$485,000 (6-year CIP Cost)
WSDOT Limited Access ROW Runoff Impact Mitigation Program	The city currently charges surface water fees to WSDOT for the SR-167 and I-405 right of way within Renton city limits. RCW 90.03.525 allows local municipalities to charge stormwater fees for state limited access highways and was modified when Senate bill 5505 was passed in 2019. The bill clarified the objectives of the Stormwater Management Funding and Implementation Program for highway related runoff problems and required charges paid by the state to local jurisdictions to be used solely for stormwater control facilities that directly reduce state highway runoff impacts or implementation of best management practices that will reduce the need for such facilities. A plan and progress report are required to be submitted annually so that WSDOT pays their stormwater fee to the City.	This program consists of studies and improvements to city facilities downstream of limited access right-of-way implemented to remain in compliance with RCW 90.03.525. This program enables the city to keep collecting surface water fees from WSDOT for limited access right of way, and prioritizes improvements beneficial to both the City and WSDOT. It supports the city's goals of public safety and quality of life.	$96,000 (6-year CIP Cost)

TABLE 6-8:
PRIORITIZED CAPITAL IMPROVEMENT PROJECTS FOR FLOOD RISK REDUCTION/WATER QUALITY TREATMENT

GIS Project No. (See Figures 6-2 and 6-3)	Project Name	Total CIP Cost Estimate (2020 dollars)	Annual Maintenance Cost (cost/year)
	PRIORITY ONE PROJECTS		
111	Monroe Avenue NE and NE 2nd Street Infiltration System Improvements	$6,350,000	
299	Downtown Storm System Improvements	$6,917,000	
187 and 302	Madsen Creek Improvement Project	$1,221,000	
101	Cedar River Gravel Removal Project	$14,966,000	
185	SE 172nd Street and 125th Ave SE Storm System Replacement Project	$3,476,000	
245	SW 23rd Street and East Valley Road Culvert Replacement	$1,780,000	
303	Maplewood Creek Sediment Facility Maintenance	$1,233,000	$95,000 - $100,000
302 and 187	Madsen Creek Sedimentation Basin Cleaning	$926,000	$75,000 - $84,000
211 and 215	Hardie Avenue S Underpass and SW 7th Storm System Improvements (All Phases)	$1,735,000	
456	NE Sunset Blvd at Union Avenue NE	$2,250,000	
279 and 281	SW 43rd Street Storm Improvements	$4,000,000	
256	East Valley Road Storm System Improvements	$550,000	
116	Ginger Creek/Cascade Park Basin Plan	$350,000	
Various Locations	Miscellaneous and Emergency Storm Projects	$527,000	
999	SE 182nd St Storm System	$300,000	
	TOTAL PRIORITY ONE PROJECTS	**$46,581,000**	
	PRIORITY TWO PROJECTS		
121	Lower Maplewood Conveyance Improvements	$557,000	
146	NE 4th Street Crossing at Maplewood Creek	$336,000	
151	East Fork Maplewood Creek at NE 2nd Street	$421,000	
156	Maplewood Creek Basin Improvements	$1,030,000	
213	SW 4th Place and Maple Avenue SW Drainage Analysis	$395,000	
217	Rainier Pump Station	$700,000	
237	Talbot Road Drainage Improvements	$527,000	
240	Puget Drive SE at Rolling Hills Avenue Culvert Crossing	$388,000	
251	Springbrook Creek Old Bridge Removal at SW 27th Street	$105,000	

PRIORITY TWO PROJECTS		
268	Talbot Road S and S 34th Pl Stormline Repair Project	$204,000
275	Oakesdale Avenue/SW 41st Street Culvert Replacement	$1,710,000
285	SE 190th Street Drainage Improvement	$108,000
287	S. 55th Street and Talbot Rd. S Drainage Improvement Project	$120,000
421	May Creek Outfall @ NE 30th Street	$658,000
511	John's Creek Outfall Culvert Crossings	$1,200,000
521	John's Creek Outfall - NE 8th to Houser	$1,450,000
531	Kennydale Master Drainage Plan	$395,000
541	East Lake Washington Blvd and NE 28th Street Drainage	$329,000
551	Blueberry Farm at Jones Avenue NE and NE 20th Street	$336,000
555	Sunset Blvd N/Aberdeen Ave NE/NE 10th St Storm Repair Project	$198,000
566	Jones Avenue NE/NE 43rd Street Culvert and Storm System Improvements	$922,000
571	Lincoln Avenue NE Culvert Improvements	$198,000
TOTAL PRIORITY TWO PROJECTS:		**$12,287,000**

PRIORITY THREE PROJECTS		
231	North Talbot Hill Drainage Improvements	$1,210,000
234	Puget Drive South and Benson Road Outfalls Study	$198,000
238	16501 Benson Rd South	$66,000
263	Shattuck Avenue South and S 37th Street Outfall	$101,000
265	Talbot Road South Drainage Study	$198,000
269	Talbot Road South @ Panther Creek Outfall	$790,000
282	S 178th Street Drainage Connection	$362,000
411	May Creek Outfall @ NE 36th Street	$658,000
431	Honey Creek Outfalls Plan	$263,000
506	John's Creek Culverts Sediment Cleaning	$165,000
516	South Lake Washington Roadway Improvement Discharge to John's Creek	$988,000
546	Meadow Avenue North Culvert on Kennydale Creek	$2,630,000
621	Black River Box Culvert Maintenance	$1,320,000
998	Wells Ave S Drainage Improvement Project	$300,000
TOTAL PRIORITY THREE PROJECTS		**$9,249,000**

FLOODING PROJECTS WITH HABITAT EMPHASIS		
271	Springbrook Creek Wetland and Habitat Mitigation Bank	$922,000
TOTAL FLOODING PROJECTS WITH HABITAT EMPHASIS		**$922,000**

WATER QUALITY TREATMENT PROJECTS		
W800	Burnett and Williams Water Quality Retrofit Project	$470,000
W801	Heather Downs Detention Pond Water Quality Retrofit	$1,145,000
W802	Stormwater Facility Retrofit Study	$300,000
W803	Jefferson Ave NE Green Connection Project	$2,506,000
TOTAL WATER QUALITY TREATMENT PROJECTS		**$4,421,000**

SECTION 7
RECOMMENDATIONS AND PLANNED ACTIONS

This section contains a summary of the recommendations developed through the planning process that are new or different from the current surface water program. The two main areas of recommendations include surface water management program elements and capital improvement program.

7.1 SUMMARY OF RECOMMENDED SURFACE WATER MANAGEMENT PROGRAM CHANGES

The recommended program changes are summarized below within two broad categories, Regulatory Compliance and Other Future Program Needs and Policy Considerations. Recommendations in the area of Regulatory Compliance primarily relate to compliance with the NPDES permit. Fact Sheets developed for new programs identified in Section 5 are included in Appendix E.

7.1.1 REGULATORY COMPLIANCE

As discussed in Section 3, Utility has taken major steps from 2008 to present day in order to meet the requirements of the NPDES permit. Starting in August 2019, Utility also began to phase in new and/or increased programs to meet the new permit compliance requirements as part of the next NDPES permit cycle.

The following paragraphs list some of the major recommendations regarding NPDES and regulatory compliance, the majority of which relates to the new NPDES permit.

- Anticipate need for program increases as the new NPDES permit is phased in. **Table 5-1** presents a list of the main changes from the current permit and provides an estimated range of cost implications of between $223,200 and $455,500 for implementation of a new source control program, additional mapping and watershed planning, and development of a Stormwater Management Action Plan. Overall costs to implement the permit, including implementation of on-going permit conditions range from $1,242,860 to $1,801,660. These estimates are based on current City staffing costs and estimated staffing levels to complete the work. Details are provided in Section 5. Some of the major NPDES permit changes in the 2019 permit (summarizing from **Table 5-1**) are:
    - Develop and implement a source control program for existing land uses.
    - Evaluate receiving water conditions in City watersheds and select high priority watershed for which to develop a Stormwater Management Action Plan.
    - Map private stormwater systems connected to the MS4.

7.1.2 OTHER FUTURE PROGRAM NEEDS AND POLICY CONSIDERATIONS

Section 5 discusses ongoing activities and the future needs of Utility to address permit requirements, city policies, and increased workloads, as well as land use, Utility processes, and potential regulatory issues. These ongoing and future program needs are summarized in **Table 5-2**, and include:

- Continue to monitor the increased resources from infill development relative to maintenance staff levels and make adjustments as needed.
- Continuation of Residential Plat Stormwater Management Facility and Maintenance and Operation
- Continuation of existing surface water initiatives, including the Mosquito Abatement Program, Stormwater Facility Fencing Program, City-Wide Drainage Maintenance Program, and Stream Flow/Water Quality Monitoring Program.
- Enhance the current Asset Management Program to include all Utility assets.
- Update the Surface Water Utility System Plan every 6 years.
- Continue with agency coordination such as WSDOT, KCFCD, FEMA, USACE, and Ecology on issues related to surface water management within the City.

7.2 PLANNED CAPITAL IMPROVEMENT PROGRAM

Table 7-1 presents Utility's 2021 to 2026 CIP. The CIP includes flood hazard reduction projects, water quality projects, and habitat projects. Fact Sheets developed by the City for the Utility CIP for 2021 to 2026 are included in Appendix G. The fact sheets describe each project, summarize the scope, and illustrate estimated expenditures and funding resources spread out over the six-year planning period. They also indicate a planned year of implementation for each CIP, noting however that project priorities change in any given year. Section 6 provides a discussion of several factors that can influence the schedule for CIP implementation.

TABLE 7-1:
SURFACE WATER UTILITY 2021-2026 CAPITAL IMPROVEMENT PROGRAM (CIP)

Priority	Capital Projects	Project GIS # (See Figures 6-2 and 6-3 for Locations)
1	Monroe Ave NE & NE 2nd St Infiltration System Improvements	111
2	Downtown Storm System Improvements	299
3	Madsen Creek Improvement Project	187 and 302
4	Jefferson Ave NE Green Connections Project	W803
5	Cedar River Gravel Removal Project	101
6	Cedar River 205 Project Levee Recertification Project	N/A
7	Heather Downs Detention Pond Retrofit	W801
8	Stormwater Facility Retrofit Study	W802
9	Burnett Ave S and Williams Ave S Water Quality Retrofit Project	W800
10	SE 172nd and 125th Ave SE Storm System Improvement Project	185

TABLE 7-1:
SURFACE WATER UTILITY 2021-2026 CAPITAL IMPROVEMENT PROGRAM (CIP)

Priority	Capital Projects	Project GIS # (See Figures 6-2 and 6-3 for Locations)
11	SW 23rd Street Drainage and Fish Passage Improvements	245
12	Maplewood Creek Sedimentation Facility Maintenance	303
13	Madsen Creek Sedimentation Cleaning	302 and 187
14	Rainier Ave and Oaksdale Ave Pump Station Upgrades	N/A
15	Springbrook Creek Wetland and Habitat Mitigation Bank	271
16	Stormwater Facility Fencing Project	N/A
17	Small Drainage Projects Program	N/A
18	Surface Water Utility GIS	N/A
19	Talbot Hill Area Mosquito Abatement Program	N/A
20	CMP Storm System Replacement Program	N/A
21	Hardie Ave SW-SW 7th St Storm System Improvements	211 and 215
22	NE Sunset Blvd & Union Ave NE Storm System Improvements	456
23	SW 43rd Street/Lind Ave SE Storm System Improvements	N/A
24	East Valley Road Storm System Improvements	256
25	Surface Water Utility System Plan	N/A
26	Ginger Creek/Cascade Park Basin Plan	116
27	Cedar River Flood Risk Reduction Feasibility Study	N/A
28	WSDOT Limited Access ROW Runoff Impact Mitigation Program	N/A
29	Miscellaneous/Emergency Storm Projects	N/A

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APPENDIX A
ISSUE PAPERS

CITY OF RENTON COUNCIL AGENDA BILL

Subject/Title:	Meeting:
Residential Plat Stormwater Management Facility Maintenance and Operation Policy	Regular Council - 20 Sep 2010
Exhibits: Issue Paper	Submitting Data: Dept/Div/Board: Public Works Staff Contact: Ron Straka,Surface Water Utility Supervisor, x7248, Steve Lee, Surface Water Engineer, x7205
Recommended Action: Refer to Committee of the Whole	

Fiscal Impact:		
Expenditure Required: $	715,950/year	Transfer Amendment: $
Amount Budgeted: $		Revenue Generated: $
Total Project Budget: $		City Share Total Project: $

SUMMARY OF ACTION:

The City needs to establish a uniform and equitable policy for maintaining stormwater management facilities in single-family residential plats with public streets. The City currently requires homeowner associations to own and maintain stormwater flow control and water quality treatment facilities in single-family residential plats, even though these facilities manage runoff from public streets. However, when the City annexes areas from King County, the City is required to assume maintenance of stormwater management facilities in the newly annexed areas because King County owns and maintains stormwater facilities in plats with public streets. The Surface Water Utility currently maintains 100 stormwater facilities in plats. There are an additional 213 facilities that are privately maintained by homeowner associations in single-family residential plats that manage runoff from public streets. Because these facilities manage runoff from public right-of-way, the City should maintain these facilities. The proper maintenance of these facilities is also needed to minimize maintenance and capital improvements costs to the City, to meet regulatory requirements related to the National Pollution Discharge Elimination System Phase II Municipal Stormwater Permit, to protect public safety, to prevent damage to property, and to protect environmental resources. Prior to the City assuming maintenance of existing stormwater facilities, the facilities would need to meet City maintenance standards. The total additional revenue increase needed to fund the program would be about $13 per year for a typical homeowner, based upon 2010 Surface Water Utility revenues. That amount could be reduced if proposed revenue increases are approved as part of the 2011-2012 budget process and if the Fairwood Annexation is approved.

The hiring of the maintenance staff and budgeting for the purchase and rental of equipment would be phased in between 2012 and 2013, depending upon how rapidly facilities are transferred from homeowner associations to the City.

STAFF RECOMMENDATION:

Assume maintenance and operation of all stormwater facilities in single-family residential plats with public streets.

PUBLIC WORKS DEPARTMENT

M E M O R A N D U M

DATE:	September 8, 2010
TO:	Don Persson, Council President Members of the Renton City Council
VIA:	Denis Law, Mayor
FROM:	Gregg Zimmerman, Administrator
STAFF CONTACT:	Ron Straka, Surface Water Utility Supervisor, x7248 Steve Lee, Surface Water Utility Engineer, x7205
SUBJECT:	**Residential Plat Stormwater Management Facility Maintenance and Operation Policy**

ISSUE:

Should the City implement a policy to take over maintenance and operation of stormwater management facilities in single-family residential plats with public streets?

RECOMMENDATION:

- The City assumes maintenance and operation of existing and future stormwater management facilities constructed in plats with public streets. This includes assuming maintenance of approximately 213 existing stormwater facilities.

- Prior to the City assuming maintenance of the existing stormwater management facilities in plats from homeowner associations, the facility will have to be maintained by them to meet City stormwater facility maintenance standards.

- The hiring of the maintenance staff and budgeting for the purchase and rental of equipment would be phased in over time starting in 2012, depending upon how rapidly facilities are transferred from homeowner associations to the City. It is recommended that the 2012 budget include funding to hire two full-time Maintenance Worker III positions and budget to hire four part-time non-regular employees (summer help), funding to purchase a slope mower with trailer, a one-ton flatbed truck and a dewatering pump. The 2013 budget would include funding to hire two additional full-time Maintenance Worker III positions , the purchase of another slope mower with trailer and a one-ton flatbed truck, along with the funding for rental of equipment, material disposal,

and the purchase of materials associated with the facility cleaning and repairs (see attached Single-Family Residential Plat Facility Maintenance Cost Summary).

- The total revenue increase needed to assume maintenance of the 213 stormwater facilities is estimated to be 14.67%, which would add an average of $1.09 per month to a typical single-family residential customer's Surface Water Utility bill. This is based upon 2010 Surface Water Utility revenues.

BACKGROUND SUMMARY:

On October 20, 2008, the Surface Water Utility (SWU) presented a Utility Committee Briefing concerning the establishment of a uniform and equitable policy regarding maintenance of stormwater management facilities in single-family residential plats with public streets draining into these facilities. Information presented during the briefing included various types of flow control and water quality treatment facilities the City manages, their intended use in mitigating water quality from roadways, reducing flooding impacts, preventing damage to properties, protecting public safety, protecting environmental resources and meeting regulatory requirements. The briefing provided reasons for assuming maintenance of stormwater management facilities in plats with contributing runoff from public streets. These reasons are summarized in the following list:

1. The City should take responsibility for stormwater management facilities maintenance in plats since they control runoff from public streets and serve multiple property owners.

2. In unincorporated King County, the policy is to require new plats to dedicate a tract for stormwater management facilities with King County assuming ownership and maintenance responsibility. These King County areas that are annexed into the City require that the City assume ownership and maintenance responsibility.

3. Current City residents who live in plats that maintain their own stormwater management facilities pay the same SWU rates as residents who live in areas with publicly maintained stormwater facilities. The City assuming maintenance of the facilities would provide greater equity of City services to all customers.

4. Taking over all privately maintained residential plat stormwater facilities with public area runoff ensures compliance with the National Pollution Discharge Elimination System Phase II Municipal Stormwater Permit (NPDES) requirements and provides the same level of service to all single-family residential customers in plats with public streets. It also eliminates the difficulties of legally enforcing maintenance of these facilities by residential homeowner associations, reduces flooding, reduces maintenance of downstream City systems, and protects water quality and habitat.

5. Problems associated with current City policy would be reduced or eliminated due to the City permitting new projects that have runoff that contribute flows to the downstream stormwater facility that is privately owned and maintained by a

homeowners association. With the City providing maintenance for these facilities, this concern will be resolved.

6. Legal difficulties with enforcing maintenance, collecting fines and staff time allocated to NPDES permit inspections and enforcement would be eliminated.

7. Concerns about safety and liability to the City associated with the current requirement that homeowner associations maintain their stormwater facilities would be reduced. Trained City personnel would properly maintain vaults (confined space entry), catch basins, ponds, and various facilities in a safe manner especially in newer systems that require more technical knowledge.

8. Prior to the transfer of all privately maintained water quality and flow control facilities, the homeowner associations need to have the facility maintained to City standards so that it functions as it was originally designed. If non-maintained facilities are turned over to the City, more City funding would be needed to bring the facility up to City standards and would require the program be implemented (hire staff and purchase equipment) faster, resulting in a larger rate increase.

9. Takeover of stormwater management facilities in plats with public streets increases the City's ability to properly operate, maintain, and make future improvements to the facilities if needed.

Stormwater facilities in potential annexation areas:

King County currently owns and maintains stormwater flow control and water quality facilities in the City's potential annexation areas. When these areas are annexed into the City, the City assumes ownership and maintenance responsibilities of these facilities. The cost to maintain these facilities is funded by the Surface Water Utility rate, which is paid by all customers in the City, even those customers who live in plats that have homeowner associations that are required to maintain the stormwater management facility in their plat.

The proposed Fairwood Annexation area contains approximately 77 stormwater facilities and the proposed West Hill Annexation area contains approximately 16 stormwater facilities. Within the Preserve Our Plateau Potential Annexation Area (PAA) there are approximately 21 stormwater facilities. The number of facilities maintained by King County within the City's PAA will increase as new single-family residential plats are approved, constructed, and released from bonding by King County.

Assumptions:

The following assumptions were used in analyzing the pond maintenance policy:

- The turnover of maintenance responsibilities to the City assumes the facilities are in single-family plats with public right-of-way. This evaluation of the City taking over stormwater maintenance facilities does not include plats that only serve private roads

and private residential structures, or stormwater facilities on commercial and industrial properties.

- There are 213 facilities in plats that are currently owned and maintained by homeowner associations with public streets that the City would over time assume responsibility to maintain. The total number of stormwater management facilities in single-family residential plats with public streets is 313. The City maintains 100 residential stormwater management facilities. The City had previously assumed maintenance of 33 facilities prior to implementing the current policy and 48 facilities recently turned over to the City from the Benson Hill annexation, seven facilities in the Aqua Barn-New Life annexation, 10 facilities in the Liberty annexation, and two facilities from the Springbrook annexation.
- This analysis assumes that the private facility inspection program will inspect all private stormwater management facilities, record inspections, quantify deficiencies and maintenance requirements, and enforce maintenance of deficient facilities. The private facility inspection program would initially focus on inspecting the stormwater management facilities in plats to document any required maintenance needed prior to the transfer of maintenance responsibilities to the City.
- Prior to the private facilities being turned over to the City for maintenance, any one-time 'catch-up' maintenance, repairs, access issues, and other deficiencies will be the responsibility of the homeowner associations. This will minimize the City's maintenance costs and have less impact on Surface Water Utility rates. The homeowner associations have the option of bringing the facilities up to City maintenance standards by hiring a private contractor or they can do the work themselves.
    - It is not recommended that the City take over the facilities without having the homeowner associations first bring the facility up to City maintenance standards, since it would result in significantly higher costs and require immediate implementation of the program.
    - By having the homeowner associations bring the facilities up to City maintenance standards prior to the City assuming maintenance of the facility, the City's cost to assume maintenance of the facilities can be spread out over several years.
    - In 2011, the process of legally transferring the facilities to the City for maintenance would be started by the Surface Water Utility Engineering Section.
    - The cost of hiring of maintenance staff and budgeting for the purchase and rental of equipment would be phased in over time starting in 2012, depending upon how rapidly facilities are transferred from homeowner associations to the City. In order to implement the program, it is recommended that the 2012 budget include funding to hire two full-time Maintenance Worker III positions and budget to hire four part-time non-regular employees (summer help), funding to purchase a slope mower with trailer, a one-ton flatbed truck and a dewatering pump. The 2013 budget would include funding to hire another two full-time Maintenance Worker III positions, the purchase of another slope mower with trailer, and a one-ton flatbed

truck, along with the funding for rental of equipment, material disposal, and the purchase of materials associated with the facility cleaning and repairs (see attached Single-family Residential Plat Facility Maintenance Cost Summary).

- Costs to takeover maintenance of facilities will be further refined during each program budget request period due to variability in yearly equipment rental, labor, materials and quantities, and disposal costs.
- Newly constructed stormwater facilities in plats with public streets would also be taken over by the City for maintenance upon completion of the two-year maintenance and defect period following construction. Additional City maintenance staff and equipment would be added over time as new facilities are constructed.

Summary of required program resources:

The following is a summary of the additional staff, equipment purchases, and other costs associated with the City assuming maintenance of the 213 stormwater facilities in the City that are currently in plats with public streets and are being maintained by homeowner associations (see attached Single-family Residential Plat Facility Maintenance Cost Summary):

- The annual additional staff needed for maintenance of these facilities in plats is estimated to be four new FTEs and four seasonal laborers in the Surface Water Utility Maintenance Section assuming little or no export of materials is needed. The estimated annual staff cost is $376,000.
- New equipment needed includes two Harper slope mowers with trailers, two dewatering pumps, and two one-ton flat bed trucks. The estimated initial purchase cost of the equipment is $192,000. The estimated annual equipment purchase, O&M, and replacement cost is $64,600.
- The annual rental of equipment is estimated to be needed for two months, which includes a dozer, a 10-yard dump truck, and a skid steer track machine. The estimated cost for the temporary rental of equipment is $28,600.
- The estimated annual disposal and repair cost of facilities is $24,750. This total assumes little or no extra disposal is needed for each facility that is assumed. The annual material deposition rate in these facilities is variable and difficult to estimate. A budget of $30,000 is estimated to purchase materials needed to make repairs to the facilities.
- The cost summary does not include newly constructed stormwater management facilities in plats that would be turned over to the City to maintain after final plat approval. As new facilities in single-family residential plats are constructed or become the Surface Water Utility's responsibility to maintain due to future annexations, they would be funded by the future revenues based upon the Surface Water Utility rate needed to implement the program and would be included in the normal City's budget process or as part of the budget adjustment associated with an annexation.

Summary of total cost and estimated rate increase:

- The approximate cost to inspect and maintain each additional facility is estimated to be $3,361 annually.
- The total annual cost to assume maintenance of an additional 213 stormwater management facilities to the current 100 facilities within single-family residential plats with public streets is estimated to be $715,950.
- The total revenue increase needed to assume maintenance of the 213 stormwater facilities is estimated to be 14.67%, which would add an average of $1.09 per month to a typical single-family residential customer's Surface Water Utility bill. This is based upon 2010 Surface Water Utility revenues.
- If the 2011 and 2012 Surface Water Utility revenue increases are approved as currently proposed, the additional revenue increase required to fund the program to assume maintenance of the stormwater facilities in plats will be reduced.
- If the Fairwood Annexation is approved, the additional revenue requirements to fund this program would be further reduced due to the additional revenue that would be collected from the new customers.

CONCLUSION:

The City should assume maintenance of stormwater facilities in single-family residential plats that are currently owned and maintained by homeowner associations. Prior to the City assuming maintenance of the existing stormwater management facilities in plats from homeowner associations, the facility will have to be maintained to meet City stormwater facility maintenance standards. The hiring of the maintenance staff and budgeting for the purchase and rental of equipment and other costs would be phased in starting in 2012, depending upon how rapidly facilities are transferred from homeowner associations to the City.

Attachment

cc: Lys Hornsby, Utility Systems Director
Mike Stenhouse, Maintenance Director
Richard Marshall, Surface Water/Wastewater Maintenance Manager
File

Single Family Residential Plat Facility Maintenance Cost

Annual Staff Cost:

Position	Number of FTE's	Assumed Grade and Level	Annual Salary & Benefit Cost	Total Annual Cost
Maintenance Worker III	4	A12, C	$88,000	$352,000
Part Time Non Regular Employees	4	NA	$6,000	$24,000
TOTAL				$376,000

Equipment Cost:

Type of Equipment	Initial Purchase Cost	Equipment Replacement Life (years)	Annualized Purchase Cost	Annual Replacement Cost	Annual O&M Cost	Total Annual Cost
2 Harper Mower: Dew EZ mower	$90,000	5	$18,000	$18,000	$3,000	$39,000
2 Mower Trailer	$12,000	10	$1,200	$1,200	$600	$3,000
2- Dewatering Pumps	$10,000	10	$1,000	$1,000	$600	$2,600
2-One Ton Flat Bed	$80,000	10	$8,000	$8,000	$4,000	$20,000
TOTAL:	$192,000		$28,200	$28,200	$8,200	$64,600

Annual Equipment Rental Cost:

Type of Equipment	Duration of Rental (Months)	Monthly Rental Rate	Total Annual Cost:
Dozer	2	$4,500	$9,000
10-yd Dump Truck	2	$2,200	$4,400
Skid Steer Track Machine	2	$2,800	$5,600
Excavator Rental (with tracks)	2	$4,800	$9,600
TOTAL:			$28,600

Annual Disposal Cost:

Type of Cost	Estimated Disposal Quantity (Tons)	Disposal Cost per Ton	Estimated Testing Cost	Total Cost
Disposal Cost (3 regional facilities only)	500	$43.50	$3,000	$24,750

Annual Misc. Facility Repair and Material Cost: (Assumed)	$30,000

IE: Fences, CB structure repairs, trash racks, bollards, signs, grates, rock material, soil, tank repairs, plant replacement, etc.

SUB TOTAL: **$715,950** (for 213 addt'l facilities)
PER FACILITY COST : **$3,361** /facility/year

New Annexation Staffing and Resources Recommended Guideline

ISSUE:

How should the Surface Water Utility Engineering and Maintenance Staff and equipment resources be increased to maintain service levels as a result of new service area annexations into the City?

BACKGROUND:

The Surface Water Utility was created in 1987 as an entity within the Public Works Department to implement the City's Surface Water Management (SWM) Program. At that time, one of the main tasks of the Utility was to improve maintenance of existing drainage facilities and solve flooding problems in Renton. Over the years the City has annexed additional area into the City, but the number of maintenance workers and engineering staff dedicated to maintaining that system has not necessarily increased proportionately resulting in declining levels of service. Additional drainage infrastructure and problems gets added to the system as a result of these annexations that needs to be maintained and solved. The newly annexed areas increase engineering needs including the following:

- customer service for drainage problem response,
- utility billing,
- storm system mapping,
- capital improvement projects,
- storm system planning,
- NPDES permitting requirements,
- technical assistance with other city programs, jurisdictions, and agencies,
- and compliance with other regulatory requirements in newly annexed areas.

The Maintenance Section is responsible for the following:

- cleaning storm systems,
- maintaining facilities,
- repairing facilities,
- inspecting public systems,
- and emergency response to newly annexed areas.

Historically this additional volume of engineering and maintenance work was absorbed by the City's existing staff from roughly 1990 to 2007 without significant changes in full time employees (FTEs). During this time there were a number of small annexations that increased the City population. The following table shows the history of the City's population and FTEs history from 1990 to 2019.

Surface Water Utility (Year)	City Population[1]	# Engineering FTEs[2]	# Maintenance FTEs[2]
1990	42,888	4.5	6.2
1991	43,199	4.5	6.2
1992	44,039	4.0	6.2
1993	44,303	5.0	6.2
1994	44,064	5.0	5.2
1995	44,332	5.3	5.2
1996	44,705	5.3	5.2
1997	45,264	5.3	4.7
1998	46,477	5.3	4.7
1999	47,540	5.3	4.7
2000	51,485	5.3	4.7
2001	51,140	5.3	4.7
2002	53,840	5.3	4.7
2003	54,900	5.3	4.7
2004	55,360	5.3	4.7
2005	56,840	5.3	4.7
2006	58,360	5.3	4.7
2007	60,290	5.3	4.7
2008	80,708	8.0	10.2
2009	83,650	8.0	11.2
2010	90,927	8.0	11.2
2011	92,590	8.0	11.2
2012	93,905	10.0	11.2
2013	95,332	8.0	13.2
2014	96,052	8.0	15.2
2015	102,567	9.0	15.2
2016	101,823	9.0	15.2
2017	103,026	9.0	15.91
2018	102,869	9.0	15.91
2019	103,074	9.0	16.24

Notes:

1. Based on US Census supplemented by data from City of Renton for years 1990-2011; Renton Community and Economic Development Department, Economic Development Division data for years 2012-2019.
2. Provided by City of Renton, based on a review of annual reports for 1990-2011 and based on adopted budgets for 2012-2019. FTEs do not reflect position vacancies.

Consequently, the overall level of service provided by the Utility declined from 1990 to 2007. Because the amount of maintenance and engineering work that can be performed each year is relatively constant while the volume of infrastructure and stormwater services needs are increasing, the result is a decreasing level of service for maintaining the drainage system over time.

In 2008 the City annexed the 4.2 square mile Benson Hill area. At that time the City performed an analysis to determine the drainage system maintenance requirements for bringing this area into the City from King County including maintenance of stormwater facilities in plats that were previously maintained by King County prior to annexation. This analysis considered the differences in historical maintenance practices between the City of Renton and King County as well as new maintenance standards needs of the Department of Ecology's NPDES Phase II Municipal Stormwater Permit. This analysis determined that 4 FTE maintenance workers would be needed to perform the required drainage system maintenance of the 4.2 square mile area, or 0.95 FTEs per square mile. An analysis for all of the Engineering Section Services to be provided to the Benson Hill Annexation area was also performed. A total of 2.7 FTEs in the Surface Water Utility Engineering Section was determined to be needed to serve the Benson Hill Annexation area or 0.65 FTE per square mile. Note that even though FTEs were increased for the Benson Hill area, there was no additional increase in the SWU capital spending plan to fix any aging infrastructure in this newly annexed area. In addition, to maintain the current level of service FTEs for each one square mile of newly annexed area, an increase of $110,000[1] per square mile is needed to be included in the capital improvement budget to maintain the current level of service.

To maintain a level of service consistent with what was required for the Benson Hill annexation it takes approximately 1 new maintenance worker, 0.65 new engineering worker and $110,000[1] included in the capital improvement budget per one square mile of newly annexed area.

This guideline is intended to be applicable to annexed areas and not to the increase in infrastructure and service needs due to new construction within existing City limits or changes in policy regarding assumption of maintenance of facilities in single family plats. The addition of new infrastructure and increased service needs to new construction typically requires a different amount of maintenance work than annexed areas with aging infrastructure. A recommendation to adjust staffing and equipment need to the growth of infrastructure and service needs due to new construction within existing City limits is being developed separately.

ASSUMPTIONS:

The primary assumption used in analyzing the proposed New Service Area Maintenance guideline was using the number of FTE(s) per area of annexation for the Benson Hill annexation as a basis for measuring the Utility's FTE level of service. In addition, the Benson Hill area has had previous equipment evaluations that are used as average cost

[1] $166,218 in 2020 dollars

needs per square miles. Equipment needs evaluations should be analyzed separately for each proposed annexation area.

ESTIMATED COST:

- The approximate cost to add each new maintenance worker varies due to type of work, classification grade levels, and employee's family dependence. Using the July 2020 Union and City agreement rates for maintenance worker MWI to maintenance worker MWIII the average annual mid level cost per employee ranges from $53,172 to $64,824. Assuming an average benefit multiple of 1.5 for each employee, this would equate to $79,758 to $97,236 respectively or an average of about $88,500 for 1 FTE per year.
- The approximate cost to add each new engineering employee varies due to type of work, classification grade levels, and employee's family dependence. Using July 2020 Union and City agreement rates for engineering specialist ES1 to civil engineering CEIII the average annual mid level cost per employee ranges from $64,128 to $95,232. Assuming an average benefit multiple of 1.5 for each employee, this would equate to $96,192 to $142,848 respectively or an average about $121,000. At 0.65 FTE, this cost would equal $78,700 per year.
- Annexation of the Benson Hill area into the City required an additional equipment maintenance cost of $242,000 per square mile annexed.

RECOMMENDATION:

The recommended guideline is to increase full time employees (FTEs) and estimated equipment needs (in dollars per square mile) to the Surface Water Utility when a certain amount of new area is added to the City through annexations. Based on the analysis described above, it is recommended that 1.0 FTE be added to the Surface Water Utility Maintenance Section and 0.65 FTE be added to the Engineering Section, plus and $110,000[1] to the capital improvement budget as resources to the Utility for each square mile of new area annexed into the City. The FTE needs per square mile is consistent with previous calculations for the Benson Hill Annexation. Each newly annexed area will also require equipment needs to be evaluated separately depending on infrastructure problems in that area. The request for new FTEs and equipment should be approved as part of the annexation approval if the annexation is sufficiently large enough to warrant the additional staff (>1.0 FTE) and equipment. Otherwise the smaller annexations will be added cumulatively and a request for additional staff and equipment will be made as part of the normal City budget process based upon this guideline. A financial analysis to evaluate costs to serve and revenues generated from the annexed area would also need review during annexation.

This guidance will be used by the Surface Water Utility to determine staffing and equipment resources needed to serve new areas annexed into the City. Actual equipment needs may vary depending on the equipment and drainage problems in the annexed area.

[1]$166,218 in 2020 dollars

New Construction Infrastructure Staffing Recommended Guideline

ISSUE:

How should the Surface Water Utility Engineering and Maintenance Staff be increased after a certain amount of new storm system infrastructure is constructed as a result of new development, re-development, and new construction?

BACKGROUND:

The Surface Water Utility was created in 1987 to assist in implementing the City's Surface Water Management Program (SWM Program). One of the main tasks of the Utility was to improve maintenance of existing drainage facilities and solve flooding problems in Renton. Other services the Surface Water Utility Engineering and Maintenance Service Sections provide are keeping the storm system clean, maintaining records, mapping, planning, responding to complaints, completing repairs and inspections, detecting and eliminating spills, managing contracts and programs, designing, permitting, constructing both minor and major system improvements, technical assistance to internal and external customers, coordinating with regional partners, and providing emergency response.

During 1992 the City had approximately 165 miles of storm drain pipe. At that time there were 6.2 maintenance workers and 4.0 engineering workers providing Surface Water Utility services. Although these workers maintained a number of different types of drainage facilities, the miles of storm drain pipe is a simple and reasonable metric that is representative of the size of the storm system as a whole. Based upon the 1992 data, the level of service provided by the utility was 3.75 maintenance workers per 100 miles of pipe and 2.4 engineering workers per 100 miles of pipe.

Between 1992 and 2007, the construction of new infrastructure has grown, yet the number of full time Surface Water Utility Engineering and Maintenance employees remained the same and did not keep pace with the growing infrastructure. In 2007, the City had staffing levels of 4.7 maintenance workers and 5.3 engineering workers dedicated to the Surface Water Utility. By the end of 2007, the City's system had grown to 233 miles of storm drain pipe. As a result, the level of service provided by the utility had dropped to 2.0 maintenance and 2.3 engineering workers per 100 miles of pipe. This means that the Utility was no longer able to achieve the same level of service that was provided in 1992.

New storm drainage system infrastructure is added to the City's system within its current City limits each year. This infill of drainage infrastructure is a result of new development, redevelopment, street improvement projects, and drainage system improvement projects. Over time, a significant amount of drainage infrastructure is added to the system that must be managed by the Utility. Historically this additional volume of infrastructure and service requirements has been absorbed by a fixed number of existing maintenance and engineering staff and resources. Therefore the level of service that could be provided was fixed while the volume of infrastructure increased over time resulting in a decreased level of service.

In 2007, the City obtained coverage under the Department of Ecology's NPDES Phase II Municipal Stormwater Permit for discharging stormwater from its system to waters of the State. To be in compliance with this Permit, the City must implement multiple programs to manage and control stormwater. The program requirements include:

- Reporting and Recordkeeping
- Stormwater Planning (new in 2019 permit)
- Public Education and Outreach
- Public Involvement and Participation
- Mapping and Documentation
- Illicit Discharge Detection and Elimination
- Controlling Runoff from New Development, Redevelopment and Construction Sites
- Operations and Maintenance including private facility inspections; and catch basin or storm system cleaning
- Source Control for Existing Development (new in 2019 permit)
- And other NPDES requirements as the permit is revised

In order for the City to maintain the level of service that was established in 1992, it is necessary for the Utility to maintain the minimum level of service of one new maintenance worker for every 27 miles of storm pipe added and one new engineering worker when 41 miles of storm pipe are added to the system. It should be understood that this metric will change over time and will need to be revised periodically depending on new stormwater regulations. In addition, while the lineal foot of pipe was selected as the basis for consideration, the City will also need to assess other stormwater infrastructure increases. For example, there may be a large increase in water quality treatment facilities as a result of new regulations. These water quality facilities typically require more intensive maintenance. It is also recommended that while the City focus on the length of pipe for this guideline, it should also track the maintenance demands of other facilities such as water quality facilities.

This guideline is intended to be used to maintain the level of service provided by the Surface Water Utility as the City grows due to new developments and redevelopments within the existing City limits only. Surface Water Utility staffing and resource needs due to annexation are being developed separately.

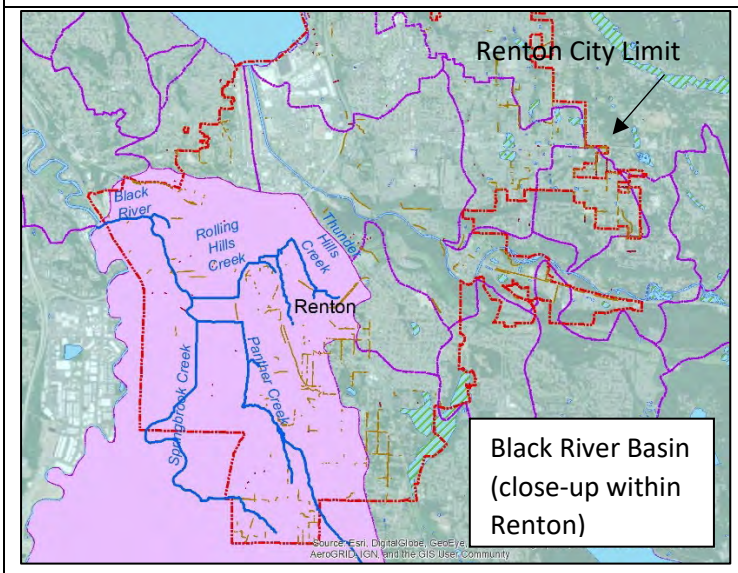
RECOMMENDATION:

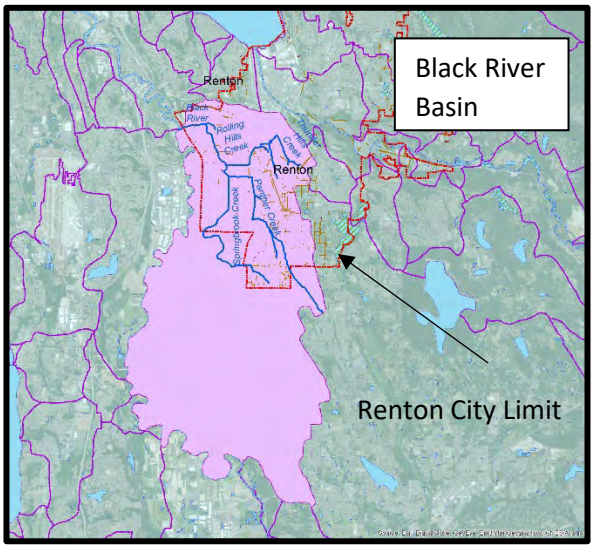
It is recommended that the Surface Water Utility staffing level be increased by one new maintenance FTE for 27 miles of added storm water pipe and one new engineering FTE for 41 miles of new storm water pipe added to the system inventory. The request for the additional staffing due to additional new construction infrastructure would be proposed and approved as part of the City's budget process.

APPENDIX B
BASIN REPORT CARDS

Surface Water Utility Plan Update Basin Report Card

Basin:	Black River
Total Basin Size (sq. mi):	20.2
Total Area in Renton and UGB (sq. mi):	8.1
WRIA 9	Green/Duwamish River





Sub-basins in the City of Renton:

- Springbrook Creek (Mill Creek)
- Panther Creek
- South Renton/SW 7th
- Rolling Hills Creek
- Thunder Hills Creek
- Valley

Basin Planning Status:

- Green Duwamish Watershed Nonpoint Action Plan (King County 1991, updated in 2002)
- Black River Water Quality Management Plan (Herrera 1993b)
- East Side Green River Watershed Project Plan and Environmental Impact Statement (RW Beck 1997a)
- Planned development of ST3 Transit Center (750 Rainier Ave S)
- Plan for Transit Oriented Development (TOD) subarea

Water Quality Summary:

- Water Quality Index (WQI) in Springbrook Creek system scored 2 out of 100 (2006).
- 303(d) list for water quality impairments for bioassessment, temperature, bacteria, and dissolved oxygen.

Fish Habitat Status:

- Juvenile coho, chum, winter steelhead, and cutthroat have been noted through the basin (Harza 1995).
- Adult chinook were observed spawning in Upper Springbrook Creek in 2011.

Beneficial Uses:

- Viewing
- Wildlife
- Fisheries

Basin Issues/Concerns:

- System capacity issues, low gradient, and upstream erosion and subsequent downstream sedimentation has resulted in flooding in multiple locations.
- System upgrades needed to replace deteriorating pipes in some locations.
- Rainier Pump Station/Oakesdale Pump Station upgrades are needed to ensure systems function during flood events.
- Historically poor water quality conditions in Springbrook Creek.

Basin Hydrology (RW Beck 2007 and Gray & Osborne 2003)):

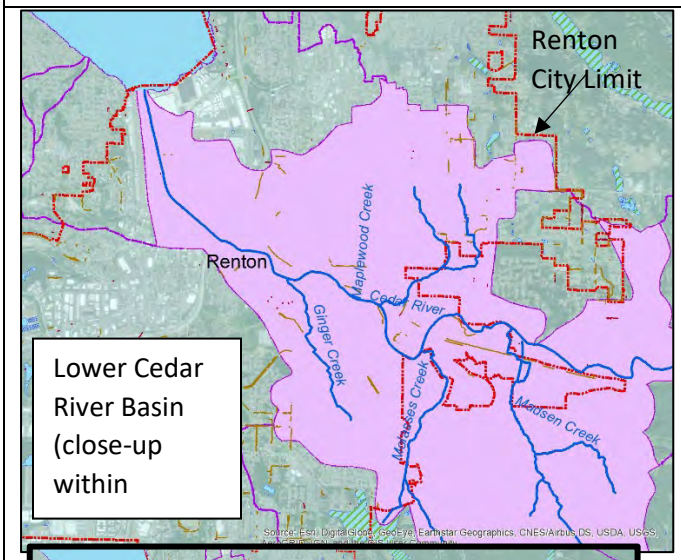
Subbasin Name	Source (& basis for existing land use)	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows[1]		100-Year Peak Flows[1]	
		2003 / 2007	Future	2003 / 2007	Future	2003 / 2007	Future	2003 / 2007	Future
South Renton (SW 7th System)	Gray & Osborne (2003)	N/A[2]	122	N/A[2]	165	N/A[2]	1856	N/A[2]	213
Springbrook Creek (at BRPS) [3]	ESGRWP (2007)	457	756	931	1053	1276[4]	1251	1197	1343
Panther (at SW 23rd St.) [3]	ESGRWP (2007)	67	119	130	149	152	174	197	226
Rolling Hills (at I-405) [3]	ESGRWP (2007)	N/A[5]	N/A[5]	148	197[4]	199[4]	186	261	330
Valley Subbasin (Springbrook Creek at SW 23rd St.)	ESGRWP (2007)	365	612	769	845	900	1003	1013	1139

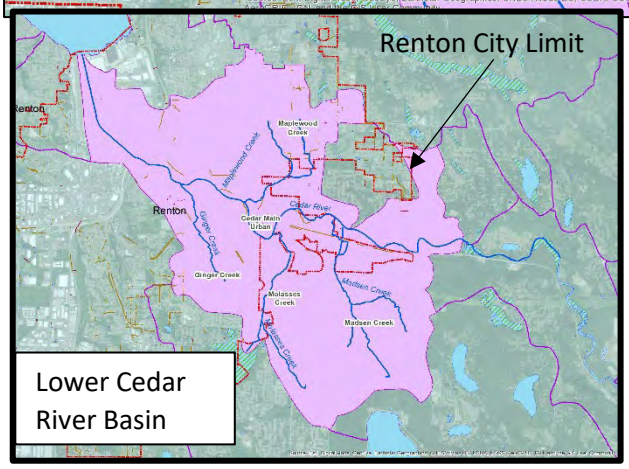
1. These flows reflect a future "conveyance" event. There is also a "storage" event that reflects pumping limitations on the BRPS. For more information, see ESGRWP Supplement (R. W. Beck, 2007).
2. Flows were estimated for future conditions only.
3. Flows are based on frequency analysis performed on Springbrook Creek at the BRPS. Individual frequency analyses have not been done.
4. Flows are higher because this event coincides with high flows in the Green, forcing BRPS to operate at a reduced rate, and thus affecting the peak rate.
5. Peak flows for the 2-year recurrence interval were not available.
6. A subsequent report prepared by GHD modeled the 25-year future condition flow at 175.0 (Scenario 2A).

Source: *ESGRWP Supplement* (R. W. Beck, 2007) and *SW 7th Street Storm Drainage Improvement Project* (Gray & Osborne, 2003)

Surface Water Utility Plan Update Basin Report Card

Basin:	Lower Cedar River
Total Basin Size (sq. mi):	25.3
Total Area in Renton and UGB (sq. mi):	7.52
WRIA 8	Cedar River/Lake Washington





Sub-basins in the City of Renton:

- Tiffany/Ginger Creek
- Maplewood Creek
- Molasses Creek
- Madsen Creek
- Orting Hills
- Summerfield Creek

Basin Planning Status:

- Lake WA/Cedar/Sammamish Watershed Chinook Samon Conservation Plan (WRIA 8 Steering Committee 2005)
- Cedar River Basin Plan (King County 1995b)
- Cedar River Current and Future Conditions Report (King County 1993)
- Maplewood Creek Basin Plan (Parametrix 1989)
- Future one-story redevelopment project at former Bryant Motors property (1300 Bronson Way N)
- Future mixed use development at the Old City Hall (200 Mill Ave S.)

Water Quality Summary:

- Water Quality Index (WQI) near mouth scored 75 out of 100 (2006)
- 303(d) list for water quality impairments for temperature, pH, and dissolved oxygen.

Fish Habitat Status:

- Lower Cedar River mainstem provides spawning habitat for chinook, coho, kokanee, and sockeye salmon and steelhead, bull, and cutthroat trout.

Beneficial Uses:

- Viewing
- Boating
- Swimming
- Fisheries
- Wildlife

Basin Issues/Concerns:

- Major flooding in lower Cedar River, partly due to sediment accumulation.
- System capacity, flooding, and erosion issues in Maplewood Creek.
- Sedimentation, erosion, and flooding in Madsen Creek.
- Fish passage in vicinity of Fairwood golf course on Madsen creek tributary.
- Habitat protection and restoration along lower Cedar River.

Basin Hydrology (King County 1993, Parametrix 1989, HDR 1995):

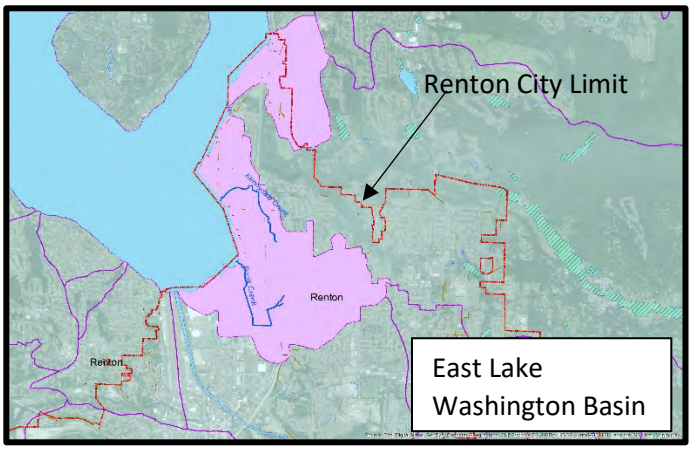
Subbasin Name	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
	1993	Future[1]	1993	Future[1]	1993	Future[1]	1993	Future[1]
Lower Basin (Outfall)[2]		N/A	5,940	N/A	N/A	N/A	12,000	N/A
Tiffany/Ginger Creek[3]	63	69	101	111	121	134	152	172
Maplewood[4]	59	132	104	207	135	257	197	349
Molasses[3]	96	130	153	200	180	238	220	299
Summerfield[3]	4	7	7	10	8	13	9	16
Orting Hill[3]	54	88	93	136	114	160	147	195
Madsen[3]	132	156	217	251	262	302	331	382

1. Future condition flows were predicted in 1993 assuming no regulatory stormwater runoff controls such as retention/detention and infiltration systems for new development.
2. Flows calculated by King County in March 2000 with HEC-RAS
3. Flows calculated using HSPF
4. 1993 flows reviewed and updates by King County in 1995. Future Flows calculated using HEC 1 by Parametrix

Sources: *Cedar River Current and Future Conditions Report (King County, 1993). Comprehensive Storm Water Plan, Maplewood Creek Basin Plan (Parametrix, 1989). City of Renton Surface Water Utility Comprehensive Plan (HDR, 1995).*

Surface Water Utility Plan Update Basin Report Card

Basin:	East Lake Washington
Total Basin Size (sq. mi):	4.4
Total Area in Renton and UGB (sq. mi):	2.9
WRIA 8	Cedar River/Lake Washington



Sub-basins in the City of Renton:

- John's Creek
- Kennydale Creek

Basin Planning Status:

- Lake WA/Cedar/Sammamish Watershed Chinook Samon Conservation Plan (WRIA 8 Steering Committee 2005)
- Renton/Lake Washington Pollution Abatement Program (RW Beck, 1993, Herrera 1993, and Herrera 1994).
- Cedar River Current and Future Conditions Report (King County 1993)
- Maplewood Creek Basin Plan (Parametrix 1989)
- Planned development on vacant commercial land at 745 Park Ave N.
- Two future mixed-use projects at Sunset Terrace
- Potential development of assisted living facilities near the VMAC

Water Quality Summary:

- 303(d) list for bacteria at Gene Coulon Park on Lake Washington.

Fish Habitat Status:

- Reduction in natural shoreline vegetation, woody debris, and cover for fish.
- Docks, piers, and other floating structures provide habitat for non-native predatory species that put pressure on juvenile salmonid populations.

Beneficial Uses:

- Viewing
- Boating
- Swimming
- Fisheries
- Wildlife

Basin Issues/Concerns:

- Bank armoring along shoreline has reduced shallow water habitat in Lake.
- Poor sediment quality due to legacy pollutants and transported material from upstream to Lake Washington influences lake ecology.
- Sedimentation, erosion, and flooding in John's Creek surface and stormwater system.
- Flooding, capacity, and system layout issues in Kennydale area.
- Localized flooding in multiple locations due to culvert, ditch, and pipe capacity issues and sedimentation.

Basin Hydrology (HDR 1995 [South Kennydale], Parametrix 2007 [Gypsy/SE 44thStreet Exit], and BHC 2007 [John's Creek]):

	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
Subbasin Name	1995	Future[1]	1995	Future[1]	1995	Future[1]	1995	Future[1]
South Kennydale 1	0.3	1.2	.9	2	1.2	2.5	1.7	3
South Kennydale 2	3.7	4.1	6.6	7.2	8.4	9	10.2	10.8
South Kennydale 3	5.0	8.6	9.9	14.5	13	17.9	16.2	21.4
South Kennydale 4	6.4	15.5	14.6	27.7	20.3	35.2	26.5	43.1
West Kennydale	29.8	Same	60.6	Same	79.0	Same	97.8	Same

1. Future condition flows were predicted in 1995 assuming no regulatory stormwater runoff controls such as retention/ detention and infiltration systems for new development. Therefore, these future condition predictions are likely overstated.

Source: *(HDR 1995)*

	25-Year Peak Flows		100-Year Peak Flows	
Subbasin Name	Existing (2005)	Future	Existing (2005)	Future
Gypsy (SE 44th St Exit)[1]	—	159.5	145.4	198.2

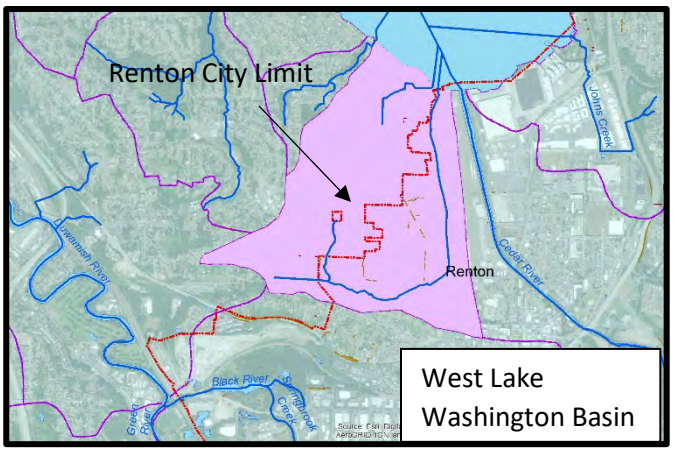
1. From *Ripley Lane Drainage Improvement Project* (Parametrix, 2007); values determined using Stormshed.

Outfall Name	25-Year Peak Flows	100-Year Peak Flows
Johns Creek (at upstream Outfall)	4.0	4.3
North 6th Street Outfall to Cedar River	5.0	5.0
Logan Ave Outfall to Cedar River	24.4	28.2
Cedar River Park Outfall to Lake Washington	75.2	86.6

Source: *South Lake Washington Roadway Improvement Drainage Report (BHC, 2007)*

Surface Water Utility Plan Update Basin Report Card

Basin:	West Lake Washington
Total Basin Size (sq. mi):	16.5
Total Area in Renton and UGB (sq. mi):	0.5



WRIA 8	Cedar River/Lake Washington

Sub-basins in the City of Renton:

- West Hill

Basin Planning Status:

- Renton/Lake Washington Pollution Abatement Program (RW Beck, 1993, Herrera 1993, and Herrera 1994).

Water Quality Summary:

- No data.

Fish Habitat Status:

- No data.

Beneficial Uses:

- Viewing
- Fisheries
- Boating
- Wildlife
- Swimming

Basin Issues/Concerns:

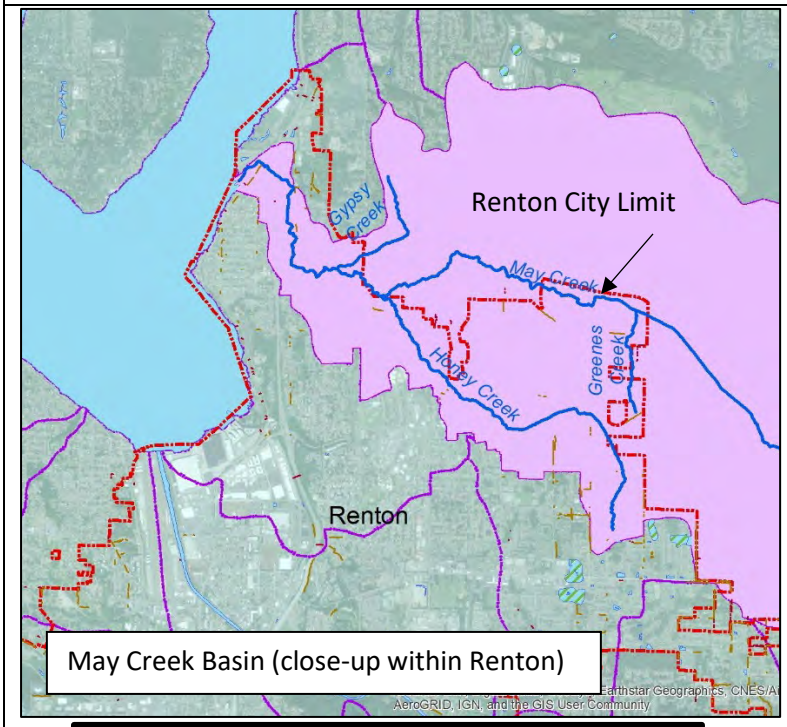
- Highly urbanized, water quality concerns.

Basin Hydrology (HDR 1995):

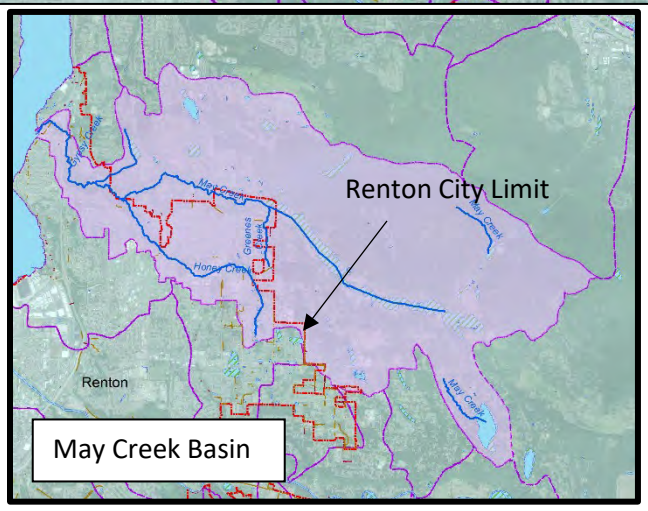
	1993			
Subbasin Name	2-Year Peak Flows	10-Year Peak Flows	25-Year Peak Flows	100-Year Peak Flows
West Hill	84	155	196	240

Surface Water Utility Plan Update Basin Report Card

Basin:	May Creek
Total Basin Size (sq. mi):	13.8
Total Area in Renton and UGB (sq. mi):	3.71



May Creek Basin (close-up within Renton)



May Creek Basin

WRIA 8	Cedar River/Lake Washington

Sub-basins in the City of Renton:

- Honey Creek
- Gypsy Creek
- Greenes Creek

Basin Planning Status:

- May Creek Current and Future Conditions Report (King County 1995a)
- May Creek Basin Action Plan (King County 2001)

Water Quality Summary:

- Water Quality Index (WQI) score 61 out of 100 (2017)
- 1979 – 2004 Trend Analysis (King County 2014)

↑ Temperature, conductivity, ammonia nitrogen increased.

↓ Total suspended solids (TSS), nutrients, pH decreased.

Fish Habitat Status:

- Habitat elements that support coho and sockeye salmon, sea-run cutthroat trout, steelhead, and rainbow trout.
- Spawning habitat at confluences between tributaries and mainstem.
- Habitat complexity lacking large woody debris (King County 2001).

Beneficial Uses:

- Viewing
- Fisheries
- Wildlife

Basin Issues:

- Erosion from outfalls entering May Creek (NE 36th Street) and Honey Creek (various locations).
- System capacity (ditches and pipes) in vicinity of NE Sunset Boulevard.
- Landslides and localized erosion along May and Honey creeks in several locations (King County, 2001)

Basin Hydrology (King County 1995a):

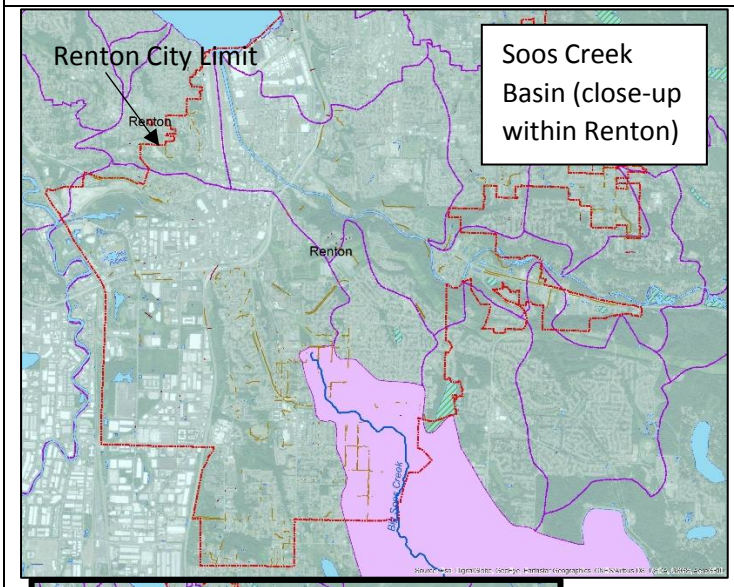
	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
Tributary Name	1995	Future[1]	1995	Future[1]	1995	Future[1]	1995	Future[1]
Lower May Creek	341	452	556	706	666	845	835	1069
Honey Creek	63	81	85	101	95	110	109	123
Gypsy Creek	16	25	25	39	30	47	38	60

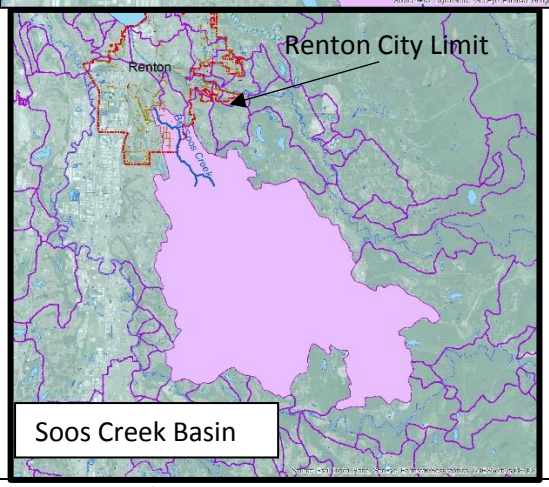
1. Future condition flows were predicted in 1995 assuming no regulatory stormwater runoff controls such as retention/detention and infiltration systems for new development. Therefore, these future condition predictions are likely overstated.

Source: *May Creek Current and Future Conditions Report (*King County 1995a)

Surface Water Utility Plan Update Basin Report Card

Basin:	Soos Creek
Total Basin Size (sq. mi):	12.3
Total Area in Renton and UGB (sq. mi):	1.5





WRIA 9	Green/Duwamish River

Sub-basins in the City of Renton:

- None

Basin Planning Status:

- Habitat Limiting Factors and Reconnaissance Assessment Report (King County 2000)
- Soos Creek Basin Plan (King County 1992)

Water Quality Summary:

- 303(d) list for water quality impairments for bacteria and dissolved oxygen downstream of Renton.

Fish Habitat Status:

- Lack of large woody debris in Soos Creek basin system.
- Degraded salmon habitat due to channel incision and excessive sedimentation.

Beneficial Uses:

- Viewing
- Wildlife
- Fisheries

Basin Issues/Concerns:

- Water quality issues in the watershed. Unknown water quality problems in Renton portion.
- Habitat degradation in downstream watershed outside City limits.

Basin Hydrology (King County 1992):

Subbasin Name	2-Year Peak Flows		10-Year Peak Flows		25-Year Peak Flows		100-Year Peak Flows	
	1992	Future	1992	Future	1992	Future	1992	Future
Big Soos Creek	50	78	81	120	N/A	N/A	124	178

APPENDIX C
COST ESTIMATES

Appendix C
Cost Estimates

Cost estimates were developed a number of ways including; prior studies, City input, and previous cost estimates developed for the 2009 plan based on field reconnaissance of problem areas. For the projects where planning-level cost estimates were available in 2007, or if project costs were previously developed in an earlier study or design project, those costs were escalated to 2007 dollars using a yearly inflation factor of 2.5 percent. Because of the economic downturn, the cost using 2007 dollars was not changed and assumed to be equivalent to 2012 dollars. Costs were escalated from 2012 to 2020 dollars using a yearly inflation factor of 3.5%.

This appendix is organized as follows:

- **Appendix C-1** lists all flooding problems and identifies whether the project has cost backup and whether the backup is in Appendix C-2 or Appendix C-3. Projects are organized by basin. In some cases, cost estimates were provided by the City and there is no backup available.
- **Appendix C-2** includes the projects where project costs were developed in prior studies. This table lists the study or report that contains the estimate, the year of the estimate, and the inflated cost.
- **Appendix C-3** includes projects where there is detailed backup. Note that although detailed spreadsheets were prepared for these projects, several project estimates were based upon field reconnaissance only without any engineering analysis and therefore costs should be considered conceptual. Projects that have been removed by the City for the 2020 update have been crossed out, and costs for the remaining projects have been escalated to 2020 dollars.

APPENDIX C-1 FLOODING COST ESTIMATES BACKUP SOURCE SUMMARY

Table 6-3a MAY CREEK BASIN : FLOODING PROBLEMS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
42	411	May Creek Outfall @ NE 36th Street	NE 36th Street Outfall to May Creek (near Lincoln Avenue NE)	$658,000	(No Backup)	No backup needed; cost estimate provided by City and based on comparable outfall project by city.
40	421	May Creek Outfall @ NE 30th Street	Outfall at NE 30th Street into May Creek	$658,000	(No Backup)	No backup needed; cost estimate provided by City and based on comparable outfall project by city.
41	431	Honey Creek Outfalls Plan	Honey Creek Slope Outfalls (Various Locations)	$263,000	(No Backup)	No backup needed; cost estimate provided by City and based on comparable outfall project by city.
103	456	NE Sunset Blvd at Union Avenue NE	NE Sunset Boulevard (Union Avenue NE to Duvall)	$2,250,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.

Table 6-3b EAST LAKE WASHINGTON BASIN : FLOODING PROBLEMS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
1	506	John's Creek Culverts Sediment Cleaning	John's Creek Sediment (Park Avenue / Lake Washington Boulevard)	$165,000	Appendix C-2	-
152	511	John's Creek Outfall Culvert Crossings	Located at entrance to Gene Coulon Park	$1,200,000	(No Backup)	Cost estimate provided by City via July 22, 2009 Steve Lee email.
2	516	South Lake Washington Roadway Improvement Outfall to John's Creek	Pipe Replacement Project from the Landing Project to John's Creek Outfall	$988,000	Appendix C-3	-
151	521	Johns Creek Outfall - NE 8th Street to Houser Way N.	NE 8th Street to Houser Way N. (I-405 to Johns Creek Outfall)	$1,450,000	Appendix C-3	-
74	531	Kennydale Master Drainage Plan	Kennydale Master Drainage Plan (Example: N 30th Street and Burnett Avenue N.)	$395,000	Appendix C-3	-
155	541	East Lake Washington Blvd and NE 28th Street Drainage	East Lake Washington Blvd and NE 28th Street	$329,000	Appendix C-3	-
157	546	Meadow Avenue North Culvert on Kennydale Creek	Kennydale Creek Culvert Crossings (at Meadow Avenue N. & N. 28th Street), (Jones Avenue NE Culvert Crossing)	$2,630,000	Appendix C-3	-
158	551	Jones Avenue NE and NE 20th Street	Blueberry Farm at NE 20th Street and west of Aberdeen	$336,000	Appendix C-3	-
156	566	Jones Ave NE/ NE 43rd Street Culvert and Storm System Improvements	Jones Avenue NE and NE 43rd Street	$922,000	(No Backup)	Cost estimate provided by City via July 22, 2009 Steve Lee email.
70	571	Lincoln Avenue NE Culvert Improvements	Lincoln Avenue NE and NE 43rd Place	$198,000	(No Backup)	Cost estimate provided by City via July 22, 2009 Steve Lee email.

Table 6-3c West LAKE WASHINGTON BASIN : FLOODING PROBLEMS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
94	621	Black River Box Culvert Maintenance	Black River Box Culvert - Major Maintenance	$1,320,000	(No Backup)	No backup needed; cost estimate is provided by City, and based upon possibility of contaminated soils.

Table 6-3d CEDAR RIVER BASIN: FLOODING PROBLEMS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
202	101	Cedar River Gravel Removal Project	Lower Cedar River Sediment Management Project - (From Williams Avenue Bridge to N. Boeing Bridge)	$14,966,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
132	111	Monroe Avenue NE and NE 2nd Street	301 Monroe Avenue NE	$6,350,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
55	116	Ginger Creek/Cascade Park Basin Plan	SE 162nd Street to Cedar River Pipeline (Cascade Park) (Tiffany Park Culvert)	$350,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
117	121	Lower Maplewood Conveyance Improvements	Lower Maplewood Creek (Behind Maplewood Glen and north of Maple Valley Highway)	$557,000	Appendix C-2	-
105	146	NE 4th Street Crossing at Maplewood Creek Study	NE 4th Street Culvert Crossings (@ Union Avenue NE, East of Duvall, 5400 Block of NE 4th Street) - (Headwaters of Maplewood Creek)	$336,000	Appendix C-3	-
118	151	East Fork Maplewood Creek at NE 2nd Street	Along NE 2nd and between 10th Place SE and 142nd Avenue SE	$421,000	(No Backup)	City Estimate Provided
100K	156	Maplewood Creek Basin Improvements	Maplewood Creek Basin Improvements (From Heather Downs to Sediment Basin)	$1,030,000	Appendix C-2	-
302 & 187	302 and 187	Madsen Creek Sedimentation Basin Cleaning	Madsen Creek (upstream of Renton-Maple Valley Road)	$926,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
210	187 and 302	Madsen Creek Improvement Project	Lower Madsen Creek Reach (Madsen Creek Sedimentation Basin to the Cedar River)	$1,221,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
303	303	Maplewood Creek Sediment Facility Maintenance	Maplewood Creek Sedimentation Facility Maintenance	$1,233,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
	299	Downtown Storm System Improvements	Along S 2nd Street, S 3rd Street and their cross streets between Rainier Ave S and Mills Ave S.	$6,917,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.

Table 6-3e BLACK RIVER: FLOODING PROBLEMS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
207 &138	211 and 215	Hardie Avenue S Underpass and SW 7th Storm System Improvements	SW 7th Street (from Powell to Naches Ave SW, or along Naches Avenue via SW 7th Street)	$1,735,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
208	213	SW 4th Place and Maple Avenue SW Drainage Analysis	SW 4th Place and Maple Avenue SW	$395,000	Appendix C-3	-
50	217	Rainier Pump Station Pump Station Upgrades.	Rainier Pump Station	$700,000	(No Backup)	No backup needed; cost estimate provided by City, done in-house with manufacturer.
139	231	North Talbot Hill Drainage Improvements	North Talbot Hill Drainage System (Lake Avenue S, S 19th Street, Davis Avenue S and Shattuck Avenue S.)	$1,210,000	Appendix C-3	-
64	234	Puget Drive South and Benson Road Outfalls Study	Puget Drive South and Benson Road: Various Outfalls	$198,000	(No Backup)	No backup needed; cost estimate provided by City, based on historical experience
-	237	Talbot Road Culvert Improvements	Talbot Road between Grady Way and I-405 near southwest corner of Sam's Club	$527,000	(No Backup)	Estimate Provided by City of Renton
65	240	Puget Drive SE at Rolling Hills Avenue Culvert Crossing	Puget Drive SE (between Rolling Hills Ave SE)	$388,000	Appendix C-3	-
-	245	SW 23rd Street Drainage and Fish Passage Improvements	SW 23rd Street between SR-167 and Springbrook Creek	$1,780,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
204	251	Springbrook Creek Old Bridge Removal at SW 27th Street	Springbrook Creek and Removal of Old Bridge North of SW 27th Street	$105,000	Appendix C-3	-

134	256	East Valley Road Storm System Improvements	East Valley Road Between SW 29th Street and SW 23rd Street	$550,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
99	263	Shattuck Avenue South and S 37th Street Outfall	Shattuck Avenue S and S 37th Street Outfall (Runoff from Talbot Road S.)	$101,000	Appendix C-3	-
62	265	Talbot Road South Drainage Study	Talbot Road South drainage problems (at S. 37th Street and Talbot Creek Drive South)	$198,000	(No Backup)	No backup needed; cost estimate provided by City, based on historical experience
187	269	Talbot Road South @ Panther Creek Outfall	Talbot Road S. (Panther Creek Culverts)	$790,000	Appendix C-3	-
205	271	Springbrook Creek Wetland and Habitat Mitigation Bank	Springbrook Creek Wetland (Springbrook Creek Wetland and Habitat Mitigation Bank)	$922,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
92	275	Oakesdale Avenue / SW 41st Street Culvert Replacement	Oakesdale Avenue SW and SW 41st Street (Culvert Replacement)	$1,710,000	Appendix C-2	-
135 and 209	279 and 281	SW 43rd Street Storm Improvements	SW 43rd Street and Lind Ave	$4,000,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
-	282	S 178th Street Drainage Connection	S 178th Street storm drain system north of S Carr Road	$362,000	(No Backup)	Estimate Provided by City of Renton
213	285	SE 190th Street Drainage Improvement	SE 190th Street (near 103rd Place SE)	$108,000	Appendix C-3	-
-	287	S. 55th Street and Talbot Rd. S. Drainage Improvement Project	S. 55th Street and Talbot Rd. S.	$120,000	(No Backup)	Estimate Provided by City of Renton
TBD	998	Wells Ave S Drainage Improvement Project	Mid block of Wells Ave S between Houser Way S and S 4th St	$300,000	(No Backup)	Estimate Provided by City of Renton
	299	Downtown Storm System Improvements	Along S 2nd Street, S 3rd Street and their cross streets between Rainier Ave S and Mills Ave S.	See Cost in Cedar River Basin	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
Table 6-3f Soos Creek: FLOODING PROBLEMS						
Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
-	185	SE 172nd St & 125th Ave SE Green Stormwater Infrastructure Design Project	Half a block of 122nd Ave SE, 123rd Ave SE, 124th Ave SE and 125th Ave SE, north of SE 172nd St, and two blocks of SE 172nd st.Mid block of 125th Ave SE between SE 168th St. and SE 172nd St.	$3,476,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
Table 6-3g CITYWIDE SMALL DRAINAGE PROBLEM PROJECTS: FLOODING PROBLEMS						
Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	PROJECT NAME	APPROXIMATE LOCATION	ESTIMATED COST (2020 escalated costs)	Backup Source	Explanation (if No Backup)
Various Locations	Various Locations	Miscellaneous and Emergency Storm Projects		$527,000	(No Backup)	No backup needed; cost estimate provided by City in 6-year CIP.
-	238	16501 Benson Rd S	16501 Benson Rd S	$66,000	(No Backup)	Estimate Provided by City of Renton
-	268	Talbot Rd S and S 34th Pl Stormline Repair Project	3400 block of Talbot Rd. S.	$204,000	(No Backup)	Estimate Provided by City of Renton
-	555	Sunset Blvd N/Aberdeen Ave NE /NE 10th St. Storm Repair Project	Sunset Blvd NE and NE 10th St intersection with NE 10th St.	$198,000	(No Backup)	Estimate Provided by City of Renton
-	999	SE 182nd St Storm System	From 114th Ave SE to 112th Ave SE	$300,000	(No Backup)	Estimate Provided by City of Renton

Assumption
Assumes cost escalate equals to 3.5% per year from 2009 to 2020

$53,773,000

APPENDIX C-2 FLOOD PROTECTION PROJECTS

Previous GIS ID # (2009 Appendix)	Current GIS ID # (in Word Ch6, 2012 & 2020)	Project Name	LOCATION	BASIN NAME	1995 PS-#	1995 Project ID or other Data Source	Cost from Previous Source	Year of Previous Cost	2020 Escalated Cost
1	506	John's Creek Culverts Sediment Cleaning	John's Creek Sediment (Park Avenue / Lake Washington Boulevard)	EAST LAKE WASH (South)		2007 City CIP	$ 125,000	2007 CIP	$165,000
117	121	Lower Maplewood Conveyance Improvements	Lower Maplewood Creek (Behind Maplewood Glen and north of Maple Valley Highway)	CEDAR RIVER	PS-15	City 1995 Comprehensive Plan	$ 325,000	1995	$557,000
100K	156	Maplewood Creek Basin Improvements	Maplewood Creek Basin Improvements (From Heather Downs to Sediment Basin)	CEDAR RIVER		City 2007 CIP	$ 850,000	2007-2012 CIP	$1,030,000
92	275	Oakesdale Avenue / SW 41st Street Culvert Replacement	Oakesdale Avenue SW and SW 41st Street (Culvert Replacement)	BLACK RIVER	PS-36	EGRWP, 1997	$ 1,035,000	1997	$1,710,000

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#157 Kennydale Creek at Meadow Avenue North Culvert - Preliminary Study, Design, & Construction**

PROJECT (2020): **#546 Meadow Avenue North Culvert on Kennydale Creek**

BASIN: **East Lake Washington**

BY: **John Featherstone** **CHECKED BY:** **M. Giseburt**

DATE: 6/8/2009 **DATE:**

Material Description	Unit	2008 Unit cost	Quantity	Amount	Comment
48" DIA. HDPE PIPE; CB TYPE 2 72" PER 150 LF	LF	$159	500	$ 80,000	
48" DIA. HDPE PIPE; BORING; CB TYPE 2 72" PER 150 LF	LF	$1,543	500	$ 770,000	Estimate based on 6/3/09 conference call
JACKING AND RECEIVING PITS	EA	$45,795	2	$ 92,000	with Steve Lee
INCIDENTALS	LS	$ 83,000	1	$ 83,000	
SUBTOTAL				**$ 1,025,000**	
OTHER ITEMS AND CONTINGENCY		50%		$ 512,500	
			Construction Subtotal	**$ 1,537,500**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 461,250	
			Project Subtotal	**$ 1,998,750**	
			Project Subtotal (Rounded)	$ 2,000,000	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 2,000,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 2,630,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: #158 Blueberry Farm at Jones Ave NE and NE 20th Street

PROJECT (2020): #551 Jones Avenue NE and NE 20th Street

BASIN: East Lake Washington

BY: John Featherstone **CHECKED BY:** M. Giseburt

DATE: 6/8/2009 **DATE:**

Material Description	Unit	2008 Unit cost	Quantity	Amount	Comment
24" DIA. HDPE PIPE; CB TYPE 2 48" PER 150 LF; PVMT RESTOR	LF	$145	900	$ 130,000	Estimate based on 6/3/09 conference call with Steve Lee
SUBTOTAL				**$ 130,000**	
OTHER ITEMS AND CONTINGENCY		50%		$ 65,000	
			Construction Subtotal	**$ 195,000**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 58,500	
			Project Subtotal	**$ 253,500**	
			Project Subtotal (Rounded)	$ 253,500	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 255,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 336,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#74 Kennydale Master Drainage Plan (MDP)** **PROJECT (2020): #531 Kennydale Master Drainage Plan**
BASIN: **East Lake Washington**
BY: **Brian Blacketer** **CHECKED BY:** **D. Pacanovsky**
DATE: 2/12/2007 **DATE:** 2/15/2007

Material Description	Unit	2007 Unit cost	Quantity	Amount	Comment
ENGINEERING	LS	$270,000	1	$ 270,000	Enlarge Existing Bioswale Step 1
SURVEY	LS	$30,000	1	$ 30,000	
			Subtotal	**$ 300,000**	
			Project Subtotal (Rounded)	$ 300,000	
2007 Dollars	**Total Estimated Project Cost (Rounded)**			**$ 300,000**	
2020 Dollars	**Total Escalated Project Cost (Rounded)**			**$ 395,000**	

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#155 East Lake Washington Blvd and NE 28th Street Drainage Master Drainage Plan**

PROJECT (2020): #541 East Lake Washington Blvd and NE 28th Street Drainage

BASIN: **East Lake Washington**

BY: **John Featherstone**

DATE: 6/8/2009

CHECKED BY: **M. Giseburt**

DATE:

Material Description	Unit	2007 Unit cost	Quantity	Amount	Comment
ENGINEERING/OTHER	LS	$250,000	1	$ 250,000	
			Subtotal	**$ 250,000**	
			Project Subtotal (Rounded)	$ 250,000	
2007 Dollars	**Total Estimated Project Cost (Rounded)**			**$ 250,000**	
2020 Dollars	**Total Escalated Project Cost (Rounded)**			**$ 329,000**	

PLANNING LEVEL CONSTRUCTION COST OPINION

#151 John's Creek Outfall - NE 8th to Houser

PROJECT (2020): #521 Johns Creek Outfall - NE 8th Street to Houser Way N.

PROJECT:
BASIN: East Lake Washington
BY: John Featherstone
DATE: 6/8/2009

CHECKED BY: M. Giseburt
DATE:

Material Description	Unit	2007 Unit cost	Quantity	Amount	Comment
48" DIA. CMP PIPE; CB TYPE 2 54" PER 300 LF; PVMT RESTOR	LF	$184	2500	$ 460,000	Estimate based on 6/3/09 conference call
REINF CONC BOX CULVERT 22' SPAN x 4' RISE	LF	$1,740	60	$ 100,000	with Steve Lee
SUBTOTAL				**$ 560,000**	
OTHER ITEMS AND CONTINGENCY		50%		$ 280,000	
			Construction Subtotal	**$ 840,000**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 252,000	
			Project Subtotal	**$ 1,092,000**	
			Project Subtotal (Rounded)	$ 1,092,000	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 1,100,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 1,450,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#2 South Lake Washington Roadway Improvement Outfall to John's Creek**

PROJECT (2020): **#516 South Lake Washington Roadway Improvement Outfall to John's Creek**

BASIN: **East Lake Washington**

BY: **John Featherstone** **CHECKED BY:** **M. Giseburt**

DATE: 6/19/2009 **DATE:**

Material Description	Unit	2008 Unit cost	Quantity	Amount	Comment
60" DIA. CMP PIPE	LF	$181	100	$ 18,000	
84" DIA CB	EA	$10,320	2	$ 21,000	
48" DIA. CMP PIPE; BORING AND JACKING	LF	$1,400	50	$ 70,000	Estimate based on 6/17/09 conf call with Steve Lee
EX 60" DIA CULVERT SEDIMENT REMOVAL	CY	$500.00	400	$ 200,000	
SUBTOTAL				**$ 309,000**	
Easement Re-linquish and Acquisition	EA	$ 20,000.00	1	$ 20,000	
Contaminated excavation contingency		30%		$ 92,700	
OTHER ITEMS AND CONTINGENCY		50%		$154,500.00	
			Construction Subtotal	**$ 576,200**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 172,860	
			Project Subtotal	**$ 749,060**	
			Project Subtotal (Rounded)	$ 750,000	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 750,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 988,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#105 NE 4th St - Preliminary Study**
BASIN: **Cedar River**
BY: **Brian Blacketer**
DATE: 2/12/2007

PROJECT (2020): **#146 NE 4th Street Crossing at Maplewood Creek Study**
CHECKED BY: **D. Pacanovsky**
DATE: 2/15/2007

Material Description	Unit	2007 Unit cost	Quantity	Amount
ENGINEERING	LS	$200,000	1	$ 200,000
SURVEY	LS	$20,000	1	$ 20,000
			Subtotal	**$ 220,000**
CONTINGENCY		10%		$ 22,000
			Construction Subtotal	**$ 242,000**
PERMITTING		5%		$ 12,100
			Project Subtotal (Rounded)	$ 254,100
2007 Dollars	**Total Estimated Project Cost (Rounded)**			**$ 255,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**			**$ 336,000**

Comment
Estimate based on field reconnaissance and no available storm drain system information

APPENDIX C-3
City of Renton CIP Cost Estimate

PLANNING LEVEL COST OPINION

PROJECT (2020): #116 Ginger Creek/Cascade Park Basin Plan

BASIN: Soos Creek

Material Description	Unit	Unit cost	Quantity	Amount	Comment
Basin Plan Development				$ 350,000	
2020 Dollars — Total Project Cost Provided by City in 6-Year CIP				$ 350,000	

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#99 Shattuck Ave**
BASIN: **Black River**
BY: **Brian Blacketer**
DATE: 2/12/2007

PROJECT (2020): **#263 Shattuck Avenue South and S 37th Street Outfall**
CHECKED BY: **D. Pacanovsky**
DATE: 2/15/2007

Material Description	Unit	2007 Unit cost	Quantity	Amount	Comment
CLEARING AND GRUBBING	SF	$2	500	$ 1,200	For slope around pipe.
RIPRAP, 2 IN TO 6 IN QUARRY SPALLS	TN	$35	0.25	$ 9	For outfall
QUARRY SPALLS	TN	$55	0.25	$ 14	For outfall
CATCH BASIN TYPE 1	EA	$1,600	1	$ 1,600	Structure to tie existing pipe and new HDPE together
12" DIA. HDPE PIPE	LF	$100	90	$ 9,000	Cost taken from Idlewood Creek design
SUBTOTAL				**$ 12,000**	
OTHER ITEMS					
DEWATERING/BYPASS FLOWS		10.0%		$ 1,200	
EROSION & SEDIMENTATION CONTROL		20.0%		$ 2,400	
SURVEY		2.0%		$ 240	
CONTINGENCY		30%		$ 3,600	
			Subtotal	**$ 28,440**	
MOBILIZATION (GENERAL REQUIREMENT)		10%		$ 2,844	
			Construction Subtotal	**$ 31,284**	
STATE SALES TAX		8.8%		$ 2,753	
ENGINEERING	LS	$20,000	1	$ 20,000	
CONSTRUCTION MANAGEMENT		20.0%		$ 6,257	
PERMITTING		20.0%		$ 6,257	Possible wetland issues by creek
			Project Subtotal	**$ 44,000**	
			Project Subtotal (Rounded)	$ 44,000	
LAND ACQUISITION/EASEMENT	LS	$20,000	1	$ 20,000	For easement or possible replacement to property
ADMINISTRATIVE COSTS	PARCEL	$7,000	1	7,000	that has been eroded already
CONTINGENCY		30%		$ 6,000	
2007 Dollars **Total Estimated Project Cost (Rounded)**				**$ 77,000**	
2020 Dollars **Total Escalated Project Cost (Rounded)**				**$ 101,000**	

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: #139 North Talbot Hill Drainage Improvements

PROJECT (2020): #231 North Talbot Hill Drainage Improvements

BASIN: Black River

BY: John Featherstone

DATE: 6/8/2009

CHECKED BY: M. Giseburt

DATE:

Material Description	Unit	2007 Unit cost	Quantity		Amount		Comment
PRELIMINARY ENGINEERING ANALYSIS	LS	$250,000	1	$	250,000		
SURVEY	LS	$20,000	1	$	20,000		
PRELIMINARY ENGINEERING SUBTOTAL				**$**	**270,000**		
18" DIA. SMOOTH INTERIOR WALL CORRUGATED POLYETHYLE	LF	$56	1800	$	101,237.76		Upsize existing 12" system and add
CATCH BASIN TYPE 2 48"	EA	$3,307	6	$	19,842.60		conveyance systems along Davis Ave and
CRUSHED SURFACE BASE COURSE	TN	$28	330	$	9,200		Lake Ave
RIPRAP, 2 IN TO 6 IN QUARRY SPALLS	TN	$35	0.25	$	9		
QUARRY SPALLS	TN	$55	0.25	$	14		
PAVEMENT, ASPHALT CONCRETE CL A {QTY < 500}	TN	$130	400	$	52,000		
12" DIA. HDPE PIPE	LF	$100	280	$	28,000		Cost taken from Idlewood Creek design
CATCH BASIN TYPE 1	EA	$1,600	1	$	1,600		Structure to tie pipe and new HDPE together
ENERGY DISSIPATOR STRUCTURE	EA	$75,000.00	1	$	75,000	*	*Added 6/8/09 to 2007 cost estimate per
24" DIA. HDPE PIPE; CB TYPE 2 48" PER 300 LF; PVMT RESTOR	LF	$133.00	300	$	40,000	*	conf call with Steve Lee
SUBTOTAL				**$**	**326,903**		
OTHER ITEMS							
DEWATERING/BYPASS FLOWS		2.0%		$	6,538		
EROSION & SEDIMENTATION CONTROL		5.0%		$	16,345		
SURVEY		2.0%		$	6,538		
TRAFFIC CONTROL		3.0%		$	9,807		
CONTINGENCY		30%		$	98,071		
			Subtotal	**$**	**464,202**		
MOBILIZATION (GENERAL REQUIREMENT)		10%		$	46,420		
		Construction Subtotal		**$**	**510,623**		
STATE SALES TAX		8.8%		$	44,935		
ENGINEERING DESIGN	LS	$80,000	1	$	80,000		
CONSTRUCTION MANAGEMENT		2.0%		$	10,212		
		Project Subtotal (Rounded)		**$**	**915,770**		

2007 Dollars	**Total Estimated Project Cost (Rounded)**	**$**	**916,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$**	**1,210,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: **#187 Talbot Road South at Panther Creek Outfall**

PROJECT (2020):#187 Talbot Road South @ Panther Creek Outfall

BASIN: **Black River**
BY: **John Featherstone**
DATE: 6/8/2009

CHECKED BY: **M. Giseburt**
DATE:

Material Description	Unit	Unit cost	Quantity	Amount	Comment
CONSTRUCTION SUBTOTAL				**$ 500,000**	Estimate based upon 2008 Carr Road projec
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING				**$ 100,000**	
2008 Dollars	**Total Estimated Project Cost (Rounded)**			**$ 600,000**	
2020 Dollars	**Total Escalated Project Cost (Rounded)**			**$ 700,000**	

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: #65-Puget Drive SE at Rolling Hills Avenue Culvert Crossing

PROJECT (2020):#240 Puget Drive SE at Rolling Hills Avenue Culvert Crossing

BASIN: Black River

BY: John Featherstone **CHECKED BY:** M. Giseburt

DATE: 6/8/2009 **DATE:**

Material Description	Unit	2007 Unit cost	Quantity	Amount	Comment
ROCK OUTFALL: 300LF 24" DIA HDPE, TYPE 2 48" CB, 2 TN QUAI	EA	$29,109	5	$ 150,000	Estimate based on 6/3/09 conference call with Steve Lee
SUBTOTAL				**$ 150,000**	
OTHER ITEMS AND CONTINGENCY		50%		$ 75,000	
			Construction Subtotal	**$ 225,000**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 67,500	
			Project Subtotal	**$ 292,500**	
			Project Subtotal (Rounded)	$ 292,500	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 295,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 388,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT: #204-Springbrook Creek Old Bridge Removal at SW 27th Street

PROJECT (2020):#251 Springbrook Creek Old Bridge Removal at SW 27th Street

BASIN: Black River

BY: John Featherstone

DATE: 6/8/2009

CHECKED BY: M. Giseburt

DATE:

Material Description	Unit	Unit cost	Quantity	Amount	Comment
CONSTRUCTION SUBTOTAL				**$ 41,026**	
OTHER ITEMS AND CONTINGENCY		50%		$ 20,513	
			Construction Subtotal	**$ 61,538**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 18,462	
			Project Subtotal	**$ 80,000**	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 80,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 105,000**

APPENDIX C-3
City of Renton CIP Cost Estimate

PLANNING LEVEL CONSTRUCTION COST OPINION

PROJECT (2020): #211 (and #215) Hardie Ave S Underpass to SW 7th Storm System Improvements

BASIN: Black River

Material Description	Unit	2020 Unit cost	Quantity	Amount	Comments
36" - 48" DIA PIPE, STRUCTURES, RESTORATION, TRAFFIC CONTROL	LF	$1,589	700	$ 1,112,300	
SUBTOTAL				**$ 1,112,300**	
OTHER ITEMS AND CONTINGENCY		20%		$ 222,500	
		Construction Subtotal		**$ 1,334,800**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 400,400	
			Project Subtotal	**$ 1,735,200**	
		Project Subtotal (Rounded)		**$ 1,735,200**	
2020 Dollars	**Total Project Cost in City Provided 6-Year CIP**			**$ 1,735,000**	

The cost estimate is for the entire project from Naches Avenue to Hardie Avenue is $9,208,000. The remaining portion of this project that needs to be constructed is from Hardie Ave to SW 7th St and its design and construction will amount to $1,735,000 based on the 6-year CIP.

PLANNING LEVEL CONSTRUCTION COST OPINION

#208 SW 4th Place and Maple Avenue SW Drainage Analysis

PROJECT (2020):#213 SW 4th Place and Maple Avenue SW Drainage Analysis

PROJECT:
BASIN: Black River
BY: John Featherstone
DATE: 6/8/2009

CHECKED BY: M. Giseburt
DATE:

Material Description	Unit	Unit cost	Quantity	Amount	Comment
CONSTRUCTION SUBTOTAL				**$ 153,846**	
OTHER ITEMS AND CONTINGENCY		50%		$ 76,923	
		Construction Subtotal		**$ 230,769**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 69,231	
		Project Subtotal		**$ 300,000**	Estimate based on 6/3/09 conference call with Steve Lee

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 300,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 395,000**

PLANNING LEVEL CONSTRUCTION COST OPINION

#213 SE 190th Street Drainage Improvements

PROJECT (2020):#285 SE 190th Street Drainage Improvement

PROJECT:
BASIN: **Black River**
BY: **John Featherstone**
DATE: 6/8/2009

CHECKED BY: **M. Giseburt**
DATE:

Material Description	Unit	2008 Unit cost	Quantity	Amount	Comment
12" DIA. HDPE PIPE; CB TYPE 2 48" PER 300 LF; PVMT RESTOR	LF	$106	400	$ 42,000	Estimate based on 6/3/09 conference call with Steve Lee
SUBTOTAL				**$ 42,000**	
OTHER ITEMS AND CONTINGENCY EASEMENT TRAFFIC CONTROL		50%		$ 21,000	
			Construction Subtotal	**$ 63,000**	
ENGINEERING/CONSTRUCTION MANAGEMENT/PERMITTING		30%		$ 18,900	
			Project Subtotal	**$ 81,900**	
			Project Subtotal (Rounded)	$ 81,900	

2008 Dollars	**Total Estimated Project Cost (Rounded)**	**$ 82,000**
2020 Dollars	**Total Escalated Project Cost (Rounded)**	**$ 108,000**

APPENDIX D

SUMMARY OF REGULATORY COMPLIANCE RECOMMENDATIONS MEMO

12/17/2020

Memorandum

Summary of Regulatory Compliance Recommendations in Support of Surface Water Utility System Plan Update

Prepared By: Erin Nelson, PE, AltaTerra Consulting & Ann Bryant, PE, Osborn Consulting Inc.

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List of Tables

1. Introduction and Background

The update of the City's draft Surface Water Utility Management Plan includes an assessment of current regulations and resources needed to comply with those regulations. Federal, state, and local regulations, permits, and codes that guide stormwater management have continually evolved since the early 1990s as stormwater impacts on natural resources, water quality, and ecological health have received greater attention. As a result, local jurisdictions must adapt their programs to meet current standards and permit requirements.

This memorandum documents Renton's current regulatory status and provides recommended program modifications to meet regulatory requirements now and the near future.

2. Methodology and Data Sources

The draft 2012 Surface Water Utility Management Plan (draft Plan) provided a comprehensive list and description of federal, state, and local regulations that provides the regulatory framework under which the Utility operates. Regulations listed in the draft Plan were reviewed to identify updates or changes since 2012 that impact how the Utility operates. If no significant updates or changes were identified, it was assumed that the Utility is complying with current regulations and there is no additional resources or actions necessary for compliance. The most significant change since the draft Plan is the new NPDES Phase II MS4 Permit. Since the draft Plan, the Utility has gone through an entire NPDES Phase II Permit cycle; a new cycle with new conditions began on August 1, 2019. It was assumed that the Utility is meeting all conditions that were in the preceding permit and only new conditions in the new permit require additional resources or actions. Table 1 lists the regulations reviewed and whether Utility resources or actions are needed for compliance.

Table 1. List of Regulations

Regulation	Resources or Actions Needed for Compliance
Renton Municipal Code (RMC) 4-3-050 Critical Areas Ordinance	No additional resources or actions necessary.
RMC 4-3-090 Shoreline Master Program	No additional resources or actions necessary.
RMC 4-4-030 Development Guidelines and Regulations	No additional resources or actions necessary.
RMC 4-4-060 Grading, Excavation, and Mining Regulations	No additional resources or actions necessary.
RMC 4-6-030 Drainage (Surface Water) Standards	No additional resources or actions necessary.
Revised Code of Washington (RCW) 36.70 Growth Management Act- City Comprehensive Plan	Coordinate with Planning Staff for 2023 City Comprehensive Plan Utility and Environmental Goals and Policies
RCW 43.21 State Environmental Policy Act	No additional resources or actions necessary.
RCW 77.55 Hydraulic Code	No additional resources or actions necessary.
RCW 86.16 Floodplain Management (establishes authority for implementation of National Flood Insurance Program [NFIP])	No additional resources or actions necessary.
33 United States Code (USC) 1251 Clean Water Act- Section 303(d)- Total Maximum Daily Loads (TMDLs)	Participate and coordinate with Ecology and regional partners in implementation of the Green River and Soos Creek TMDLs.
33 USC 1251 Clean Water Act- Section 404	No additional resources or actions necessary.
33 USC 1251 Clean Water Act- Section 401 Water Quality Certification	No additional resources or actions necessary.
33 USC 1251 Clean Water Act- Section 402 National Pollutant Discharge Elimination System (NPDES)	Develop and implement stormwater planning program, including watershed prioritization and Stormwater Management Action Plan (SMAP).
	Map size and material of all known outfalls and map all known connections from the Municipal Separate Storm Sewer (MS4) to privately owned stormwater systems.
	Develop and implement source control program for existing development.
42 USC 4321 National Environmental Policy Act (NEPA)	No additional resources or actions necessary.
16 USC 1531 Endandered Species Act (ESA)	No additional resources or actions necessary.

3. Regulatory Compliance Needs

Based on a review of the current regulations under which the Utility operates, additional staff resources will be needed to (1) comply with the current City's NPDES Phase II permit, (2) coordinate with regional partners on TMDLS, flood plain management and ESA-listed salmon recovery, and (3) coordinate internally for the City's next update of the Comprehensive Plan. The latter two items will require significantly less time commitment than the first; an additional staff person will likely be necessary to

assist with development and implementation of NPDES-related programs. A discussion of the specific compliance needs and recommendations is provided below.

3.1 NPDES Stormwater Planning Program

The NPDES Phase II Permit Condition S5.C.1 outlines components of what is expected for a stormwater planning program. Some of the elements are a continuation of the previous permit, including continued review and update of LID codes, rules and standards to encourage use of LID, as well as remove barriers in the development code that prevent use of LID principles and LID BMPs. Additionally, Condition S5.C.1.b involves coordination with long-range plan updates. The Utility is coordinating with the Planning department for the update of the City Comprehensive Plan, which will be adopted in 2023. This coordination effort would likely occur whether or not required by the permit, however, the permit requires a response to a series of questions in the Stormwater Planning Annual Report about how the Utility addressed stormwater impacts on water quality in the Comprehensive Plan or equivalent long-term plans by March 31, 2021. A follow-up report responding to the same questions related to water quality, land-use and growth is due on or before January 1, 2023.

The most significant change is the addition of watershed prioritization and development of a Stormwater Management Action Plan for a priority catchment area.

The steps needed to comply with this condition include the following:

1. Develop a watershed inventory and conduct a receiving water assessment including expected stormwater management influence for each watershed.
2. Prioritize watersheds based on receiving water conditions and expected potential stormwater management influences (i.e., which watersheds would most benefit from stormwater actions) and select high priority watershed to develop a Stormwater Management Action Plan.
3. Identify actions in the high priority watershed, including capital (i.e., stormwater retrofits), operational (i.e. enhanced maintenance, source control investigations, etc.), policy or code-related (i.e., land management), or public education and outreach strategies and projects to improve water quality in the watershed, including a budget and implementation schedule.

Table 2 lists some recommended strategies for complying with this condition, including anticipated resource needs on a low, medium, high scale by level of effort. It is anticipated that existing City NPDES staff can accomplish most of this requirement, but consultant support may be needed for the Stormwater Management Action Plan development. The receiving water assessment must be done by March 2022, the receiving water prioritization deadline is June 2022, and the SMAP is due in March 2023.

Table 2. Stormwater Planning Tasks and Level of Effort

Task	Level of Effort	Description	Result
Watershed Inventory, Receiving Water Assessment and Influence	Medium (500 hours)	Use data that is already available. Watershed boundaries are delineated, use available water quality data and beneficial uses, conduct GIS analysis of potential influence using existing stormwater facilities, potential redevelopment, open space, and natural resources layers.	Table of Watershed Inventory
Prioritize Watersheds	Medium-High (700 hours)	Develop criteria for prioritization, use data in watershed inventory table to prioritize. Identify high priority watershed for which to develop SMAP. Choose watershed where projects can be expected to be completed and fit within other City goals.	Sorted Table of Watershed Inventory by Priority and Selected High Priority Watershed
Stormwater Management Action Plan	High (800 hours)	Develop a plan to address issues in selected watershed, including range of projects. The level of effort will depend on whether new projects are developed, or if projects are already ready to go for the watershed selected. A consultant is likely to be needed for this effort due to the large number of estimated hours.	Plan with Projects, Strategies, Budget, and Schedule for Implementation

3.2 NPDES MS4 Mapping and Documentation

The NPDES Phase II Permit Condition S5.C.4 outlines new components for stormwater system mapping, including the following:

- Size and material for all known MS4 outfalls, to be collected during the normal course of business (e.g. during field screening, inspection, or maintenance) and records update beginning no later than January 1, 2020.
- Complete mapping of all known connections from the MS4 to a privately owned stormwater system by August 1, 2023.

The City continually updates its stormwater system inventory as new infrastructure comes on-line, modifications are made in the field, or systems are abandoned. This condition will likely not require additional resources because it can be accomplished by field crews and the GIS specialist in the normal course of business. However, coordination is necessary to ensure that this team is aware of the type of data that needs to be collected, including methodology for recording the data, or what to do if the information is unclear (i.e., material type, ownership, etc.).

Below are options for accomplishing this requirement include the following:

1. Instead of having all field personnel take on the duty of collecting data on MS4 outfalls, assign this task to crews that inspect and clean the system to meet NPDES condition S5.C.7 Operations and Maintenance. The City cleans all pipes, ditches, and catch basins and inlets within a circuit once during the permit term. Part of the system will be completely mapped during this permit term, and eventually the entire system will be mapped as all circuits are inspected and cleaned.
2. Assign private facility inspection staff and source control program staff to identify connections from the MS4 to privately owned stormwater system. This will be one way to systematically identify and map privately owned systems.
3. Alert maintenance crews and inspection and cleaning crews to inform stormwater management staff if privately owned systems are identified during CCTV inspection or other methods.

3.3 NPDES Source Control Program for Existing Development

The NPDES Phase II Permit Condition S5.C.8 outlines components for implementing a source control program that targets pollution-generating public and private properties for the inspection, implementation of source control measures, and enforcement if necessary.

The steps needed to comply with this condition include the following:

1. Develop an ordinance or other enforceable document to require the application of source control BMPs for pollutant generating sources. The City's code already has language that requires source control BMPs and references the RMC 4-6-030. Section I adopts the April 2016 King County Stormwater Pollution Prevention Manual by reference and Section J.4. Elimination of Illicit Connection and/or Illicit Discharge requires implementation of source control or treatment BMPs. The City may want to review the code and determine if the language is adequate to meet City and permit goals.
2. Establish inventory of public and private institutional, commercial and industrial sites that have the potential to generate pollutants to the MS4.
3. Develop and implement an inspection program for sites identified in the inventory.
4. Develop and implement a progressive enforcement policy that requires sites to comply with stormwater requirements.
5. Develop and implement a staff source control training program.

Table 3 lists some recommended strategies for complying with this condition, including anticipated resource needs on a low, medium, high scale by level of effort. It is anticipated that additional City NPDES staff will be needed for this requirement. Ordinance adoption and site inventory must be completed by August 2022, and inspection program and enforcement implementation must begin by January 2023.

Table 3. Source Control Program Tasks and Level of Effort

Task	Level of Effort	Description	Result
Develop an Ordinance or Other Enforceable Document	Low - High (~20 -100 hours)	Review existing code language and determine if it needs revision. Level of effort will depend on whether a new ordinance is developed.	New Ordinance or Keep Existing
Establish Inventory of Public and Private Sites	High (~200 hours)	Use SIC and NAICS codes to identify sites that have potential to generate pollutants to MS4. Include sites with water quality complaints. Use GIS to develop map and database of sites.	Database of Sites
Develop and Implement a Source Control Inspection Program	Very High (~1,000 hours)	Develop inspection protocol, including but not limited to forms, tracking, communications, and educational materials for business owners. Implement program for 20% of site inventory. Level of effort depends on the number of sites for inspection. Program development is expected to take ~200 hours.	Program Implementation and Documentation
Develop progressive enforcement policy	Med- High (~300 hours)	Develop and/or implement existing enforcement policies. Evaluate options for new enforcement methods if existing policies aren't working. Reach out to other jurisdictions to find out what works for them.	Updated or New Enforcement Policy
Staff source control training program	Low- Med (~40 hours)	The level of effort for this task depends on the number of staff assigned to the source control program. Some of the most effective source control programs are ones where fewer staff are responsible for implementation and enforcement. Personal connections can be made with business owners to encourage best practices, with the understanding that the inspectors also have authority for enforcement if violations occur.	Staff Training and Outreach to Source Control Inspectors from Other Cities

There may be overlap with types of City inspections conducted at the sites developed for the inventory. It would be useful to find out what types of inspections are required or routinely done in other City departments, including fats, oil and grease inspections for the wastewater system, private stormwater facility inspections, solid waste outreach to multi-family sites, and outreach from water department staff for pollution prevention in aquifer protection areas. Sites that overlap with multiple inspections, could be flagged for a combined visit by one staff person, staggered visits on opposite schedules for efficiency, or a coordinated site visit by multiple inspectors. A matrix to determine which sites overlap could be helpful.

3.4 Coordination with Regional Partners

The City of Renton overlaps the watershed boundary for the Green River and Soos Creek, both of which have approved or developing TMDLs. Renton will be expected to participate in these TMDLS, even though participation may be more limited than other jurisdictions due to the City's location and land area in each watershed. While there is a regulatory need to be addressed, the resources needed to address participation in TMDLs is expected to be low and existing City staff should be able to manage the workload.

If Ecology were to require the City to take action and develop a monitoring plan to track water quality in Soos Creek for the TMDL, the City may be expected to collect monthly water quality samples and conduct flow monitoring at one or two locations in the portion of Soos Creek within the City's jurisdiction. This would require staff or consultant time to collect water quality samples and installation of flow meters. The annual costs for the City of Kenmore to analyze data from 5 locations for the Swamp Creek TMDL ranges from $4,000 to $18,000 based on a review of their budget data from 2017 through 2019. Kenmore's 2020 budget allocates $6,000 for Swamp Creek TMDL monitoring and $30,000 for stream telemetry, which collects stream flow data on Swamp Creek and other locations. Staff time is not included in this budget, although a reasonable estimate for Renton would be approximately 60 – 70 hours annually (3 hours per month for sample collection and 30 – 40 hours to write and submit a report documenting results to Ecology). An additional 80 hours would be required to write the Quality Assurance Project Plan (QAPP) describing the sampling and analysis protocol.

The City currently has an interlocal agreement (ILA) to improve salmon habitat in Watershed Resource Inventory Areas (WRIAs) 8 and 9 (Cedar River and Green River watersheds, respectively). Through its work with these WRIAs, the City addresses issues around the "threatened" ESA listing of Chinook salmon and coordinates with other jurisdictions on salmon recovery. Additional workload is not expected.

Floodplain management and coordination with King County and FEMA already occurs with the City of Renton, so additional efforts needed to address existing flood plain maps and issues with depictions of flood hazard areas is likely an on-going discussion and will not need additional City resources.

3.5 Coordination with Planning Staff for 2023 City Comprehensive Plan

City Utility staff will need to coordinate with planning staff for the 2023 City Comprehensive Plan to ensure that goals and policies reflect the direction of the Utility. This effort is not expected to require additional resources.

APPENDIX E

PROGRAMMATIC AND OPERATIONAL FACT SHEETS

Surface Water Utility System Plan Update

Project ID:	2020-01
Culvert Assessment	
Preliminary Level of Effort: 570 hrs.	

Project Description:

The objective of this program is to conduct an inventory of the City's culverts to assess fish passage and develop a prioritization scheme to proactively improve fish passage and identify opportunities for habitat improvements in association with other agencies.

The scope of this project includes (1) developing an inventory of stream culverts, (2) assessing the City's stream culverts for fish passage and potential access to fish habitat (i.e., availability of fish habitat upstream of the culvert), and (3) prioritization and ranking of the culvert inventory.

Benefits:

- Proactive strategy for culvert improvement before the City is required to meet fish passage obligations Improved fish passage and habitat accessibility as opportunities for culvert improvements arise.

Challenges:

- Assessment of fish use and presence in the absence of data.
- Staff and budget for new program
- Improving fish passage may need to be coupled with water quality improvement to promote fish utilization.

Assumptions and Considerations:

The following are assumptions and considerations for the City to develop an inventory of its stream culverts, assess the culverts for fish passage, and prioritize for replacement and/or improvement.

- The City does not have a fish passage improvement program to fund fish passage projects. Culverts have not been assessed for fish passage. Fish passage improvement projects implemented so far were completed either by with other agencies, or due to permitting requirements.
- The State of Washington is required to resolve fish passage issues on its culverts due to a U.S. District Court Decision regarding Native Treaty rights; it is anticipated that future rulings may require Counties and Cities to do the same.
- A brief review of the Washington Department of Fish and Wildlife SalmonScape application (https://apps.wdfw.wa.gov/salmonscape/map.html) indicates the City has several stream culverts that are full or partial fish passage barriers.
- The City's GIS system does not appear to differentiate the types of culverts (i.e., stream culverts vs. ditch culverts).
- The field evaluation will be conducted by a fish biologist and an ecologist. For estimating purposes, it is assumed that up to 4 culverts can be assessed in a day.
- Based on the review of SalmonScape, it is estimated that 60 to 70 stream culverts will require field review and inventory.

- Prioritization criteria may include categories of culverts (high, medium, and low priority) or ranking from highest to lowest, depending on what is most useful to the City. Prioritization criteria is likely to include type of barrier (full, partial, unknown, etc.), type of fish usage (anadromous, resident), life histories of fish using stream reach (i.e., is barrier present when fish use would occur? Is culvert a barrier to adults, juveniles, etc.?), habitat availability upstream of the barrier, and habitat quality. Other factors may also be considered.

Recommendations:

The following tasks are recommended for this programmatic action:

1. Develop inventory of City stream culverts by intersecting culvert GIS layer with stream GIS layer. Compare culvert inventory to culverts shown on WDFW SalmonScape.
2. Conduct a field evaluation of the City's culverts located on fish-bearing streams (starting with verification of the WDFW list). The evaluation will include a general condition of the stream, condition of the culvert including conditions that would render it impassable to fish all the time or during flow certain conditions, and general habitat availability upstream of the culvert.
3. Develop prioritization criteria and prioritize culverts for replacement or improvement based on the potential to improve habitat availability to salmonids or other fish species.

Planning Level Effort:

Task	Description	Deliverable	Level of Effort (hrs)
1. Develop culvert inventory.	Use GIS to select all City culverts located on streams.	GIS layer of stream culverts and list of culverts including attributes such as diameter, material, location, and stream name.	50
2. Culvert assessment for fish passage.	Assess up to 70 culverts to evaluate fish passage and habitat conditions. Up to 17.5 field days (4 culverts per day) will be needed, with the assumption that two field staff conduct the assessment.	Technical memorandum describing methodology, culvert assessment field notes describing conditions and photo documentation, table ranking culverts for replacement or improvements.	380 (280 field, 100 documentation)
3. Prioritize culverts.	Develop prioritization criteria and prioritize culverts (high, medium, low) or rank from highest to lowest priority.	Documentation describing prioritization criteria and methodology. List of culverts showing priority.	100
4. Develop individual projects	Develop project worksheets for the prioritized culvert replacements and add to the Surface Water CIP.	Project worksheet	40

Surface Water Utility System Plan Update

Project ID:	2020-02
Evaluation of Enforcement Strategies	
Preliminary Level of Effort: 150 hrs.	

Project Description and Background:

The objective of this project is to evaluate enforcement strategies for maintenance of private facilities, illicit discharges, and other stormwater management elements that require action by private entities.

The City's MS4 system consists of public and private components. Currently there are multiple tiers of inspection and maintenance of the public and private components, depending on the ownership and age of the system. City-owned infrastructure and facilities are inspected and maintained by city maintenance crews. Additionally, city staff inspect and maintain private facilities that were transferred to the City following a policy decision on October 18, 2010. These facilities receive runoff from public roads and were generally under the management of homeowner's associations (HOAs) prior to city transfer.

Other private facilities that are owned and maintained by developments without HOAs or by private businesses are inspected by City maintenance crews as required by the City's NPDES Phase II MS4 permit. Whereas inspection is completed by the City, maintenance and repairs are the responsibility of the owner, and the City follows up to ensure maintenance has been completed. Maintenance and repairs are not always completed, and the City has difficulty compelling owners to complete them. The City faces this challenge particularly in communities where there was no HOA formed and where all owners have equal and undivided interest in the stormwater flow control system.

Other situations where City inspection requires private stormwater management action, including removal of illicit discharges and connections, implementation of source control measures, or any other type of stormwater code violation the Utility might receive, requires methods to compel private entities to take corrective action.

Benefits:

- Identification of range of methods to compel correction actions.
- Consistency for all stormwater management infractions.

Challenges:

- Politically unpopular.
- Integration with City-wide code enforcement policies and database.

Assumptions and Considerations:

The following are assumptions and considerations for the Utility to evaluate stormwater code enforcement methods to achieve desired compliance results.

- The City enforces code compliance through its Community and Economic Development Department. Methods and procedures used to evaluate and issue code violations by Community and Economic Development will be assessed during this project to determine whether stormwater code compliance could be integrated with existing processes or if existing processes used by this department would be applicable to the Utility.
- City code describing enforcement procedures and consequences for violations of stormwater code will be evaluated relative to how the enforcement procedures are currently being applied to stormwater code violations.
- Alternative compliance methods will be researched from other jurisdictions to evaluate methods of success, including educational outreach, financial seed money for repairs, incentives for businesses that do the right thing, etc.

- This project will identify tools necessary to develop a successful enforcement strategy, including consistent and easy to understand enforcement methods, tracking system, integration with other City code enforcement strategies, and staff needed to implement the program.
- This programmatic fact sheet does not include the level of effort to implement the enforcement strategy, only to evaluate and develop an enforcement strategy.

Recommendations:

The following tasks are recommended for this programmatic action:

1. Review existing Utility enforcement strategy relative to stormwater code, including records of enforcement actions, compliance rate, and types of enforcements.
2. Review City's code compliance enforcement strategy for comparison to Utility's stormwater code enforcement strategy. Evaluate whether there are opportunities for merging code enforcement duties or if there are differences worth exploring.
3. Research stormwater code enforcement strategies used by other jurisdictions to identify successful techniques that could be applied by the Utility.
4. Develop stormwater code enforcement policy utilizing data, techniques, potential inter-departmental efficiencies, and alternatives gathered in Tasks 1 through 3.

Planning Level Effort:

Task	Description	Deliverable	Level of Effort (hrs)
1. Review existing Utility enforcement strategy.	Review existing stormwater code, including violations and consequences, Utility enforcement actions taken in the previous 5 years, compliance rate in the previous 5 years, and general enforcement strategy and protocols.	Summary table documenting results of review.	40
2. Review City's code compliance enforcement strategy.	Consult with City Community and Economic Development staff on code compliance and enforcement strategies. Compare strategies, tracking, staffing, and success rates with practices used in Utility.	Summary table documenting comparison of different code enforcement strategies within the City of Renton.	40
3. Research alternative code enforcement strategies used by other jurisdictions.	Conduct research and interviews with up to three other regional or national jurisdictions to identify successful code enforcement strategies and alternatives to code enforcement that could be adopted by the Utility.	Summary table of code enforcement strategies and alternatives used by other jurisdictions.	20
4. Develop stormwater code enforcement policy.	Use data gathered during tasks 1 through 3 to develop a strategy to enforce stormwater codes, including maintenance of private stormwater facilities, removal of illicit discharges, implementation of source control BMPs and other stormwater management actions necessary to limit pollutants from entering the City's MS4 and to improve water quality in the City's receiving waters.	Fact sheet detailing strategy for obtaining compliance with stormwater codes.	50

Surface Water Utility System Plan Update

Project ID:	2020-03
Pipe and Culvert Asset Management Enhancement	
Preliminary Level of Effort: 80 hrs.	

Project Description:

The objective of this project is to enhance the City's existing asset management program to extend condition assessment of pipes beyond CMP pipes and prioritize pipes for repair and/or replacement based on risk.

The scope of this project includes (1) prioritize pipes for condition assessment that are not being assessed, and (2) develop a repair and replacement strategy.

Benefits:

- Strategy for pipe maintenance, repair, and replacement.
- Investment in long-term decision making.
- Proactive system management.

Challenges:

- Compliance with schedule for maintenance specified in the NPDES Phase II MS4 Permit

Assumptions and Considerations:

The following are assumptions and considerations for the City to augment its existing pipe condition assessment program, and develop a pipe maintenance, repair, and replacement program based on condition assessment.

- The City cleans all pipes, ditches, and catch basins and inlets within a circuit once during a permit term.
- The City has a dedicated CCTV truck to inspect stormwater pipes and uses a combination of tools to assess condition and maintain the system. and score their condition. GIS is used to determine consequence of failure based on location of the pipe (i.e., pipes under major arterials and over 18 inches diameter are the primary criteria), and CityWorks is used to track work orders.
- The pipes that are currently being assessed by the City are constructed of corrugated metal (CMP).
- This project will develop a prioritization scheme to assess non-CMP pipes and prioritize maintenance, repair and replacement based on results.
- Use of the City's existing electronic tools will be emphasized for efficiency and cost considerations.
- This programmatic fact sheet does not include the level of effort to implement a condition assessment or asset management program, only to develop the plan to do so.

Recommendations:

The following tasks are recommended for this programmatic action:

1. Review existing condition assessment data and CMP management program to evaluate number of pipes assessed each year, frequency of assessment for individual pipes (i.e., once every 5 years? Every 10 years?), protocols used for data collection, storage, review and work prioritization, staffing, etc. The existing condition assessment program will be used as a basis for prioritization of non-CMP pipes for condition assessment.
2. Develop protocols for using condition assessment data to inform the City's pipe maintenance, repair and replacement program.

Planning Level Effort:

Task	Description	Deliverable	Level of Effort (hrs)
1. Prioritize non-CMP pipes for condition assessment.	Evaluate existing CMP condition assessment program to inform and apply program to non-CMP pipes.	Map and list of prioritized pipes for condition assessment.	40
2. Develop protocols for pipe maintenance, repair and replacement program.	Identify condition assessment and other criticality criteria (i.e. consequence of failure) for prioritizing pipe repair and replacement.	Excel spreadsheet of criticality criteria.	40

Surface Water Utility System Plan Update

Project ID:	2020-04
Stormwater Management Action Plan (NPDES Phase II Permit S5.C.1.d)	
Preliminary Level of Effort: 2000 hrs.	

Project Description:

The objective of this project is to meet the August 2019 NPDES Phase II MS4 Permit condition S5.C.1.d which requires the City to develop a Stormwater Management Action Plan for a high priority watershed.

The scope of this project includes (1) developing an inventory of the watersheds within the City's jurisdiction assess beneficial uses and stormwater management influences, (2) watershed and receiving water prioritization, and (3) development of a Stormwater Management Action Plan for the high priority watershed.

Benefits:

- Compliance with state and federal regulations
- Strategic planning for water quality management
- Protection of receiving waters within the City's jurisdiction.
- Development of CIP projects that are good candidates for Ecology funding

Challenges:

- Coordinating City land management and development strategies to improve water quality.
- Differentiating beneficial uses and stormwater management influences to select high priority watersheds.

Assumptions and Considerations:

The following are assumptions and considerations for the City to develop and implement development of a Stormwater Management Action Plan to meet Condition S5.C.1.d in the NPDES Phase II MS4 Permit.

- The City has an existing inventory of its watersheds including GIS mapping and basic characteristics including size and area within the City of Renton that discharges to the waterbody.
- Ecology's guidance document, "Stormwater Management Action Planning Guidance- Phase I and Western Washington Phase II Municipal Stormwater Permits," Publication 19-10-010, dated August 2019 will be used by the City for reference on how to develop and implement the Stormwater Management Action Plan.
- No new data will be collected to conduct the analysis to support development of a Stormwater Management Action Plan. Existing water quality and designated use data may include water quality data collected from previous studies, basin analyses, and publicly available electronic data such as Ecology's Water Quality Assessment (https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d and Washington Department of Fish and Wildlife's SalmonScape application (http://apps.wdfw.wa.gov/salmonscape/).
- Watershed inventory will include basic land cover data available from City GIS data, including but not limited to the distribution of current zoning types (i.e., commercial, single-family, multi-family, open space, etc.), predicted growth areas, impervious surface coverage, road length or right-of-way area, length of stormwater pipes or conveyance network in the watershed, critical areas or otherwise protected areas, and number and type of stormwater flow control and/or water quality treatment facilities in the watershed.

Recommendations:

The following tasks are needed to develop and implement the Stormwater Management Action Plan:

1. Using the City's existing watershed inventory on GIS as a starting point, augment the watershed inventory with data required by Condition S5.C .1.d.i. of the Permit. This task will include a map of the watersheds and a table of data indicating the watershed name, area, percent of the area within Renton's jurisdiction, and description of existing conditions (water quality, habitat, stormwater treatment, etc.), and potential stormwater management influence (i.e., response to protection, restoration or stormwater investments). The inventory and brief description of the relative conditions of the receiving waters and contributing areas must be submitted by **March 31, 2022.**
2. The watershed inventory developed in the Task 1 will be used to prioritize receiving waters based on the potential benefit from implementation of stormwater facility retrofits, stormwater management program actions, land/development management actions or other actions designed to improve receiving water conditions in Renton. This task will involve developing criteria and a ranking process to prioritize the watersheds in the inventory. The receiving water prioritization and documentation must be complete by **June 30, 2022**.
3. This task involves development of the Stormwater Management Action Plan for the highest priority watershed where the City has determined the greatest improvement and receiving water benefit may be possible with stormwater management and/or land management actions. The Stormwater Management Action Plan must be submitted by **March 31, 2023**. The Stormwater Management Action Plan must include an integrated short- and long-term strategy for improving water quality and designated uses in the selected watershed including operational (i.e., IDDE field screening, source control, operations and maintenance inspections or enhanced maintenance), educational (i.e., targeted public education and outreach), capital (i.e., stormwater retrofit or new stormwater facilities), and/or policy/regulatory (i.e., land management and development strategies).

Planning Level Effort:

Task	Description	Deliverable	Level of Effort (hrs)
1. Develop a watershed inventory, receiving water assessment and influence	Augment existing watershed inventory with available data, assess receiving water influence based on analysis of existing data.	Table with watershed inventory, receiving water conditions and influence, and map.	500
2. Prioritize watersheds	Develop prioritization criteria and ranking process and prioritize the watersheds in the inventory. Select high priority watershed for Stormwater Management Action Plan.	Document describing ranking process and rationale for selecting high priority watershed for SMAP.	700
3. Develop Stormwater Management Action Plan	Develop a plan describing operational, capital, educational, policy, and regulatory stormwater management action strategies and implementation schedule and budget for improving water quality in the high priority watershed.	Stormwater Management Action Plan	800

Surface Water Utility System Plan Update

Project ID:	2020-05
Source Control Program for Existing Development (NPDES Phase II Permit S5.C.8)	
Preliminary Level of Effort: 1900 hrs.	

Project Description:

The objective of this project is to meet the August 2019 NPDES Phase II MS4 Permit condition S5.C.8 which requires the City to implement a source control program that targets pollution-generating public and private properties for inspection, implements source control measures, and enforces source control BMP regulations if necessary.

The scope of this project includes (1) review of the City's existing code to determine if current code language is adequate to meet the permit requirement and/or development of an ordinance or other enforceable document that requires source control BMPs, (2) an inventory of public and private sites that have the potential to generate pollutants to the City's MS4, (3) an inspection program for sites identified in the inventory, (4) a progressive enforcement policy to require site compliance with stormwater requirements, and (5) a source control staff training program.

Benefits:

- Compliance with state and federal regulations
- Reduction in pollutants discharged to the City's MS4 system.
- Community building with local businesses to reach City goal of providing high quality customer service while meeting service demands.

Challenges:

- Coordination with existing business inspection programs within the Utility and in other City departments to avoid burdening businesses with multiple inspections.
- Enforcing site compliance with stormwater requirements.
- Staffing new program.
- Widespread community belief that their businesses are grandfathered into the regulations effective at the time they were permitted

Assumptions and Considerations:

The following are assumptions and considerations for the City to implement a Source Control program to meet the requirements of S5.C.8 in the NPDES Phase II MS4 Permit.

- This is a new program for the City; an additional staff person in the surface water engineering or maintenance section will be needed to implement the program.
- Renton Municipal Code (RMC) 4-6-030. Section I adopts the 2016 King County Stormwater Pollution Prevention Manual. This manual describes required best management practices (BMPs) and maintenance activities for different types of business activities.
- RMC 4-6-030. Section J. Discharge Prohibition describes illicit and allowable discharges to the MS4 and procedures that must occur after a business or other entity is found in violation of this code section, including implementation of source control or treatment BMPs. This section describes enforcement procedures.
- Several jurisdictions in the region are implementing successful source control programs; those programs can be used as a model or template for Renton's incipient program. Examples include City of Kirkland, City of Seattle, City of Shoreline, and Snohomish County.

- The City of Kirkland includes an informative page on the City's website that has links to references and documents to assist businesses in implementation of source control measures on their properties. It also describes what businesses can expect during a City site inspection. Kirkland encourages good business practices by highlighting businesses that are implementing excellent stormwater management BMPs or have made significant improvements.
- The City of Seattle links to a short informational video showing how to implement simple BMPs for a typical automotive facility, for which the video spokesperson is the shop owner.
- The City of Shoreline offers assistance for business owners to implement BMPs at their sites, providing small incentives for participation.
- Snohomish County Code Chapter 7.53 Water Pollution Control outlines escalating monetary penalties for violations depending on the public health and environmental impacts of the violation, willfulness or knowledge of the violation, responsiveness of the violator, and economic benefit accrued by the person(s) responsible for the violation.

- City GIS and business license tracking systems will be used to map businesses included in the business source control inspection inventory and track data. Data collection may occur using existing electronic applications already used by the City in IDDE inspections or other field data collection efforts (e.g. Cityworks). Alternatively, data could be collected with ArcGIS Collector, Survey123, or NPDES Pro. It is recommended that a standardized electronic collection method is used that link to the database or system where inspections are stored.

Recommendations:

The following tasks are needed to develop and implement a source control program:

1. Review existing code language and determine if revisions are needed or desired. Renton has an existing code that adopts the 2016 King County Stormwater Pollution Prevention Manual and prohibits illicit discharges to the MS4. The City may wish to enhance the code with additional enforcement language, including monetary penalties, but the existing code provides for enforcement of violations. An ordinance must be adopted and made effective by **August 1, 2022**.
2. An inventory of public and private sites will need to be developed based on the potential for site activities to generate and discharge pollutants to the MS4. North American Industry Classification System (NAICS) or Standard Industrial Code (SIC) business codes are useful to identify businesses that fit the categories that align with activities in the 2016 King County Stormwater Pollution Prevention Manual (i.e., vehicle repair and maintenance, woodcraft, landscaping, manufacturing, etc.). Additionally, sites that are pollutant generating sources based on complaints must be included in the inventory (Appendix 8 of Permit). The inventory should be geo-referenced and an ArcGIS coverage should be developed that can be used in the collection of business inspection data by field personnel, either electronically or on paper maps. Once developed the inventory will need to be updated as necessary to ensure that the list is accurate and complete. The inventory must be done by **August 1, 2022**.
3. Develop and implement procedures for business inspection, data collection, data storage, communications, business education, and tracking by **January 1, 2023**.
    a. Send communication to all site owners/tenants/operators listed in the inventory to provide information about the source control program including requirements for pollution prevention, available resources, and City business inspections.
    b. Create schedule for inspections. The permit requires a 20% inspection rate annually including 100% of sites identified through credible complaints. The businesses should be prioritized for inspection based on criteria determined during program set up.

c. Determine who is going to complete the inspections. Can this be done in conjunction with other inspection duties? Does the site inventory align with site inventories for other purposes (i.e., stormwater facility inspection, IDDE program, FOG, aquifer protection, etc.)?
d. Develop standard operating procedures for business inspections, including pre-visit research, communication protocols, standard educational materials and resources to provide, data collection methods (electronic or paper checklists), number and types of photographs, and post-visit completion and or follow-up if necessary. Ecology has an MS4 Source Control Business Inspection Template available for use and the Business Inspection Group (BIG) will be developing a guidance manual and training resources in the future (https://www.wastormwatercenter.org/big-business-inspection-group/).
e. Determine how the business inspection data will be stored and tracked, in CityWorks, GIS, Access database, or other database systems?

4. Implement existing enforcement policy or develop a new progressive enforcement policy if the existing policies aren't working. The City's existing code for prohibiting and eliminating illicit discharges and connections to the MS4 relies on education and outreach, and written notice of violation first. Any violation can also be declared a nuisance under RMC 1-3-3, which leads to escalating enforcement measures. The City should review its current code and enforcement policies and evaluate whether updates are necessary. Enforcement must be implemented by **January 1, 2023.**
5. Develop a training program for staff responsible for implementing the source control program, including mentoring, on-line videos, ride-along opportunities with other jurisdictions, and other off-site training specific to implementation of best management practices and inspection protocols.

Planning Level Effort:

Task	Description	Deliverable	Level of Effort (hrs)
1. Develop an ordinance or other enforceable document	Review existing code language; revise, if necessary.	Keep existing code, or New ordinance	100
2. Establish inventory of public and private sites	Use SIC/NAICS codes and complaint database to develop site inventory and database. Use GIS to map sites.	Database and map of sites.	200 (initial effort) 40 per year, maintenance
3. Develop and implement source control program	Send initial communications to site inventory list, develop standard operating procedures, implement initial program (20% of sites).	Educational materials, standard operating procedures, tools for inspections and tracking.	1,200 + depending on number of sites in inventory (Program set up and 1st year)
4. Develop progressive enforcement policy	Review existing enforcement policy; evaluate different enforcement options to determine if updates are needed.	Updated or new enforcement policy	300
5. Staff source control training	Identify training materials and methods, including on-line, off-site, and mentoring or partnership opportunities.	On-going staff training and outreach to inspectors from other Cities	40 – 100 Depends on number of staff

APPENDIX F
DRAINAGE COMPLAINTS

Drainage Complaint Data
From City of Renton Online GIS Database
July 1, 2020

Reference Number	Request Type	Description	Location	Parcel ID	Status	Category	Closed Date
2015091701	Flooding	New property owner objects to discharge from neighboring detention vault onto his property. Ref Claim #CL-15-053	12420 SE Petrovitsky Rd	07393000035	Open	Maintenance	
2015101201	Flooding	Paving for SFR remodel causes sheet flow to miss cb in ROW	1326 Beacon Way S	7221400001	Open		
2015120801	Flooding	Localized flooding of yard due to overtopping of Madsen Creek channel.	14937 Maple Valley Hwy	2323059118	Open	Other	
2016102001	Flooding	Street runoff from S 19th crosses Morris runs down drive during heavy rain events	1823 Morris Ave S	7222000352	Open		
2016102002	Flooding	InvestigateFlooding/Channel obstruction under SR169, DS Wonderland Est.	SR169/150th Ave SE		Open	Maintenance	
2016103101	Flooding	KC Resident Referred to City - Flooding of street ditch. Madsen Creek ds flow obstruct.	15202 149th Ave SE	2323059010	Open	Maintenance	
2017020903	Flooding	Overtopping of cross property conveyance flooded street	8024 S 132nd St	2144800476	Open	Maintenance	
2017031501	Flooding	Benson Woods wetland facility overtopping, runoff across Village Gate Condos	111th Pl SE / SE 189th St	07433000090	Open	Maintenance	
2017020902	Flooding	Resident states water bubbles from storm system during heavy events, crosses yard floods basement	10814 SE 166th St	0088000740	Open	Maintenance	
2017042601	Flooding	Per Maintenance, onsite flooding due to upstream facility #111357	18504 112th Ave SE	3223059287	Open	Maintenance	
2017041801	Flooding	Street runoff flowing to backyard, no structure flooding	16404 SE 143rd Pl	7695500320	Open	Maintenance	
Renton Mainte	Flooding	Four catch basins on the road (two on each side).	1105 N 28th Pl		Open	Known Drainage Issue	
Renton Mainte	Flooding	Beehive left of lower fire entrance of condos	1800 NE 40th St	3345700035	Open	Known Drainage Issue	
Renton Mainte	Flooding	Inlet to 48" CMP	4242 Jones Ave NE (on NE 43rd St)		Open	Known Drainage Issue	
Renton Mainte	Flooding	Inlet - Check grate for dirt and vegetation	4348 Lincoln Ave NE	3345700005	Open	Known Drainage Issue	
Renton Mainte	Flooding	Four inlet pipes to a vault under the roadway (RW3 key required for access to the pond)	12 Seahawks Way		Open	Known Drainage Issue	
Renton Mainte	Flooding	Trash rack inlet for a stream	201 Taylor Ave NW	2144800876	Open	Known Drainage Issue	
Renton Mainte	Flooding	Off pipeline road directly next to tiffany park. It is a trash rack inlet for a stream.	15657 123rd Ave Se		Open	Known Drainage Issue	
Renton Mainte	Flooding	Trash rack to the east of jack in the box.	4810 NE 4th		Open	Known Drainage Issue	
Renton Mainte	Flooding	Clean cross tubes and ditches	14111 SE May Valley Rd		Open	Known Drainage Issue	
Renton Mainte	Flooding	Storm pond inlets. Inlets are behind the pond to the left. There is a trail leading directly to them.	NE 2nd Pl and Field Ave NE.	1523059227	Open	Known Drainage Issue	
Renton Mainte	Flooding	Wetland outfall. Watch for big debris.	Across from 483 Duvall Ave NE	086970TR-A	Open	Known Drainage Issue	
Renton Mainte	Flooding	Inlet to honey creek system on Duvall Ave NE. SW corner of parking lot.	4715 Sunset Blvd NE		Open	Known Drainage Issue	
Renton Mainte	Flooding	Wetland/ 3 Chambers. Chamber one inlet and outfall (shore gate control in manhole)	682 Vashon PL NE	6403500650	Open	Known Drainage Issue	
Renton Mainte	Flooding	Trash rack directly behind sidewalk and mailboxes.	Between 15619 & 15705 SE 157th St		Open	Known Drainage Issue	
Renton Mainte	Flooding	Trash rack inlet surrounded by chain link fencing.	1235 S 36th St		Open	Known Drainage Issue	
Renton Mainte	Flooding	Inlet pipe line is directly to the north of the clarion hotel. Be extremely cautious during heavy rain, heavy flow and will suck anything into the pipe.	3700 East Valley Rd	3023059117	Open	Known Drainage Issue	
Renton Mainte	Flooding	When entering eagle ridge stay to the right. Follow gravel road past the gate to the end. Follow trail at the end of the road.	1300 S Eagle Ridge Dr.		Open	Known Drainage Issue	
Renton Mainte	Flooding	Six inch bee hive on the south side of the road, directly to the east of the bus turn around.	Royal Hills Dr		Open	Known Drainage Issue	
2018112801	Flooding	Driveway/Garage flooding from street runoff during heavy rain events	515 S 38th Ct	8558600195	Open		
0914201801	Flooding		13928 156th ave SE Renton,WA 98059	0914201801	Open	Private	
11272018	Flooding	flooded their garage , caused by leaves	1749 Jones Dr	7399000020	Open	Private	
2019012401	Flooding	Runoff from site ponding reported to flow to ROW	198240106th Ave SE	0087000250	Open	Private	
2016092201	Flooding	Resident approached volunteer and described flooding at street cb during heavy events	Jones AVE NE ROW at NE 23rd		Closed	Maintenance	
2017031301	Flooding	Citizen reported overtopping of private street cb running crx sidewalk.	NE 23rd St / Jones Ave NE		Closed	Private	
2017020904	Flooding	Properties flooded by runoff from Toalson Prop: 2017020903	8225, 8231 S 132nd St	2144800535, 525	Closed	Private	
2010090801	Flooding		421 UnionSystem	0923059050			
2010010401	Flooding		3108SE6th_WardDC	5126400150			
2013082001	Flooding		1326 Beacon Way S	7221400001			
2013110401	Flooding		Victora Hills/Montclaire	889870TR-C			

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2012010501	Flooding		Bank of America Drive Thru	7231502271			
KC-1996-1662	Flooding	SEE 96-0438	17418 108TH AVE SE	2923059072		King County	
2019012401	Flooding	Flashwater and debris running into the road	17013 106th Ave SE				
2019031501	Flooding	Flow accumulated next the property	2104 Wells Ct S				5/3/2019
1127291801	Flooding	flooding into a living room, caused by leaves. The apartment is lower than the road and the water topped the curb.	200 Maple ave S	1127291801			11/28/2018
2018013101	Flooding	Followup to earlier drainage issue. Flooding of parking lot due to overtopping or RR ditch.	Houser Way Bypass	0823059026	Closed	Maintenance	6/8/2018
2018021301	Flooding	Groundwater surcharging at crack in driveway, running over walk.	14055 SE 159th Pl	5104451070	Closed	Private	5/1/2018
2018040501	Flooding	Site drainage flowing to neighboring property at 2219 NE 6th Ct	601 Bronson Pl NE, Renton	7227502505	Closed	Private	4/27/2018
2018041001	Flooding	New resident inquired about tree removal in ROW. Water pooling in yard.	11050 SE 186th St	9117100300	Closed	Private	4/26/2018
2018041801	Flooding	Resident stated that the sidewalk and driveway filll up with water	645 Shattuck Ave S, Renton	1823059134	Closed	Other	4/18/2018
2018032601	Flooding	Water in backyard, concerns of runoff from neighboring apartments	564 S 51st CT	8083350200	Closed	Private	3/26/2018
	Flooding	Surface Water Drainage	140th way SE	2314301060			2/6/2018
2018020501	Flooding	Resident observed water running across sidewalk to roadway.	140th Way SE / north of SE 154th Pl		Closed	Maintenance	2/5/2018
2018012401	Flooding	Resident has water in crawlspace and adjacent yard.	1500 S 18th St, N101	7988500000	Closed	Private	2/5/2018
2017122901	Flooding	Res. describes backyard flooding, possibly due to neighbor	15823 130th Ave SE	2460700200	Closed	Private	1/8/2018
2017071901	Flooding	Stormwater missing CB per customer	8805 S 132nd St	2144800885	Closed	Maintenance	7/27/2017
2017050501	Flooding	Building flooding during 100yr rain event	95 Burnett Ave S	0007200072,0148	Closed	Capital Imprement Project	6/15/2017
2017052301	Flooding	Runoff from 156th Ave SE runs down driveway during heavy events.	13615 156th Ave SE	1463400047	Closed	Private	6/9/2017
2017051901	Flooding	Possible street runoff flooding at base of driveway during heavy events	16522 108th Ave SE	0088000721	Closed	Maintenance	6/1/2017
2017050901	Flooding	Res. inquired about connection to public storm system	4611 NE 17th Pl	5169700136	Closed	Private	5/22/2017
2017050401	Flooding	Debris blocking culvert end	9403 s 192nd St	0622059051	Closed	Maintenance	5/4/2017
2017050402	Flooding	Debris blocking culvert end.	16404 111th Ave SE	0088000442	Closed	Maintenance	5/4/2017
2017050403	Flooding	Water ran down NE 14th onto property during 100yr event	1401 Jones Ave Ne	3344500045	Closed	Maintenance	5/4/2017
2017050404	Flooding	debris covered grate causing water/debris to run down NE 43rd	4348 Lincoln Ave NE	3345700005	Closed	Maintenance	5/4/2017
2017050405	Flooding	Flooding over road at RR underpass	Hardie Ave Underpass		Closed	Maintenance	5/4/2017
2017050406	Flooding	Flooding intersection - 100yr event	Park Ave N		Closed	Maintenance	5/4/2017
2017050407	Flooding	Standing Water in street - 100yr event	ROW at 706 Shelton Ave NE		Closed	Maintenance	5/4/2017
2017050408	Flooding	Flooding at intersections	Wells/Williams & Grady Way		Closed	Maintenance	5/4/2017
2017033101	Flooding	Flooding of private roadway, visited site - private drain issue	122nd Pl SE Private Drive	3323059079	Closed	Private	5/3/2017
2017041901	Flooding	FYI Only, Property OCL - Owner concerned of access due to flooding of Soos Creek		3323059053	Closed	Private	4/20/2017
2017040601	Flooding	Res submitted ERTS re: backyard flooding	522 Pasco Pl NE	9477940040	Closed	Private	4/6/2017
2017020901	Flooding	Water Ponding in SW corner of lawn. Ongoing problem, appears larger since new construction to east.	11323 SE 180th Pl	0511700070	Closed	Maintenance	3/31/2017
2017030201	Flooding	Backyard Flooding, resident requested visit to investigate drainage options	12762 SE 164th St	1432900150	Closed	Private	3/3/2017
2015073101	Flooding	Resident stated that drainage system at RR overflows during heavy events, flooding garage	3223 Mountain View Ave N	3342103775	Closed	Private	12/1/2016
2016101401	Flooding	System surcharged at structure, flowed to residential property.	Victoria Hills/Montclaire	3376750000	Closed	Maintenance	10/21/2016
2016080201	Flooding	Storm System Surcharge in heavy rain placing sand/silt	15711 SE 157th St / Summerfield	8856920170	Closed	Maintenance	8/4/2016
2016070601	Flooding	Owner was contacted by attorney re: 3318 LWB property receiving runoff.	3315 Burnett Ave N	3342100032	Closed	Other	7/13/2016
2016041901	Flooding	Resident is concerned about high runoff in driveway during rain events.	6704 SE 8th St	1423059030	Closed	Private	5/1/2016
2016032401	Flooding	Water under home, customer concerned of ROW runoff.	375 Union Ave SE #198	1623059022	Closed	Private	3/31/2016
2015120802	Flooding	Flooding in ROW during heavy rain events, NE of intersection and South side of Sunset	NE Sunset / Anacortes Ave NE		Closed	Maintenance	3/8/2016
2016012201	Flooding	Onsite flooding, owner feels adjacent construction is issue.	1101 Lake Washington Blvd N (920?)	0823059178	Closed	Private	1/29/2016
2016012601	Flooding	Flooding of daylight basement during heavy rain events.	4434 NE 23rd Ct	2787720140	Closed	Private	1/27/2016
2015121601	Flooding	Email - res. describes recurring drainage issues from street runoff, basement drain surcharge	1603 Davis Ave S	3340401265	Closed	Private	1/7/2016
2015123001	Flooding	Resident has recurring water accum. in crawlspace. Asked for tech. assistance	10311 SE 185th Pl	9476000070	Closed	Private	1/6/2016

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2015120901	Flooding	On site structure overtopping, investigate structure and drainage	1610/1614 Lake Youngs Way SE	8645510500	Closed	Private	12/30/2015
2015121401	Flooding	Site flooding during heavy events. Contractor hired, questions outfall to wetland.	12000 SE Petrovitsky	0739000066	Closed	Private	12/21/2015
2014121501	Flooding	Ref. DC 2013112601_Site/Structure flooding during heavy rain events	15509 116th Ave SE	2023059067	Closed	Private	9/1/2015
2015020901	Flooding	Site Runoff, Sewer Issues - Source of downhill flooding on Neimi property	10817 SE 170th St	2923059144	Closed	Private	7/15/2015
2014103101	Flooding	EMail to CED - Water Pooling in backyard of residence. Res says old KC drainage project a factor.	17020 108th Ave SE	2923059052	Closed	Other	6/1/2015
2014120501	Flooding	Duvall Place ditchline overtopping, sedimentation.	723 Duvall Pl	6649500170	Closed	Maintenance	6/1/2015
2015030401	Flooding	Resident call to investigate increased water level in backyard	2012 Shattuck Ave S	7222000184	Closed	Private	4/1/2015
2015031901	Flooding	Pond on adjacent property overtops, floods neighbors and roadway	17616 116th Ave SE	6196600040	Closed	Private	3/23/2015
2015012901	Flooding	Flooding on north property line, concerns of neighboring property runoff/grading issues	2202 Jones Ave NE	334903611	Closed	Private	2/4/2015
2015012902	Flooding	No Immed. flooding issues - Resident requested information on system in street. Concern of potential flooding from street system.	19721 92nd Ave S	0622059047	Closed	Maintenance	1/30/2015
2014112601	Flooding	Catch basin surcharges in heavy rain events. Onsite roof & area drain tied into cb, site flooding.	95 Burnett Ave S	0007200148	Closed	Private	12/15/2014
2014102001	Flooding	Resubmitttal of 2013 DC, Resident requesting CB north of driveway to attach site drain system.	19250 106th Ave SE	0522059312	Closed	Maintenance	10/23/2014
2013120201	Flooding	Alley runoff flooding back yard of residenct. Conveyance condition and path not known.	1110 N 27th Pl	1644500390	Closed	Maintenance	10/22/2014
2013080501	Flooding	Discharge from unknown source flooding property	15805 140th Ct SE	5104450820	Closed	Maintenance	8/1/2014
2014062501	Flooding	Plugged drain line from property running into street	5024 Lake Washington Blvd NE	3343300862	Closed	Private	7/15/2014
2013112601	Flooding	Church school building flooded during heavy events, concern that Water facility runoff a factor.	15509 116th Ave SE	2023059067	Closed	Private	11/27/2013
2013100101	Flooding	Ditch and front yard flooding during recent events	10833 SE 173rd St	1626800055	Closed	Maintenance	10/4/2013
2013093001	Flooding	Runoff from alley & adj construction site flooding back yard	3318 Lake Washington Blvd N	3342100036	Closed	Other	10/2/2013
2013083001	Flooding	Street Runoff flooded property during Aug 29 event	900 Kirkland Ave NE	8074400115	Closed	Capital Improment Project	10/1/2013
2013090301	Flooding	CB surcharged flooding front yard in 8/29 event	1741 Jones Dr SE	7399000020	Closed	Maintenance	10/1/2013
2013090601	Flooding	Street Runoff flooding driveway during heavy rain events	10810 SE 182nd St	0741100020	Closed	Other	9/13/2013
2013061201	Flooding	Sheet flow from street runs onto property - no curb/gutter	19251 106th Ave SE	0522059312	Closed	Private	6/17/2013
2013041201	Flooding	Street Runoff flooding driveway during heavy rain events	9215 S 198th St	7941000200	Closed	Maintenance	5/1/2013
KC-2000-0013	Flooding	PVT PROPERTY FLOODING NEW SFR CONTRIBUT	18851 103RD CT SE	3223059314		King County	12/11/2002
KC-2000-0013	Flooding	PVT PROPERTY FLOODING NEW SFR CONTRIBUTE. OWNER DECLINED OPTIONS TO REPLACE HIS PUMP SYSTEM.	18851 103RD CT SE	3223059314		King County	12/11/2002
KC-2000-0094	Flooding	GROUNDWATER SURFACING ON PVT PROP	7855 S 130TH ST	2144800334		King County	7/24/2001
KC-2000-0094	Flooding	GROUNDWATER SURFACING ON PVT PROP	7855 S 130TH ST	2144800334		King County	7/24/2001
KC-1999-0657	Flooding	ROADS CAUSING FLOODING SEE99-0608	17314 116TH AVE SE	7938400060		King County	9/20/1999
KC-1999-0602	Flooding	APPARENT OVERFLOW OF ROAD DRNG	10426 SE 196TH ST	6388000040		King County	9/3/1999
KC-1999-0230	Flooding		17811 97TH AVE S	7616800150		King County	6/30/1999
KC-1998-0546	Flooding	SHEET FLOW FROM ROAD HIGH INTENSITY ST	10810 SE 182ND ST	0741100020		King County	8/26/1998
KC-1996-0438	Flooding	OFFSITE FLOW IMPACTING CHURCH PROPERTY	17418 108TH AVE SE	2923059072		King County	7/14/1998
KC-1996-0540	Flooding	INADEQUATE PVT DRNG SYS IMPACT PVT PROP	16308 126TH AVE SE	1433100200		King County	12/31/1997
KC-1997-0423	Flooding	ROADSIDE DITCH OVERFLOW-160TH AVE SE	14028 160TH AVE SE	1457500105		King County	12/18/1997
KC-1996-0282	Flooding	STORM EVENT COMMERCIAL PROP FLOODING	11626 SE 168TH ST	1423700941		King County	12/17/1997
KC-1997-0206	Flooding	OFFSITE FLOW IMPACTING PRIVATE PROP	16046 SE 142ND PL	7253700110		King County	10/29/1997
KC-1996-0438	Flooding	OFFSITE FLOW IMPACTING CHURCH PROPERTY	17418 108TH AVE SE	2923059072		King County	10/2/1997
KC-1997-0206	Flooding	OFFSITE FLOW IMPACTING PRIVATE PROP	16046 SE 142ND PL	7253700110		King County	9/10/1997
KC-1997-1081	Flooding	NEIGHBORHOOD DRNG PROB COST PROHIBITIVE	16316 127TH AVE SE	1433100320		King County	7/3/1997
KC-1997-0055	Flooding	PUGET COLONY HOMES	14105 SE 133RD ST	6928000210		King County	5/8/1997
KC-1996-2050	Flooding	NAT CHAL SEDIMENT IMPACT CIP PROJ???	12601 SE PETROVITSKY RD	0739000105		King County	2/14/1997
KC-1997-0194	Flooding	SUMP PMP DISCHARGE WATER ON ROAD	11924 SE 161ST ST	1423400070		King County	2/14/1997
KC-1997-0203	Flooding	OVERFLOW FROM D/W CULV IMPACT PVT PROP	14028 160TH AVE SE	1457500105		King County	2/11/1997
KC-1997-0206	Flooding	OFFSITE FLOW IMPACTING PRIVATE PROP	16046 SE 142ND PL	7253700110		King County	2/11/1997
KC-1997-0349	Flooding	PONDING IN ROAD RIGHT-OF-WAY	138DD SE 156TH	5104450400		King County	2/7/1997
KC-1996-2071	Flooding	INADEQUATE CONVEYANCE OFFSITE FLOW	11828 SE 180TH ST	6196600543		King County	2/7/1997

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KC-1997-0084	Flooding	UNDER CONST R/D POND	18504 112TH AVE SE	3223059287		King County	2/5/1997
KC-1996-2061	Flooding		14615 SE RENTON-MAPLE VALLEY HWY	2223059018		King County	2/4/1997
KC-1997-0055	Flooding	PUGET COLONY HOMES	14105 SE 133RD ST	6928000210		King County	1/30/1997
KC-1997-0173	Flooding	RUDELLS FLOODING D90914	18304 108TH PL SE	5089700480		King County	1/28/1997
KC-1997-0263	Flooding	HIGH GROUNDWATER TABLE BASEMENT FLOODED	16117 131ST PL SE	2473380310		King County	1/27/1997
KC-1996-2071	Flooding	INADEQUATE CONVEYANCE OFFSITE FLOW	11828 SE 180TH ST	6196600543		King County	1/24/1997
KC-1997-0085	Flooding	RUDDELLS STUDY PROBLEM, CIP TO BE DONE	11202 SE 186TH ST	9117000160		King County	1/23/1997
KC-1997-0054	Flooding	GROUNDWATER FROM NEIGHBOR	13660 143RD AVE SE	0593400070		King County	1/13/1997
KC-1997-0053	Flooding	GNDWATER FROM NEIGHBOR	16425 128TH AVE SE	1423910570		King County	1/13/1997
KC-1997-0055	Flooding	PUGET COLONY HOMES	14105 SE 133RD ST	6928000210		King County	1/13/1997
KC-1996-2042	Flooding	GROUND WATER IMPACT PVT PROP	16134 128TH AVE SE	1432900310		King County	1/3/1997
KC-1996-1236	Flooding	APPARENT IMPACT TO PVT PROP OPEN NDAP??	17023 113TH AVE SE	2892700120		King County	12/13/1996
KC-1996-1724	Flooding	OFFSITE FLOW IMPACTING PVT PROP	14206 164TH AVE SE	7695500360		King County	10/18/1996
KC-1996-1662	Flooding	SEE 96-0438: COMPLAINANT WITHDREW CMPLT	17418 108TH AVE SE	2923059072		King County	10/17/1996
KC-1996-1662	Flooding	SHEET FLOW FROM PARKING SEE 960438	17418 108TH AVE SE	2923059072		King County	9/26/1996
KC-1996-1236	Flooding	APPARENT IMPACT TO PVT PROP OPEN NDAP??	17023 113TH AVE SE	2892700120		King County	8/8/1996
KC-1996-0714	Flooding	RUDDELL ADD	11044 SE 186TH ST	9117100290		King County	6/7/1996
KC-1996-0540	Flooding	INADEQUATE PVT DRNG SYS IMPACT PVT PROP	16308 126TH AVE SE	1433100200		King County	5/20/1996
KC-1996-0094	Flooding	WATER OVERSIDEWALK FROM PVT PROP	12103 SE 164TH ST	1423801090		King County	4/18/1996
KC-1996-0552	Flooding	FLOODING FROM VANDALIZED FIRE HYDRANT	11615 148TH AVE SE	1023059353		King County	4/9/1996
KC-1996-0713	Flooding	PVT PROP FLOODING FROM INADEQUATE DRNG	16316 127TH AVE SE	1433100320		King County	3/26/1996
KC-1996-0540	Flooding	INADEQUATE PVT DRNG SYS IMPACT PVT PROP	16308 126TH AVE SE	1433100200		King County	3/21/1996
KC-1996-0218	Flooding	ADJ PROPERTY IMPROV IMPACT PVT PROP	16131 120TH AVE SE	1423400175		King County	3/15/1996
KC-1996-0094	Flooding	WATER OVERSIDEWALK FROM PVT PROP	12103 SE 164TH ST	1423801090		King County	3/15/1996
KC-1996-0679	Flooding	IMPACT TO PVT PROPERTY FROM UNMAINT DRG	12031 SE 170TH PL	1432401095		King County	3/15/1996
KC-1996-0438	Flooding	OFFSITE FLOW IMPACTING CHURCH PROPERTY	17418 108TH AVE SE	2923059072		King County	3/15/1996
KC-1996-0221	Flooding	STORM EVENT FLOODING DUE TO STORM	16316 127TH AVE SE	1433100320		King County	3/7/1996
KC-1996-0185	Flooding	WATER MISSES CB, PIPE DAMAGE	11625 148TH AVE SE	1023059354		King County	2/27/1996
KC-1995-1116	Flooding	APPARENT GROUND WATER PROBLEM.	16128 128TH AVE SE	1432900300		King County	1/12/1996
KC-1994-1000	Flooding	LACK OF CONVEYANCE THROUGH PVT PROP	11615 148TH AVE SE	1023059390		King County	12/7/1995
KC-1995-0855	Flooding	BUILDING FLOODED FROM BLOCKED D/S	17418 108TH AVE SE	2923059072		King County	10/27/1995
KC-1995-0649	Flooding	BRODKA/WORELY DISPUTE	12602 SE PETROVISKY RD	0739000025		King County	8/14/1995
KC-1995-0179	Flooding	GRNDWTR IMP TO S/W; WILL TIE TO DWNSPTS	18618 106TH PL SE	8956500190		King County	5/9/1995
KC-1995-0214	Flooding	ROAD RUNOFF DOWN DRIVEWAY FLOODS BSMT	7601+ S 135TH ST	2988800121		King County	5/1/1995
KC-1995-0214	Flooding	ROAD RUNOFF DOWN DRIVEWAY FLOODS BSMT	7601+ S 135TH ST	2988800121		King County	5/1/1995
KC-1994-1000	Flooding	LACK OF CONVEYANCE THROUGH PVT PROP	11615 148TH AVE SE	1023059390		King County	3/22/1995
KC-1994-0995	Flooding	OBSTRUCTED FLOW BY FREDRICK'S PLACE ??	18616 102ND AVE SE	3223059085		King County	3/13/1995
KC-1995-0214	Flooding		7601+ S 135TH ST	2988800121		King County	3/7/1995
KC-1995-0179	Flooding	UNCONTROLLED FLOW OVER SIDEWALK	18618 106TH PL SE	8956500190		King County	3/1/1995
KC-1993-0724	Flooding	FLOODING IN WETLAND ON PROPERTY	13516 164TH AVE SE	7229700006		King County	1/18/1995
KC-1994-0933	Flooding	OPEN CHANNEL PVT PROP NO EASEMENTS	10406 SE 174TH ST	2923059151		King County	1/13/1995
KC-1994-1000	Flooding	LACK OF CONVEYANCE THROUGH PVT PROP	11615 148TH AVE SE	1023059390		King County	1/10/1995
KC-1994-0447	Flooding	VALLEY FAIRE 3 TIGHTLINE	15705 SE 157TH ST	8856920180		King County	12/16/1994
KC-1994-0447	Flooding	VALLEY FAIRE III SYSTEM NOT WORKING	15705 SE 157TH ST	8856920180		King County	12/15/1994
KC-1994-0447	Flooding	VALLEY FAIRE III SYSTEM NOT WORKING	15705 SE 157TH ST	8856920180		King County	7/29/1994
KC-1993-0109	Flooding	YARD PONDING NOT NDA SINGLE PROP SOURCE	15533 156TH CT SE	8856920330		King County	4/2/1994
KC-1993-0724	Flooding	FLOODING	13516 164TH AVE SE	7229700006		King County	10/25/1993
KC-1993-0109	Flooding	VALLEY FAIRE CRAWL SPACE	15533 156TH CT SE	8856920330		King County	2/25/1993
KC-1990-1511	Flooding	CAPACITY OF PLAT DRNG	14105 SE 133RD ST	6928000210		King County	1/23/1993
KC-1991-0929	Flooding	TO CIP	17024 SPRINGBROOK RD S	3023059041		King County	12/24/1992
KC-1991-0196	Flooding	NOT NDAP	18425 112TH AVE SE	3223059195		King County	12/8/1992
KC-1991-0777	Flooding	CCF# 591-39 NOT NDA PUGET COLONY	14103 SE 132ND ST	6928000050		King County	11/24/1992
KC-1992-0078	Flooding	TO CIP	11208 SE 182ND ST	8906100070		King County	11/23/1992
KC-1991-0852	Flooding	WATER FROM BANK	12615 SE PETROVISKY RD	0739000115		King County	11/19/1992
KC-1990-1186	Flooding	MEMO/RUDDELLS STUDY TO PA	11044 SE 186TH ST	9117100290		King County	9/11/1992
KC-1991-0080	Flooding	RETAINING WALL /PONDING WATER	14037 SE 159TH PL	5104451030		King County	8/28/1992
KC-1992-0078	Flooding		11208 SE 182ND ST	8906100070		King County	2/26/1992
KC-1991-1100	Flooding	IN YARD AND PLAYGROUND	12512 SE 164TH PL	1433200040		King County	11/1/1991
KC-1991-1087	Flooding	LACK OF DRNG/NEW HOUSES	18216 124TH AVE SE	3323059069		King County	10/29/1991
KC-1990-1128	Flooding	MUDSLIDE CL#13375	16126 SE 156TH ST	8856890310		King County	10/4/1991
KC-1991-1028	Flooding	CROSS PIPE SIZE OK	9623 S 175TH ST	8558600195		King County	10/1/1991
KC-1991-0996	Flooding	RUDDEL'S FIRST ADD STUDY	11056 SE 186TH ST	9117100310		King County	9/18/1991
KC-1991-0929	Flooding	DITCH BY PRIVATE DRIVEWAY	17024 SPRINGBROOK RD S	3023059041		King County	8/28/1991
KC-1991-0885	Flooding	CCF# SWM-0854/DRAINAGE IMPROVEMENTS	13405 142ND AVE SE	6928000400		King County	8/20/1991
KC-1991-0099	Flooding	MEMO TO PA	12602 SE PETROVITSKY	0739000020		King County	8/15/1991
KC-1991-0852	Flooding	WATER FROM BANK	12615 SE PETROVISKY RD	0739000115		King County	8/14/1991
KC-1991-0817	Flooding	R/D POND BACKUP	18851 103RD CT SE	3223059314		King County	7/26/1991
KC-1991-0290	Flooding	DITCH MAINTENANCE/NEW DEVELOPEMENT	17023 106TH AV SE	0087000203		King County	6/22/1991
KC-1990-1623	Flooding	@ R/D FACILITY SEEPING WATER	13611 SE 116TH ST	1437650230		King County	6/21/1991
KC-1991-0031	Flooding	STORM EVENT/NO DITCH PONDING	18217 124TH AVE SE	3323059094		King County	6/18/1991
KC-1990-1187	Flooding	CL#13430 FLOODED HOUSE	13932 SE 155TH PL	5104450160		King County	6/6/1991
KC-1991-0777	Flooding	CCF# 591-39	14103 SE 132ND ST	6928000050		King County	6/5/1991

Drainage Complaint Data
From City of Renton Online GIS Database
July 1, 2020

Reference Number	Request Type	Description	Location	Parcel ID	Status	Category	Closed Date
KC-1991-0315	Flooding	DIVERSION/CULVERT OVERFLOW	14011 SE 132ND	6928000020		King County	6/4/1991
KC-1991-0196	Flooding		18425 112TH AVE SE	3223059195		King County	4/6/1991
KC-1991-0339	Flooding	PIPE OF PRIVATE DITCH	11212 137TH AVE SE	1023059173		King County	3/29/1991
KC-1991-0170	Flooding	WATER IN BASEMENT	12109 SE 164TH ST	1423900010		King County	3/16/1991
KC-1991-0080	Flooding	WATER AND ICE ON SIDEWALK	14037 SE 159TH PL	5104451030		King County	3/9/1991
KC-1990-1602	Flooding	MUD & WATER IN STREET FROM CONST	15805 140TH CT SE	5104450820		King County	1/25/1991
KC-1990-1539	Flooding	RAVINE ERODING/FULL	14231 SE 138TH ST	1523059059		King County	1/19/1991
KC-1990-0709	Flooding	CL#12959 SEE CL#13224 DUE DECEMBER	18504 112TH AVE SE	3223059287		King County	12/26/1990
KC-1990-1061	Flooding	CL#13224 SEE CL#12959 GARAGE FLOODED	11202 SE 186TH ST	9117000160		King County	12/26/1990
KC-1990-0692	Flooding	CL#12942 WONDERLAND MOBILE PK DUE OCT	15277 BIRCH DR	2323059029		King County	12/11/1990
KC-1990-1552	Flooding	STORM EVENT /GIBBONS	15018 132ND AVE SE	9189700175		King County	12/8/1990
KC-1990-1530	Flooding		18427 112TH AVE SE	3223059196		King County	11/27/1990
KC-1990-1531	Flooding		18427 112TH AVE SE	3223059196		King County	11/27/1990
KC-1990-0804	Flooding	COMPLETION OF STUDY	14105 SE 133RD ST	6928000210		King County	9/18/1990
KC-1990-0776	Flooding	SUMMERFIELD/CL#13011	15900 SE 156TH ST	8856890090		King County	7/19/1990
KC-1990-0869	Flooding	CL#13063/SUMMERFIELD	15607 160TH CT SE	8856890180		King County	7/19/1990
KC-1990-0622	Flooding	CL#12901 SUMMERFIELD	15613 160TH CT SE	8856890190		King County	7/19/1990
KC-1990-0708	Flooding	SUMMERFIELD/CL#12952	15617 160TH CT SE	8856890200		King County	7/19/1990
KC-1990-0477	Flooding	CL#12818 SUMMERFIELD	15621 160TH CT SE	8856890210		King County	7/19/1990
KC-1990-0476	Flooding	CL#12816 SUMMERFIELD	15620 160TH CT SE	8856890220		King County	7/19/1990
KC-1990-0480	Flooding	CL#12826 SUMMERFIELD	15610 160TH CT SE	8856890240		King County	7/19/1990
KC-1990-0654	Flooding	CL#12920 /SUMMERFIELD	15604 160TH CT SE	8856890250		King County	7/19/1990
KC-1990-0598	Flooding	CL#12874 & #12836 SUMMERFIELD	16104 SE 156TH ST	8856890350		King County	7/19/1990
KC-1990-0719	Flooding	BACK UP FROM PIPES/90-225,1077	5121 RIPLEY LN N	3343302870		King County	4/17/1990
KC-1990-0589	Flooding	/CLEVENGER STORM EVENT	16405 SE MAPLE VALLEY HW	2323059029		King County	3/23/1990
KC-1990-0304	Flooding	RAIN FROM HILLSIDE/STORM	16623 116TH PL SE	1423700910		King County	3/16/1990
KC-1989-0776	Flooding	FILLING OF LOT BEHIND/FLOODED CRAWLSPAC	11644 142ND AVE SE	1023059060		King County	2/23/1990
KC-1990-0209	Flooding	DITCH OVERFLOW/STORM EVENT	14639 SE 132ND ST	0847100060		King County	2/16/1990
KC-1990-0141	Flooding	POND OVERFLOW/90-0149,235,372/STORM EVE	18400 112TH AVE SE	9117000160		King County	2/5/1990
KC-1990-0149	Flooding	R/D POND OVERFLOW/ROBERT/ STORM EVENT	11202 SE 186TH ST	9117000160		King County	2/5/1990
KC-1990-0235	Flooding	WATER IN BASEMENT/STORM/90-141,149,342	11202 SE 186TH ST	9117000160		King County	2/5/1990
KC-1990-0342	Flooding	R/D POND/ROBERT/ STORM EVENT	11202 SE 186TH ST	9117000160		King County	2/5/1990
KC-1990-0274	Flooding	R/D POND FLOODED/STORM	11022 SE 184TH PL	3223059302		King County	2/5/1990
KC-1990-0225	Flooding	STORM	5121 RIPLEY LN N	3343302870		King County	1/28/1990
KC-1989-0563	Flooding	NEW PLAT ROAD WATER FLOWING OVER ROAD	3211 TALBOT RD S	3023059019		King County	11/28/1989
KC-1989-0268	Flooding	FLOODING OF FIELD/DITCH MAINT	16638 106TH AVE SE	0087000235		King County	5/25/1989
KC-1989-0051	Flooding	PONDING IN BACKYARD	17121 125TH AVE SE	1432400090		King County	3/8/1989
KC-1989-0002	Flooding	WET YARDAND DRIVEWAY	7601 S 135TH ST	2988800121		King County	1/20/1989
KC-1988-0238	Flooding	NEW DRIVEWAY WILL IT FLOOD	18431 120TH AVE SE	6197800241		King County	6/18/1988
KC-1988-0220	Flooding	R/D POND IS FLOODING PROPERTY	18862 103RD CT SE	3223059251		King County	6/9/1988
KC-1988-0193	Flooding	SPRINGBROOK AREA	19030 102ND AVE SE	3223059327		King County	4/4/1988
KC-1987-1109	Flooding	WATER FROM UPHILL LOTS	19264 98TH AVE S	7941200130		King County	3/7/1988
KC-1987-1026	Flooding	KENNYDALE CLEARING OF LAND	11030 SE 76TH ST	3343300842		King County	10/25/1987
KC-1987-0445	Flooding	SEE 86-03A4 PENTON. 87-0707	13837 SE 128TH ST	1523059112		King County	9/26/1987
KC-1987-0821	Flooding	SKYWAY/RENTON AVE S WIDENING	8044 S 132ND ST	2144800466		King County	7/25/1987
KC-1987-0108	Flooding	OH/TO PA FOR CM-07/19/87-MAPLEWOOD HTS	13419 SE 141ST ST	5127000200		King County	7/19/1987
KC-1986-1296	Flooding	BASEMENT FLOODING	16623 BENSON RD SE	0087000332		King County	7/3/1987
KC-1987-0654	Flooding	WATER UNDER HOUSE	17005 130TH AVE SE	7229200060		King County	6/20/1987
KC-1987-0641	Flooding	IN BSMT 87-0596 VAN MECHELEN	8054 S 132ND ST	2144800460		King County	6/7/1987
KC-1987-0518	Flooding	SPRING GLEN/ROAD DRAINAGE	17223 98TH AVE S	8558600060		King County	6/7/1987
KC-1987-0409	Flooding	INADEQUATE DRNG/PLUGGED 86-1047	17665 111TH AVE SE	3276200230		King County	5/11/1987
KC-1987-0471	Flooding	SPRING GLEN 86-1166,1185	11202 SE 186TH ST	9117000160		King County	4/26/1987
KC-1987-0433	Flooding	@ FAIRWOOD CRAWL SPACE WET	12716 SE 164TH ST	1432900210		King County	4/25/1987
KC-1987-0445	Flooding	FILLING OF LOT	13837 SE 128TH ST	1523059112		King County	4/15/1987
KC-1987-0415	Flooding	YARD 87-0412	17224 98TH AVE S	8558600100		King County	4/15/1987
KC-1987-0255	Flooding	STANDING WATER & MUD	14639 SE 132ND ST	0847100060		King County	4/14/1987
KC-1987-1145	Flooding	PIPE TO HIGH FOR POND	18850 103RD CT SE	3223059231		King County	4/14/1987
KC-1987-0314	Flooding	ROAD CULVERT DISCHARGE ON PROPERTY	10028 SE 190TH ST	3388320050		King County	3/18/1987
KC-1986-1166	Flooding	STORM OVERFLOW	11202 SE 186TH ST	9117000160		King County	3/6/1987
KC-1986-1185	Flooding	SEE: 86-1166 BRYANT, BILL	11202 SE 186TH ST	9117000160		King County	3/6/1987
KC-1986-1190	Flooding	BASEMENT GETTING WATER	11001 SE 186TH ST	9117100080		King County	3/6/1987
KC-1986-1047	Flooding	TO SMALL OF PIPE	17665 111TH AVE SE	3276200230		King County	12/1/1986
KC-1986-0707	Flooding		13837 SE 128TH ST	1523059112		King County	8/7/1986
KC-1986-02B4	Flooding	FLOODED LOT	12137 SE 172ND ST	1432401120		King County	4/29/1986
KC-1986-0105	Flooding	TO RD COORD 2/11	8223 S 132ND ST	2144800525		King County	3/24/1986
KC-1986-0103	Flooding	TO B.A.L.D.	14220 164TH AVE SE	7695500330		King County	2/19/1986
KC-1984-0085	Flooding	TO CODE ENF.	10908 SE 164TH AVE	0088000870		King County	10/29/1984
KC-1984-0085	Flooding	TO CODE ENF.	10908 SE 164TH ST	0088000870		King County	8/8/1984
KC-1984-0247	Flooding	FRONT YARD	11613 SE 164TH ST	1423700610		King County	6/21/1984
KC-1984-0094	Flooding		18814 110TH CT SE	2698200160		King County	6/6/1984
KC-1984-0088	Flooding	CULVERTS BLOCKED	17041 104TH AVE SE	2923059161		King County	6/6/1984
KC-1984-0096	Flooding		16638 106TH AVE SE	0087000235		King County	6/4/1984
KC-1984-0302	Flooding		12129 SE 172ND ST	1432401115		King County	5/23/1984
KC-1984-0310	Flooding	BENSON HILL AREA	18019 118TH AVE SE	6197200323		King County	4/9/1984
KC-1984-0104	Flooding		17420 98TH AVE S	8558600170		King County	3/23/1984
KC-1984-0013	Flooding		12864 SE 102ND ST	7788400185		King County	2/29/1984
KC-1983-0380	Flooding	IN CRAWL SPACE	16618 127TH AVE SE	1423910310		King County	5/5/1983
KC-1983-0197	Flooding		17811 97TH AVE S	7616800150		King County	3/30/1983

Drainage Complaint Data
From City of Renton Online GIS Database
July 1, 2020

Reference Number	Request Type	Description	Location	Parcel ID	Status	Category	Closed Date
KC-1983-0422	Flooding		12206 SE 167TH ST	1423900980		King County	3/8/1983
KC-1983-0353	Flooding		13224 144TH AVE SE	0847100073		King County	2/16/1983
KC-1982-0030	Flooding	CO RD CULVERT	9630 138TH AVE SE	0323059164		King County	12/30/1982
KC-1982-0224	Flooding	CASCADE VISTA	11325 SE 176TH ST	3223059005		King County	12/21/1982
KC-1982-0208	Flooding	EROSION	11220 SE 186TH	9117000140		King County	9/27/1982
KC-1982-0341	Flooding		14005 SE 133RD ST	6928000170		King County	6/11/1982
KC-1982-0522	Flooding	SEEPAGE/SUMP-PUMP/DRNG DITCH	11702 SE 157TH ST	1432600670		King County	6/7/1982
KC-1982-0183	Flooding		10034 SE 190TH ST	3388320040		King County	4/26/1982
KC-1982-0204	Flooding		17210 SPRINGBROOK RD S	8558600010		King County	4/19/1982
KC-1982-0566	Flooding		17004 113TH AVE SE	2892700020		King County	3/22/1982
KC-1982-0520	Flooding		13612 160TH AVE SE	1457500085		King County	2/25/1982
KC-1982-0189	Flooding		10830 SE 173RD ST	1626800020		King County	2/18/1982
KC-1982-0342	Flooding	CASCADE VISTA	15779 119TH PL SE	1432600335		King County	1/27/1982
KC-1982-0476	Flooding	CASCADE VISTA #2 AREA	15779 119TH PL SE	1432600335		King County	1/27/1982
KC-1981-0096	Flooding	YARD	10836 SE 190TH ST	6623400031		King County	12/15/1981
KC-1981-0217	Flooding	CASCADE AREA	16743 126TH AVE SE	1423600170		King County	6/10/1981
KC-1981-0094	Flooding	INADEQUATE RD DRNG	10404 SE 194TH PL	0522059006		King County	2/18/1981
KC-1975-0132	Flooding	BASEMENT	11433 SE 164TH ST	0088000341		King County	11/12/1975
KC-1975-0150	Flooding	111TH AVE SE/168TH ST	16650 111TH AVE SE	0088000426		King County	2/12/1975

APPENDIX G
CIP FACT SHEETS

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

SUMMARY BY COUNCIL PRIORITY

Projects	Priority	Type*	Actual through 12/31/19	ESTIMATED 2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:												
Monroe Ave NE & NE 2nd St Infiltration System Improvements	1	ED	25	225	650	5,450	-	-	-	-	-	6,350
Downtown Storm System Improvements	2	ED	886	750	3,050	2,230	-	-	-	-	-	6,917
Madsen Creek Improvement Project	3	M, SP	475	140	450	156	-	-	-	-	-	1,221
Jefferson Ave NE Green Connections Project	4	D	314	415	1,777	-	-	-	-	-	-	2,506
Cedar River Gravel Removal (Maintenance Dredge) Project	5	M, SP	10,564	1,000	1,000	902	-	500	500	500	-	14,966
Cedar River 205 Project Levee Recertification Project	6	R	822	370	320	2,570	1,020	580	70	70	-	5,822
Heather Downs Detention Pond Retrofit	7	M, SP	137	208	800	-	-	-	-	-	-	1,145
Stormwater Facility Retrofit Study	8	P	-	75	225	-	-	-	-	-	-	300
Burnett Ave S and Williams Ave S Water Quality Retrofit Project	9	D	2	30	225	213	-	-	-	-	-	470
SE 172nd St and 125th Ave N Storm System Improvement Project	10	D	207	233	20	-	-	1,500	1,500	-	-	3,460
SW 23rd Street Drainage and Fish Passage Improvements	11	M, SP	-	-	350	250	150	20	510	500	-	1,780
Maplewood Creek Sedimentation Facility Maintenance	12	M, SP	553	95	95	95	95	100	100	100	-	1,233
Madsen Creek Sedimentation Cleaning	13	M, SP	377	84	75	75	75	80	80	80	-	926
Rainier Ave and Oakesdale Ave Pump Station Upgrades	14	M, SP	125	80	142	375	-	-	-	-	-	723
Springbrook Creek Wetland and Habitat Mitigation Bank	15	D	762	70	40	50	-	-	-	-	-	922
Stormwater Facility Fencing Project	16	M, SP	485	5	140	140	100	100	100	100	-	1,170
Small Drainage Projects Program	17	M, SP	2,024	100	584	200	400	400	400	400	-	4,508
Surface Water Utility GIS	18	R	928	125	110	110	115	115	115	115	-	1,734
Talbot Hill Area Mosquito Abatement Program	19	R	532	90	85	85	85	90	90	90	-	1,147
CMP Storm System Replacement Program	20	ED	10	10	210	370	-	-	-	-	-	600
Hardie Ave SW-SW 7th St Storm System Improvements	21	ED	7,471	2	-	450	1,150	135	-	-	-	9,208
NE Sunset Blvd & Union Ave NE Storm System Improvements	22	ED	-	-	-	-	-	350	250	1,650	-	2,250
SW 43rd Street/Lind Ave SW Storm System Improvements	23	ED	-	-	-	-	-	300	500	3,200	-	4,000
East Valley Road Storm System Improvements	24	ED	-	-	-	-	-	-	400	150	-	550
Surface Water Utility System Plan	25	R	298	172	-	-	-	-	120	-	-	590
Ginger Creek/Cascade Park Basin Plan	26	P	-	-	-	-	-	350	-	-	-	350
Cedar River Flood Risk Reduction Feasibility Study	27	P	-	15	210	210	65	-	-	-	-	500
WSDOT Limited Access ROW Runoff Impact Mitigation Program	28	R	-	96	96	96	-	-	-	-	-	289
Miscellaneous/Emergency Storm Projects	29	M, SP	177	50	50	50	50	50	50	50	-	527
Total Expenditures			**27,176**	**4,440**	**10,705**	**14,077**	**3,305**	**4,670**	**4,785**	**7,005**	**-**	**76,163**

**Project Types: A = Acquisition, C = Cross Category, D = Development, M = Maintenance, P = Planning, R = Regulatory, ED = Correcting Existing Deficiencies; SP = System Preservation; N = New Facilities to Accommodate Growth*

Projects	Actual through 12/31/19	ESTIMATED 2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Grants/Contributions	12,124	2,105	4,127	3,946	1,085	1,080	570	570	-	25,606
System Development Charges	177	-	-	-	-	-	-	-	-	177
Surfacewater Collection Fees	14,875	2,335	6,578	10,131	2,220	3,590	4,215	6,435	-	50,378
Total Resources	**27,176**	**4,440**	**10,705**	**14,077**	**3,305**	**4,670**	**4,785**	**7,005**	**-**	**76,161**
Project Funding Status:										
Secured	27,176	4,440	10,705	14,077	1,085	580	70	70	-	58,203
Anticipated**	-	-	-	-	2,220	4,090	4,715	6,935	-	17,960
Total Project Funding	**27,176**	**4,440**	**10,705**	**14,077**	**3,305**	**4,670**	**4,785**	**7,005**	**-**	**76,163**

***Expenditures utilizing anticipated funding are not included in the adopted budget.*

Reconciliation to Adopted Budget:	
Project Funding Secured	58,203
Appropriations To-Date	49,111
Additional Appropriations Needed	**9,092**
Additional Appropriations:	
2021 Adopted Budget	1,326
2022 Adopted Budget	7,766
Total Additional Appropriations	**9,092**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Monroe Ave NE & NE 2nd St Infiltration System Improvements	**Priority Number:**	1
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

The project includes the design and construction of an additional infiltration system to provide increased drainage capacity to a 245-acre basin in the Renton Highlands. This basin does not have an adequate connection to a downstream conveyance system or waterbody and solely relied on infiltration through perforated pipes near the city's Maintenance Shops prior to the construction of temporary overflow outfalls to the gravel pit at 301 Monroe Ave N owned by Segale Properties. The city has a temporary easement, last renewed in 2018, to discharge stormwater to the Segale gravel pit through two overflow pipes installed in 1996 and 2007. The city anticipates that the easement agreement will be terminated in the near future as Segale is in the process of filling the pit, to redevelop the property to multi-family dwellings or mixed use commercial. The city is in the process of evaluating alternatives for a permanent drainage solution that replaces the temporary overflow pipes, and is identifying grant opportunities to help fund this project. Planning level efforts will conclude in 2020, and design efforts will start in 2021. Construction will need to be completed prior to the filling of the site.

Rationale

The project will help protect businesses and residential areas from flooding with a permanent solution in lieu of a temporary easement granted to the city by a business owner. This project supports the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	25	200	600	400	-	-	-	-	-	1,225
Project Management	-	25	50	50	-	-	-	-	-	125
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	5,000	-	-	-	-	-	5,000
Total Expenditures	**25**	**225**	**650**	**5,450**	**-**	**-**	**-**	**-**	**-**	**6,350**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	17	108	-	-	-	-	-	-	-	125
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	8	117	650	5,450	-	-	-	-	-	6,225
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**25**	**225**	**650**	**5,450**	**-**	**-**	**-**	**-**	**-**	**6,350**
Project Funding Status:										
Secured	25	225	650	5,450	-	-	-	-	-	6,350
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**25**	**225**	**650**	**5,450**	**-**	**-**	**-**	**-**	**-**	**6,350**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Downtown Storm System Improvements	**Priority Number:**	2
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

Downtown Storm System Improvements consist of replacing undersized and aging stormwater pipes along S 2nd St, S 3rd St and their cross streets between Rainier Ave S and Mills Ave S. These improvements are part of the Downtown Utilities Improvement Project managed by the Utilities Division and the Wells Ave S and Williams Ave S conversion project managed by the Transportation Division. These utility improvements are needed to support re-development and new development in the downtown core and will provide better service for existing and future development. These projects are the first steps to support coordinated efforts by the city to improve intersections, add signals, and convert S 2nd St and S 3rd St to two-way operations, as guided by the 2018 Downtown Civic Core Vision and Action Plan. Construction of these utility improvements started in 2020 and is expected to continue through spring 2022.

Rationale

This project replaced undersized and aging drainage systems in the Downtown core in support of the City's 2018 Civic Core Vision and Action Plan and future transportation improvements. This project supports the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	886	500	-	-	-	-	-	-	-	1,386
Project Management	-	50	50	50	-	-	-	-	-	150
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	200	3,000	2,180	-	-	-	-	-	5,380
Total Expenditures	**886**	**750**	**3,050**	**2,230**	**-**	**-**	**-**	**-**	**-**	**6,917**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	886	750	3,050	2,230	-	-	-	-	-	6,917
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**886**	**750**	**3,050**	**2,230**	**-**	**-**	**-**	**-**	**-**	**6,917**
Project Funding Status:										
Secured	886	750	3,050	2,230	-	-	-	-	-	6,917
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**886**	**750**	**3,050**	**2,230**	**-**	**-**	**-**	**-**	**-**	**6,917**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Madsen Creek Improvement Project	**Priority Number:**	3
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

This project will address flooding problems associated with Madsen Creek, where it crosses SR-169 and discharges to the Cedar River. Flooding has occurred along SR-169 near Wonderland Estates Manufactured Home Park, along 149th Avenue SE and in Ron Regis Park. The King County Flood Control District awarded the city a $472,000 flood reduction grant for hydrologic and hydraulic analysis, surveying, environmental analysis and preliminary design to solve the flooding problems. The planning level effort was completed in March 2020. The design and construction of alternative solution elements identified in the planning effort will be funded through a Capital Improvement Plan grant from the District in the amount of $615,000.

Rationale

This project will construct near-term and long-term improvements to reduce the risk of flooding from Madsen Creek onto adjacent properties. This project supports the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	475	120	30	141	-	-	-	-	-	766
Project Management	-	20	20	15	-	-	-	-	-	55
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	400	-	-	-	-	-	-	400
Total Expenditures	**475**	**140**	**450**	**156**	**-**	**-**	**-**	**-**	**-**	**1,221**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	361	140	450	156	-	-	-	-	-	1,107
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	114	-	-	-	-	-	-	-	-	114
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**475**	**140**	**450**	**156**	**-**	**-**	**-**	**-**	**-**	**1,221**
Project Funding Status:										
Secured	475	140	450	156	-	-	-	-	-	1,221
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**475**	**140**	**450**	**156**	**-**	**-**	**-**	**-**	**-**	**1,221**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Jefferson Ave NE Green Connections Project	**Priority Number:**	4
Project Category:	Development		
Status:	Previously Approved		

Description and Scope

This project will design flow reduction and stormwater quality treatment facilities for approximately 1,300 linear feet of roadway to include bio retention facilities, a storm conveyance system and permeable concrete sidewalks on Jefferson Avenue NE (between NE 16th Street and NE 12th Street) and on NE 16th Street (between Jefferson Avenue NE and Harrington Ave NE) in the Sunset Area community along the existing roadway where most feasible. The project is partially funded by an Ecology Stormwater Financial Assistance Program grant of $2,075,095 that was awarded in 2018. Project design and permitting is anticipated to be completed in 2020 with construction in 2021.

Rationale

This project was identified in the Sunset Area Surface Water Master Plan that was developed and approved as part of the Sunset Community Investment Strategy and Planned Action EIS. This project supports the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	314	100	-	-	-	-	-	-	-	414
Project Management	-	15	-	-	-	-	-	-	-	15
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	300	1,777	-	-	-	-	-	-	2,077
Total Expenditures	**314**	**415**	**1,777**	**-**	**-**	**-**	**-**	**-**	**-**	**2,506**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	298	182	1,777	-	-	-	-	-	-	2,258
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	16	233	-	-	-	-	-	-	-	249
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**314**	**415**	**1,777**	**-**	**-**	**-**	**-**	**-**	**-**	**2,506**
Project Funding Status:										
Secured	314	415	1,777	-	-	-	-	-	-	2,506
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**314**	**415**	**1,777**	**-**	**-**	**-**	**-**	**-**	**-**	**2,506**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Cedar River Gravel Removal (Maintenance Dredge) Project	**Priority Number:**	5
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

Periodic maintenance dredging along the lower 1.23 mile of the Cedar River is necessary due to ongoing sediment transport and deposition. This project is a critical component of the Lower Cedar River Section 205 Flood Hazard Reduction project which consisted of dredging and adding levees and floodwalls to the lower 1.23 miles of the river. This project was completed in 1998 in cooperation with the US Army Corps of Engineers (USACE). Gravel removal from the lower 1.23 miles of the Cedar River maintains the 100-year level of protection offered by the levees and floodwalls and is a requirement of the Project Cooperation Agreement with the USACE. The project is entirely funded by the King County Flood Control District. The project design, permitting and construction of the second dredging project was completed in 2016. The city is currently in the post-construction mitigation phase through 2026, during which the city is required to maintain mitigation plantings, monitor habitat parameters and fish counts in the Elliot and Royal Hills habitat channels, and submit yearly reports to the permitting agencies. The planning and design effort for the next maintenance dredge is anticipated to begin in 2024.

Rationale

This will provide funding for completing permitting, design, construction and mitigation work associated with the project and performing long-term monitoring, maintenance and reporting as required by the project permits. This project supports the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	480	480	480	-	1,440
Project Management	-	-	-	-	-	20	20	20	-	60
Major Maintenance	10,564	1,000	1,000	902	-	-	-	-	-	13,466
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**10,564**	**1,000**	**1,000**	**902**	**-**	**500**	**500**	**500**	**-**	**14,966**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	10,564	1,000	1,000	902	-	500	500	500	-	14,966
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**10,564**	**1,000**	**1,000**	**902**	**-**	**500**	**500**	**500**	**-**	**14,966**
Project Funding Status:										
Secured	10,564	1,000	1,000	902	-	-	-	-	-	13,466
Anticipated*	-	-	-	-	-	500	500	500	-	1,500
Total Project Funding	**10,564**	**1,000**	**1,000**	**902**	**-**	**500**	**500**	**500**	**-**	**14,966**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Cedar River 205 Project Levee Recertification Project	**Priority Number:**	6
Project Category:	Regulatory		
Status:	Previously Approved		

Description and Scope

The U.S. Army Corps of Engineers originally certified the levees and floodwalls that were constructed as part of the Lower Cedar River Flood Hazard Reduction project in 1998. The U.S. Army Corps of Engineers has since determined that their certification is no longer valid and that the city of Renton would need to re-certify the levees and floodwalls, if they are to be accredited by FEMA as providing 100-year flood protection for floodplain mapping purposes. If the levees are not re-certified and accredited by FEMA, the properties behind the levees would have to be remapped to show they are in a floodplain. Phase 1 of the project was completed in 2016. Phase 2 of the project to complete the re-certification documentation was completed in 2018. Phase 3 of the project is currently in progress and it consists of the permitting, design and construction of the levee improvements required for accreditation. Phase 3 is expected to be completed in 2023. Phase 4 will consist of any post-construction mitigation measures and monitoring effort, if any is imposed onto the project.

Rationale

The city has to prepare the re-certification information for approval by FEMA in order to have the levees and floodwall re-certified and accredited by FEMA. This project is in coordination with the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	822	350	300	50	-	-	-	-	-	1,522
Project Management	-	20	20	20	20	20	20	20	-	140
Major Maintenance	-	-	-	-	-	50	50	50	-	150
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	2,500	1,000	510	-	-	-	4,010
Total Expenditures	**822**	**370**	**320**	**2,570**	**1,020**	**580**	**70**	**70**	**-**	**5,822**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	343	370	320	2,570	1,020	580	70	70	-	5,343
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	479	-	-	-	-	-	-	-	-	479
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**822**	**370**	**320**	**2,570**	**1,020**	**580**	**70**	**70**	**-**	**5,822**
Project Funding Status:										
Secured	822	370	320	2,570	1,020	580	70	70	-	5,822
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**822**	**370**	**320**	**2,570**	**1,020**	**580**	**70**	**70**	**-**	**5,822**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Heather Downs Detention Pond Retrofit	**Priority Number:**	7
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

The project will retrofit a city-owned detention facility in the Heather Downs residential development to be a combined detention and wet pond stormwater facility. This stormwater facility will provide flow control and additional basic water quality treatment to remove pollutants from streets and other pollution generating surfaces within a 30-acre drainage basin. The existing detention pond is located at the intersection of Union Avenue SE and SE 4th Street and is in the Maplewood Creek sub basin to the Cedar River. The design of this project was partially funded by an Ecology Stormwater Financial Assistance Program grant in the amount of $93,000 that was awarded in 2018. Construction will be partially funded by a King County Waterworks Grant that was awarded in 2017 in the amount of $70,000 and another Ecology Stormwater Financial Assistance Program grant in the amount of $230,250. Project planning and design was completed in 2020 with construction planned for 2021.

Rationale

The improved facility will remove stormwater runoff pollutants to improve water quality in the Maplewood Creek Sub basin and the Cedar River. This project supports the city's goals of promoting public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	137	175	-	-	-	-	-	-	-	312
Project Management	-	33	50	-	-	-	-	-	-	83
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	750	-	-	-	-	-	-	750
Total Expenditures	**137**	**208**	**800**	**-**	**-**	**-**	**-**	**-**	**-**	**1,145**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	78	15	70	-	-	-	-	-	-	163
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	59	193	730	-	-	-	-	-	-	982
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**137**	**208**	**800**	**-**	**-**	**-**	**-**	**-**	**-**	**1,145**
Project Funding Status:										
Secured	137	208	800	-	-	-	-	-	-	1,145
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**137**	**208**	**800**	**-**	**-**	**-**	**-**	**-**	**-**	**1,145**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Stormwater Facility Retrofit Study	**Priority Number:**	8
Project Category:	Planning		
Status:	Previously Approved		

Description and Scope

The purpose of the Stormwater Facility Retrofit Study is to identify, rank, and prioritize water quality treatment retrofits that can be feasibly made to the city's publicly maintained flow control facilities, mainly detention ponds, vaults and tanks. These facilities reduce peak stormwater flows from impervious surfaces, but do not provide any runoff treatment in areas that were developed prior to implementation of water quality standards. This study will assess all forty nine (49) flow control facilities with no treatment component that discharge untreated runoff to the nearest waterbody. The identified projects will then be evaluated, ranked and prioritized as potential projects for future water quality treatment grants. Conceptual designs and cost estimates of the three highest-priority potential future projects will be developed for incorporation into the Surface Water Utility's Capital Improvement Plan. This study will begin in 2020 and conclude in 2021.

Rationale

This study identifies opportunities to retrofit flow control facilities with water quality treatment and hence, it ultimately aims to protect and restore water quality in the waters of the state by reducing the discharge of untreated stormwater from existing infrastructure and development. It supports the city's goal of increasing quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	50	200	-	-	-	-	-	-	250
Project Management	-	25	25	-	-	-	-	-	-	50
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**-**	**75**	**225**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	38	150	-	-	-	-	-	-	188
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	38	75	-	-	-	-	-	-	113
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**75**	**225**	**-**	**-**	**-**	**-**	**-**	**-**	**300**
Project Funding Status:										
Secured	-	75	225	-	-	-	-	-	-	300
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**-**	**75**	**225**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Burnett Ave S and Williams Ave S Water Quality Retrofit Project	**Priority Number:**	9
Project Category:	Development		
Status:	Previoulsy Approved		

Description and Scope

This projects adds drainage improvements and water quality retrofits to the Burnett Avenue S and Williams Avenue S storm water system which discharges directly to the Cedar River, a waterbody listed on the Department of Ecology's 303(d) under multiple categories of impairment. The need, to upsize the storm system, was identified through the Downtown Utilities Improvement Project. Water quality retrofits, paired with the drainage improvements, will provide treatment to runoff from Williams Ave S and Burnett Ave S north of S 2nd St. The design of the water quality treatment retrofits in this project is funded by a Department of Ecology Storm Water Quality Grant. The design effort will start in 2020 and will be completed by January 2023. Subsequently, a construction grant application will be submitted to Ecology in fall 2023 and construction will take place in 2025 if the grant application is successful.

Rationale

This project includes drainage improvements to reduce the risk of flooding and water quality retrofits to treat stormwater runoff along Williams Ave S and Wells Ave S. It supports the city's goal of protecting public safety and increasing quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	2	20	215	203	-	-	-	-	-	440
Project Management	-	10	10	10	-	-	-	-	-	30
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**2**	**30**	**225**	**213**	**-**	**-**	**-**	**-**	**-**	**470**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	20	150	108	-	-	-	-	-	278
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	2	10	75	105	-	-	-	-	-	192
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**2**	**30**	**225**	**213**	**-**	**-**	**-**	**-**	**-**	**470**
Project Funding Status:										
Secured	2	30	225	213	-	-	-	-	-	470
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**2**	**30**	**225**	**213**	**-**	**-**	**-**	**-**	**-**	**470**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	SE 172nd St and 125th Ave N Storm System Improvement Project	**Priority Number:**	10
Project Category:	Development		
Status:	Previously Approved		

Description and Scope

The project includes the design and permitting of storm system improvements that include green stormwater infrastructure improvements of bio retention facilities and pervious sidewalks to provide water quality treatment for the street stormwater runoff and flow reduction. The project is funded by a $250,000 Ecology Stormwater Financial Assistance Program grant that was awarded in 2018. The project design started in 2019 and will be completed in 2020. The city is applying for another Ecology grant to fund the construction of the proposed improvements in fall 2020. Construction will be planned once the city is notified of the outcome of the construction grant application, but it is estimated to take place in 2024.

Rationale

The project will address a street flooding problem and improve storm system conveyance capacity of existing drainage systems along 125th Avenue SE, 124th Avenue SE, 123rd Avenue SE, 122nd Avenue SE, and SE 172nd Street. This project supports the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	207	213	-	-	-	-	-	-	-	420
Project Management	-	20	20	-	-	-	-	-	-	40
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	1,500	1,500	-	-	3,000
Total Expenditures	**207**	**233**	**20**	**-**	**-**	**1,500**	**1,500**	**-**	**-**	**3,460**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	141	217	-	-	-	-	-	-	-	359
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	66	15	20	-	-	1,500	1,500	-	-	3,101
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**207**	**233**	**20**	**-**	**-**	**1,500**	**1,500**	**-**	**-**	**3,460**
Project Funding Status:										
Secured	207	233	20	-	-	-	-	-	-	460
Anticipated*	-	-	-	-	-	1,500	1,500	-	-	3,000
Total Project Funding	**207**	**233**	**20**	**-**	**-**	**1,500**	**1,500**	**-**	**-**	**3,460**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	SW 23rd Street Drainage and Fish Passage Improvements	**Priority Number:**	11
Project Category:	Maintenance and Preservatiion		
Status:	New Request		

Description and Scope

Panther Creek flows into the SW 23rd St channel prior to connecting into Springbrook Creek. The hydraulic capacity of this channel is reduced due to vegetation growth and due to culverts set below the grade of the channel at East Valley Road and Lind Ave SW. The invert elevations of the culverts create a submerged condition which impairs both flow and fish passage. Channel improvements are needed along with culvert replacements to ensure adequate hydraulic connectivity along Panther Creek from SR-167 to Springbrook Creek. Furthermore, WSDOT approached the City in 2020 with a proposal to connect Rolling Hills Creek to the Panther Creek channel at SW 23rd St, to meet their fish passage injunction obligation by 2030. Connecting Rolling Hills Creek into the SW 23rd St channel would require further upsizing of the culverts and further channel improvements. The Utility will collaborate with WSDOT on this project. Planning and hydraulic modeling would be completed by 2023, and design would be completed by 2025, with construction to follow in 2026. The funding programmed for the project is only the Utility's estimated share of the overall project cost.

Rationale

This project presents an opportunity to partner with WSDOT and share the cost of hydraulic and fish passage improvements to Panther Creek, which would benefit both the City and the State of Washington. It supports the city's goals of protecting public safety and increasing quality of life, and it promotes interagency cooperation.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	300	200	100	-	-	-	-	600
Project Management	-	-	50	50	50	20	10	-	-	180
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	500	500	-	1,000
Total Expenditures	**-**	**-**	**350**	**250**	**150**	**20**	**510**	**500**	**-**	**1,780**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	350	250	150	20	510	500	-	1,780
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**-**	**350**	**250**	**150**	**20**	**510**	**500**	**-**	**1,780**
Project Funding Status:										
Secured	-	-	350	250	-	-	-	-	-	600
Anticipated*	-	-	-	-	150	20	510	500	-	1,180
Total Project Funding	**-**	**-**	**350**	**250**	**150**	**20**	**510**	**500**	**-**	**1,780**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Maplewood Creek Sedimentation Facility Maintenance	**Priority Number:**	12
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

The Maplewood Creek Sedimentation Facility is located on the Maplewood Golf Course and traps sediment that is transported downstream by Maplewood Creek. The facility prevents the sediment from being deposited on the golf course during large storms and reduces flooding of the golf course and SR-169. The funding is programmed for project management, permitting, and construction to routinely remove the accumulated sediment from the facility. The facility was constructed in 1996 in conjunction with a fish passage channel across the Maplewood Golf Course to the Cedar River. A fish ladder was constructed as part of the facility to allow upstream fish passage. The accumulated sediment in the facility needs to be removed on a yearly basis, depending upon flood events and the rate of sediment accumulation in the facility.

Rationale

The sediment will be removed from the facility in the summer of 2020 and annually thereafter, as needed. This project supports the city's goals of promoting public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	20	10	10	10	10	10	10	-	80
Major Maintenance	553	-	-	-	-	-	-	-	-	553
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	75	85	85	85	90	90	90	-	600
Total Expenditures	**553**	**95**	**95**	**95**	**95**	**100**	**100**	**100**	**-**	**1,233**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	21	-	-	-	-	-	-	-	-	21
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	532	95	95	95	95	100	100	100	-	1,212
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**553**	**95**	**95**	**95**	**95**	**100**	**100**	**100**	**-**	**1,233**
Project Funding Status:										
Secured	553	95	95	95	-	-	-	-	-	838
Anticipated*	-	-	-	-	95	100	100	100	-	395
Total Project Funding	**553**	**95**	**95**	**95**	**95**	**100**	**100**	**100**	**-**	**1,233**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Madsen Creek Sedimentation Cleaning	**Priority Number:**	13
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

The Madsen Creek Sedimentation Facility was originally constructed by King County to control sediment resulting from erosion of steep slopes in the Madsen Creek ravine due to increased upstream stormwater runoff from new development projects. The facility is located on the New Life Church property that was annexed into the city as part of the New Life-Aqua Barn annexation (A-07-001) in June of 2008. Approximately 800 cubic yards of sediment has to be removed from the facility annually to control the sediment that is being deposited from the upstream area into the facility in order to maintain its proper operation. The accumulated sediment in the facility needs to be removed on a yearly basis, depending upon flood events and the rate of sediment accumulation in the facility.

Rationale

The maintenance of the facility is planned to be completed in the summer of 2020 and annually thereafter, as needed. This project supports the city's goals of promoting public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	10	10	10	10	10	10	10	-	70
Major Maintenance	377	-	-	-	-	-	-	-	-	377
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	74	65	65	65	70	70	70	-	479
Total Expenditures	**377**	**84**	**75**	**75**	**75**	**80**	**80**	**80**	**-**	**926**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	377	84	75	75	75	80	80	80	-	926
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**377**	**84**	**75**	**75**	**75**	**80**	**80**	**80**	**-**	**926**
Project Funding Status:										
Secured	377	84	75	75	-	-	-	-	-	611
Anticipated*	-	-	-	-	75	80	80	80	-	315
Total Project Funding	**377**	**84**	**75**	**75**	**75**	**80**	**80**	**80**	**-**	**926**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Rainier Ave and Oakesdale Ave Pump Station Upgrades	**Priority Number:**	14
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

This project consists of increasing the level of flood protection of the Rainier and Oakesdale pump stations through the addition of on-site permanent emergency generators. The Rainier Ave pump station is 50-years old and was inherited from WSDOT but it serves a critical role of protecting Rainier Ave S from flooding along the sag point underneath the BNSF railroad crossing. Permanent emergency generators would increase the level of protection from flooding along Rainier Ave N and Oaksdale Avenue during thunderstorm events or disasters that result in loss of power supply. This project started with site assessments and evaluation of alternatives to site the generators and provide new control panels. Site constraints at both pump stations will likely require the city to obtain permanent easements from adjacent properties. This phase is expected to be completed in 2020. The design of the improvements is expected to be completed in 2021, and construction is anticipated in 2022.

Rationale

This program provides us with funding to upgrade critical pump stations and reduce the risk of flooding on major city arterials in a disaster event or thunderstorm. This project supports the city's goals of promoting public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	125	65	127	-	-	-	-	-	-	318
Project Management	-	15	15	25	-	-	-	-	-	55
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	350	-	-	-	-	-	350
Total Expenditures	**125**	**80**	**142**	**375**	**-**	**-**	**-**	**-**	**-**	**723**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	125	80	142	375	-	-	-	-	-	723
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**125**	**80**	**142**	**375**	**-**	**-**	**-**	**-**	**-**	**723**
Project Funding Status:										
Secured	125	80	142	375	-	-	-	-	-	723
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**125**	**80**	**142**	**375**	**-**	**-**	**-**	**-**	**-**	**723**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Springbrook Creek Wetland and Habitat Mitigation Bank	**Priority Number:**	15
Project Category:	Development		
Status:	Previously Approved		

Description and Scope

The project consisted of developing a wetland mitigation bank, in partnership with WSDOT, on approximately 130 total acres in the valley adjacent to Springbrook Creek. The wetland mitigation bank is an alternative to onsite mitigation imposed onto private and public projects (city of Renton or WSDOT) for wetland impacts that require mitigation. The newly created wetlands and the enhanced existing wetlands accomplished by the project increased flood storage, improves water quality and enhance fish and wildlife habitat associated with Springbrook Creek. A total of 43.61 wetland mitigation bank credits have been released to date out of the total of 45 credits possible. The city's share of wetland credits in is 20.55 credits. Projects that have wetland impacts can purchase credits rather than constructing onsite mitigation. This will help streamline the local, state and federal permitting process associated with filling wetlands, reduces project costs and allows private developers to develop more area on their property, if it contains wetlands. This will result in higher assess property values and create more jobs, which will benefit the city overall financially. The project construction was completed in 2009 with a following 10-year monitoring period to verify whether performance standards have been met to allow for the release of wetland mitigation credits. Funds programmed in the budget will be used for long term maintenance to meet and maintain performance metrics.

Rationale

This provides funding for the city's share of plant establishment and monitoring costs necessary to meet performance standards to allow the release of mitigation credits. This project supports the city's goals of economic development and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	70	20	25	-	-	-	-	-	115
Major Maintenance	308	-	20	25	-	-	-	-	-	353
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	454	-	-	-	-	-	-	-	-	454
Total Expenditures	**762**	**70**	**40**	**50**	**-**	**-**	**-**	**-**	**-**	**922**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	22	-	-	-	-	-	-	-	-	22
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	739	70	40	50	-	-	-	-	-	900
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**762**	**70**	**40**	**50**	**-**	**-**	**-**	**-**	**-**	**922**
Project Funding Status:										
Secured	762	70	40	50	-	-	-	-	-	922
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**762**	**70**	**40**	**50**	**-**	**-**	**-**	**-**	**-**	**922**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Stormwater Facility Fencing Project	**Priority Number:**	16
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

This project consists of constructing fences around existing stormwater detention/retention and water quality treatment facilities that the Surface Water Utility owns and maintains. Stormwater facilities that were constructed with side slopes that were not steep (3:1 or flatter side slopes), were not required to have fences by previous surface water design standards. The city's surface water design standards have been updated to require all future constructed stormwater facilities to be fenced. Many of the stormwater facilities that are not fenced were constructed in unincorporated King County and were previously owned and maintained by the county. When the city annexed these areas, the Surface Water Utility assumed ownership and maintenance of the facilities. A total of 23 stormwater facilities have been fenced since the start of this project. There are currently 22 stormwater facilities that still need fencing and the City expects to complete this effort within six years. This number may increase due to annexations and as the Utility takes over maintenance of stormwater facilities from homeowners associations as part of the stormwater facility transfer program.

Rationale

This project will provide funding to install fences over time on stormwater facilities to protect residents and to limit liability associated with these facilities being unfenced. This project supports the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	5	10	10	10	10	10	10	-	65
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	485	-	130	130	90	90	90	90	-	1,105
Total Expenditures	**485**	**5**	**140**	**140**	**100**	**100**	**100**	**100**	**-**	**1,170**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	485	5	140	140	100	100	100	100	-	1,170
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**485**	**5**	**140**	**140**	**100**	**100**	**100**	**100**	**-**	**1,170**
Project Funding Status:										
Secured	485	5	140	140	-	-	-	-	-	770
Anticipated*	-	-	-	-	100	100	100	100	-	400
Total Project Funding	**485**	**5**	**140**	**140**	**100**	**100**	**100**	**100**	**-**	**1,170**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Small Drainage Projects Program	**Priority Number:**	17
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

This project consists of designing and constructing solutions to local flooding problems, minor storm system maintenance, and replacements that are relatively simple to construct by the city's maintenance crews or contractors. The Surface Water Utility identifies these projects on an annual basis through problem identification, citizen complaints, and input from the maintenance section. In 2021, this program will fund the replacement of culverts along Talbot Road S.

Rationale

To provide funding for small drainage projects that will replace failing corrugated metal pipes and other storm systems, as needed. The projects selected will be in support of the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	20	50	50	50	50	50	50	-	320
Major Maintenance	1,589	-	-	-	-	-	-	-	-	1,589
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	436	80	534	150	350	350	350	350	-	2,600
Total Expenditures	**2,024**	**100**	**584**	**200**	**400**	**400**	**400**	**400**	**-**	**4,508**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	2,024	100	584	200	400	400	400	400	-	4,508
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**2,024**	**100**	**584**	**200**	**400**	**400**	**400**	**400**	**-**	**4,508**
Project Funding Status:										
Secured	2,024	100	584	200	-	-	-	-	-	2,908
Anticipated*	-	-	-	-	400	400	400	400	-	1,600
Total Project Funding	**2,024**	**100**	**584**	**200**	**400**	**400**	**400**	**400**	**-**	**4,508**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Surface Water Utility GIS	**Priority Number:**	18
Project Category:	Regulatory		
Status:	Previously Approved		

Description and Scope

This annual program is to update our storm system inventory maps and database with new storm system infrastructure that is constructed or added by private development projects, public projects, and annexations. The information is integrated into the city's Geographic Information System (GIS). The GIS data is used to track maintenance and inspection of public and private stormwater management systems and facilities for operation and maintenance purposes. The data is also used to update long-range asset management programs. The updating and adding newly constructed storm systems to the Surface Water Utility GIS is a requirement of the NPDES Phase II Municipal Stormwater permit.

Rationale

This annual program provides funding to maintain an accurate inventory of the city's storm systems for use by the Surface Water Utility for maintenance, planning and engineering functions, other city departments, and the public. This program meets regulatory requirements and supports the city's goals of economic development and public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	928	125	110	110	115	115	115	115	-	1,734
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**928**	**125**	**110**	**110**	**115**	**115**	**115**	**115**	**-**	**1,734**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	928	125	110	110	115	115	115	115	-	1,734
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**928**	**125**	**110**	**110**	**115**	**115**	**115**	**115**	**-**	**1,734**
Project Funding Status:										
Secured	928	125	110	110	-	-	-	-	-	1,274
Anticipated*	-	-	-	-	115	115	115	115	-	460
Total Project Funding	**928**	**125**	**110**	**110**	**115**	**115**	**115**	**115**	**-**	**1,734**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Talbot Hill Area Mosquito Abatement Program	**Priority Number:**	19
Project Category:	Regulatory		
Status:	Previously Approved		

Description and Scope

The program consists of annually treating upland areas around the Panther Creek Wetlands to control mosquitoes from the wetlands in response to citizen complaints in the Talbot Hill area. This program also funds the annual treatment of city-owned stormwater water quality/flow control facilities in response to the West Nile Virus. It also provides additional funding in the event of a West Nile Virus outbreak occurs and more treatments are advised by the Department of Health.

Rationale

This program provides funding for mosquito abatement in the Talbot Hill area and helps to protect the city against a West Nile Virus outbreak. This program meets regulatory requirements and supports the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	10	5	5	5	5	5	5	-	40
Major Maintenance	532	-	-	-	-	-	-	-	-	532
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	80	80	80	80	85	85	85	-	575
Total Expenditures	**532**	**90**	**85**	**85**	**85**	**90**	**90**	**90**	**-**	**1,147**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	532	90	85	85	85	90	90	90	-	1,147
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**532**	**90**	**85**	**85**	**85**	**90**	**90**	**90**	**-**	**1,147**
Project Funding Status:										
Secured	532	90	85	85	-	-	-	-	-	792
Anticipated*	-	-	-	-	85	90	90	90	-	355
Total Project Funding	**532**	**90**	**85**	**85**	**85**	**90**	**90**	**90**	**-**	**1,147**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	CMP Storm System Replacement Program	**Priority Number:**	20
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

This program consists of assessing the condition of all corrugated metal pipes (CMP) whose diameter is 18 inches or larger, located in high risk areas (i.e. under major roads). Minor deficiencies are typically repaired through coordination with the surface water maintenance section, while replacement projects resulting from significant structural issues (e.g. deterioration of the pipe wall, pipe collapse) require the replacement or rehabilitation of the pipe and may require hiring a contractor. This program was driven by a failure of a CMP along Rainier Ave S in 2018, which caused a major cavity to form underneath the road, and required an emergency repair project. This program is intended to address deficiencies in CMPs, which are more susceptible to deterioration than plastic and concrete pipes, before a catastrophic failure becomes imminent. The Surface Water Utility is currently identifying deficiencies across its CMPs. Expenditures beyond 2023 will be estimated once the required pipe rehabilitation and replacement projects are determined and prioritized.

Rationale

This program repairs and replaces corrugated metal pipes showing signs of deterioration in high risk areas to avoid catastrophic failures and emergency repairs. This project supports the city's goal of protecting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	10	-	200	50	-	-	-	-	-	260
Project Management	-	10	10	10	-	-	-	-	-	30
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	310	-	-	-	-	-	310
Total Expenditures	**10**	**10**	**210**	**370**	**-**	**-**	**-**	**-**	**-**	**600**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	10	10	210	370	-	-	-	-	-	600
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**10**	**10**	**210**	**370**	**-**	**-**	**-**	**-**	**-**	**600**
Project Funding Status:										
Secured	10	10	210	370	-	-	-	-	-	600
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**10**	**10**	**210**	**370**	**-**	**-**	**-**	**-**	**-**	**600**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Hardie Ave SW-SW 7th St Storm System Improvements	**Priority Number:**	21
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

The planning, design and permitting of the first two phases of the project, which included installing approximately 3,600 linear feet of new 60-inch storm system in SW 7th Street between Lind Avenue NE and Naches Avenue SW has been completed. The third phase of the project includes the replacement of approximately 700 linear feet of 36 inch to 48-inch storm system, between Hardie Avenue SW to SW 7th Street, with a new 60-inch storm system. Phase 3 project design will start in 2022 and will carry the 30% design completed in 2012 to final design. Construction is planned for 2024.

Rationale

This project supports the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	-	-	-	400	-	-	-	-	-	400
Project Management	-	2	-	50	50	25	-	-	-	127
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	7,471	-	-	-	1,100	110	-	-	-	8,681
Total Expenditures	**7,471**	**2**	**-**	**450**	**1,150**	**135**	**-**	**-**	**-**	**9,208**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	278	-	-	-	-	-	-	-	-	278
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	7,193	2	-	450	1,150	135	-	-	-	8,930
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**7,471**	**2**	**-**	**450**	**1,150**	**135**	**-**	**-**	**-**	**9,208**
Project Funding Status:										
Secured	7,471	2	-	450	-	-	-	-	-	7,923
Anticipated*	-	-	-	-	1,150	135	-	-	-	1,285
Total Project Funding	**7,471**	**2**	**-**	**450**	**1,150**	**135**	**-**	**-**	**-**	**9,208**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

Note: This cost estimate is for the entire project from Naches Avenue to Hardie Avenue. The remaining portion of this project that needs to be constructed is from Hardie Ave to SW 7th St and its design and construction will amount to $1,735,000 based on the 6-year CIP.

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	NE Sunset Blvd & Union Ave NE Storm System Improvements	**Priority Number:**	22
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

Sections of Honey Creek between Union Avenue NE and Duvall Avenue NE contains an old, closed pipe system that has insufficient capacity and is located in parking lots, under buildings, and across public right-of-ways. Land use changes in the upstream basin area have increased surface water runoff and could cause flooding due to the lack of capacity in the piped sections. Due to the age of the piped section, the structural condition of the storm system is unknown. This project will consist of developing an accurate base map of the storm system location; inspecting its structural condition; developing a basin hydrologic and hydraulic model to perform capacity analysis of the existing system; and developing conceptual design solutions. The selected conceptual design solution will be used for the final design, permitting, and construction of the storm system improvements. The improved conveyance system will have sufficient capacity to convey future land use condition runoff and meet city capacity design standards to help prevent flooding and the structural failure of the storm system.

Rationale

The project will help protect businesses, residential areas and important transportation corridors (SR-900) from flooding. This project is in coordination with the city's goals of economic development and promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	-	-	-	-	-	300	200	-	-	500
Project Management	-	-	-	-	-	50	50	50	-	150
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	1,600	-	1,600
Total Expenditures	**-**	**-**	**-**	**-**	**-**	**350**	**250**	**1,650**	**-**	**2,250**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	350	250	1,650	-	2,250
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**-**	**-**	**-**	**-**	**350**	**250**	**1,650**	**-**	**2,250**
Project Funding Status:										
Secured	-	-	-	-	-	-	-	-	-	-
Anticipated*	-	-	-	-	-	350	250	1,650	-	2,250
Total Project Funding	**-**	**-**	**-**	**-**	**-**	**350**	**250**	**1,650**	**-**	**2,250**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	SW 43rd Street/Lind Ave SW Storm System Improvements	**Priority Number:**	23
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

The project includes constructing approximately 3,500 feet of a new 84-inch diameter storm system along Lind Avenue SW, from SW 43rd Street to SW 39th Street, and then along SW 39th Street from Lind Avenue to a new outfall into Springbrook Creek. The estimated total project cost is $4 million. Project design and permitting is programmed to start in 2024 with construction planned for 2026.

Rationale

This project is in coordination with the city's goals of economic development, public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	250	450	-	-	700
Project Management	-	-	-	-	-	50	50	50	-	150
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	3,150	-	3,150
Total Expenditures	**-**	**-**	**-**	**-**	**-**	**300**	**500**	**3,200**	**-**	**4,000**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	300	500	3,200	-	4,000
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**-**	**-**	**-**	**-**	**300**	**500**	**3,200**	**-**	**4,000**
Project Funding Status:										
Secured	-	-	-	-	-	-	-	-	-	-
Anticipated*	-	-	-	-	-	300	500	3,200	-	4,000
Total Project Funding	**-**	**-**	**-**	**-**	**-**	**300**	**500**	**3,200**	**-**	**4,000**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	East Valley Road Storm System Improvements	**Priority Number:**	24
Project Category:	Correcting Existing Deficiencies		
Status:	Previously Approved		

Description and Scope

The project includes replacing the existing storm system along the East Valley Road between SW 29th Street and SW 23rd Street with a new 48-inch storm system. The new storm system will discharge into the SW 23rd Street channel, which flows to Springbrook Creek. The project schedule and improvements may change depending upon the schedule and scope of improvements planned by WSDOT and the city as part of the SW 23rd Street Drainage and Fish Passage Improvements.

Rationale

This project is in coordination with the city's goals of economic development and promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	-	350	100	-	450
Project Management	-	-	-	-	-	-	50	50	-	100
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**-**	**-**	**-**	**-**	**-**	**-**	**400**	**150**	**-**	**550**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	-	400	150	-	550
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**-**	**-**	**-**	**-**	**-**	**400**	**150**	**-**	**550**
Project Funding Status:										
Secured	-	-	-	-	-	-	-	-	-	-
Anticipated*	-	-	-	-	-	-	400	150	-	550
Total Project Funding	**-**	**-**	**-**	**-**	**-**	**-**	**400**	**150**	**-**	**550**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Surface Water Utility System Plan	**Priority Number:**	25
Project Category:	Regulatory		
Status:	Previously Approved		

Description and Scope

The Surface Water Utility System Master Plan is a comprehensive management plan of the city's natural and constructed surface water systems. The plan identifies current and future resource requirements, policies, regulatory requirements, and design criteria associated with the management of surface water runoff within the city. The plan defines maintenance and operational programs along with future capital investment programs needed to solve flooding, water quality, and fish habitat problems in response to existing problems, future growth, and regulatory requirements related to the NPDES Phase II Permit and the Endangered Species Act. A draft Surface Water Utility System Master Plan is being prepared for review and approval by Renton City Council in 2020. Future funding is anticipated in 2025 to update this plan after the issuance of the 2024 National Pollutant Discharge Elimination System (NPDES) permit which is expected to create a new set of challenges for the Surface Water Utility.

Rationale

This plan update is a regulatory requirement as well as a guiding document for the Surface Water Utility . This plan supports the city's goals of economic development, public safety, and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	298	100	-	-	-	-	120	-	-	518
Project Management	-	72	-	-	-	-	-	-	-	72
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**298**	**172**	**-**	**-**	**-**	**-**	**120**	**-**	**-**	**590**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	298	172	-	-	-	-	120	-	-	590
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**298**	**172**	**-**	**-**	**-**	**-**	**120**	**-**	**-**	**590**
Project Funding Status:										
Secured	298	172	-	-	-	-	-	-	-	470
Anticipated*	-	-	-	-	-	-	120	-	-	120
Total Project Funding	**298**	**172**	**-**	**-**	**-**	**-**	**120**	**-**	**-**	**590**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	-	-	-	-	-	-	-	-	-	-

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Ginger Creek/Cascade Park Basin Plan	**Priority Number:**	26
Project Category:	Planning		
Status:	Previously Approved		

Description and Scope

Ginger Creek is a tributary to the Cedar River, but sections of the stream have been placed in large pipes sections (72-inch CMP) that are old and located in Tiffany Park, Cascade Park and residential neighborhoods. The existing pipe system has surcharged during significant storm events causing flooding in Cascade Park. After the city annexed the Benson Hill area, the pipe systems and open channel were maintained to reduce sediment buildup between SE 160th Street and the Cedar River Pipeline ROW, which has reduced the occurrence of flooding. However, the project is needed to evaluate conditions of the existing pipes sections due to their age and the capacity of the existing conveyance system. The basin plan will involve a complete hydrologic and hydraulic analysis of the basin for future land use runoff conditions and the evaluation of the conveyance system conditions to identify long-term capital investment needs to prevent future flooding and to protect public safety. In addition, the basin plan will evaluate opportunities for incorporating environmental and other multi-purpose benefits.

Rationale

This provides funding for a study to determine the primary cause of the problem, evaluate alternative solutions and develop a design of the preferred solution. This project supports the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	-	-	-	-	300	-	-	-	300
Project Management	-	-	-	-	-	50	-	-	-	50
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**-**	**-**	**-**	**-**	**-**	**350**	**-**	**-**	**-**	**350**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	350	-	-	-	350
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**-**	**-**	**-**	**-**	**350**	**-**	**-**	**-**	**350**
Project Funding Status:										
Secured	-	-	-	-	-	-	-	-	-	-
Anticipated*	-	-	-	-	-	350	-	-	-	350
Total Project Funding	**-**	**-**	**-**	**-**	**-**	**350**	**-**	**-**	**-**	**350**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Cedar River Flood Risk Reduction Feasibility Study	**Priority Number:**	27
Project Category:	Planning		
Status:	Previously Funded		

Description and Scope

The Lower Cedar River Flood Risk Reduction Feasibility Study intends to assess the feasibility of improving the level of flood protection and evaluate future flood risk mitigation projects along the Cedar River from River Mile 0 to River Mile 2.7. This feasibility study would identify potential measures or construction projects that would increase resiliency to floods greater than the 100-year event and identify the most feasible level of flood protection that could be achieved along this reach of the Cedar River, a critical area of development and economic activity within King County. The King County Flood Control Zone District (KCFCZD) placed the Feasibility Study on its 6-year Capital Improvement Project funding plan in 2018 and a funding agreement was executed with the City in April 2020. This study is expected to begin in 2020 and be completed by 2023.

Rationale

This study evaluates the feasibility of increasing the level of flood protection along the Lower Cedar River, and reducing the risk of flooding to the surrounding area in Renton. It supports the city's goal of protecting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	10	200	200	60	-	-	-	-	470
Project Management	-	5	10	10	5	-	-	-	-	30
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**-**	**15**	**210**	**210**	**65**	**-**	**-**	**-**	**-**	**500**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	15	210	210	65	-	-	-	-	500
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	-	-	-	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**15**	**210**	**210**	**65**	**-**	**-**	**-**	**-**	**500**
Project Funding Status:										
Secured	-	15	210	210	65	-	-	-	-	500
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**-**	**15**	**210**	**210**	**65**	**-**	**-**	**-**	**-**	**500**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	WSDOT Limited Access ROW Runoff Impact Mitigation Program	**Priority Number:**	28
Project Category:	Regulatory		
Status:	Previously Approved		

Description and Scope

The city currently charges surface water fees to WSDOT for the SR-167 and I-405 right of way within Renton city limits. RCW 90.03.525 allows local municipalities to charge stormwater fees for state limited access highways and was modified when Senate bill 5505 was passed in 2019. The bill clarified the objectives of the Stormwater Management Funding and Implementation Program for highway related runoff problems and required charges paid by the state to local jurisdictions to be used solely for stormwater control facilities that directly reduce state highway runoff impacts or implementation of best management practices that will reduce the need for such facilities. A plan and progress report are required to be submitted annually so that WSDOT pays their stormwater fee to the City. This program consists of studies and improvements to city facilities downstream of limited access right-of-way implemented to remain in compliance with RCW 90.03.525.

Rationale

This program enables the city to keep collecting surface water fees from WSDOT for limited access right of way, and prioritizes improvements beneficial to both the City and WSDOT. It supports the city's goals of public safety and quality of life.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Expenditures
Expenditures:										
Planning/Design	-	85	85	85	-	-	-	-	-	255
Project Management	-	11	11	11	-	-	-	-	-	34
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Total Expenditures	**-**	**96**	**96**	**96**	**-**	**-**	**-**	**-**	**-**	**289**

		ESTIMATED								
	Actual through 12/31/19	2020	2021	2022	2023	2024	2025	2026	Thereafter	Total Project Resources
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	-	-	-	-	-	-	-	-	-	-
Surfacewater Collection Fees	-	96	96	96	-	-	-	-	-	289
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**-**	**96**	**96**	**96**	**-**	**-**	**-**	**-**	**-**	**289**
Project Funding Status:										
Secured	-	96	96	96	-	-	-	-	-	289
Anticipated*	-	-	-	-	-	-	-	-	-	-
Total Project Funding	**-**	**96**	**96**	**96**	**-**	**-**	**-**	**-**	**-**	**289**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SURFACE WATER UTILITY CAPITAL INVESTMENT PROGRAM

2021 through 2026 (in thousands of dollars)

Project Title:	Miscellaneous/Emergency Storm Projects	**Priority Number:**	29
Project Category:	Maintenance and Preservation		
Status:	Previously Approved		

Description and Scope

This fund is for unplanned or miscellaneous storm system improvements needed to keep the existing system functional or in response to an opportunity to fix identified system deficiencies in coordination with another project. The funding is also available to respond to system failures (structure failure, pipeline failure, pump station failure) or other emergency response needs during storm events.

Rationale

These funds are used for unplanned projects in response to system failures that need immediate repair or other unplanned storm system improvements, as needed. The projects selected will be in support of the city's goal of promoting public safety.

TOTAL

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Expenditures**
Expenditures:										
Planning/Design	-	-	-	-	-	-	-	-	-	-
Project Management	-	-	-	-	-	-	-	-	-	-
Major Maintenance	-	-	-	-	-	-	-	-	-	-
Land Acquisitions	-	-	-	-	-	-	-	-	-	-
Construction	177	50	50	50	50	50	50	50	-	527
Total Expenditures	**177**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**-**	**527**

		ESTIMATED								
	Actual through 12/31/19	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**Thereafter**	**Total Project Resources**
Resources:										
Mitigation Fees	-	-	-	-	-	-	-	-	-	-
Bond Proceeds (RePmt Funding Src Only)	-	-	-	-	-	-	-	-	-	-
Grants/Contributions	-	-	-	-	-	-	-	-	-	-
Special Assessment District	-	-	-	-	-	-	-	-	-	-
System Development Charges	177	-	-	-	-	-	-	-	-	177
Surfacewater Collection Fees	-	50	50	50	50	50	50	50	-	350
Interest	-	-	-	-	-	-	-	-	-	-
Total Resources	**177**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**-**	**527**
Project Funding Status:										
Secured	177	50	50	50	-	-	-	-	-	327
Anticipated*	-	-	-	-	50	50	50	50	-	200
Total Project Funding	**177**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**-**	**527**

**Expenditures utilizing anticipated funding are not included in the adopted budget.*

Operating Fund Impacts	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**