2026 Stormwater Comprehensive Plan and Rate Study

City of Cosmopolis

Cosmopolis, Washington

June 2, 2026

Certificate of the Engineer

The technical material and data contained in this Stormwater Comprehensive Plan was prepared under the supervision and direction of the undersigned.

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Stormwater Engineer
HDR Engineering, Inc.

Contents

Tables

Figures

Appendices

Abbreviations

AACE	Association for the Advancement of Cost Engineering
B&O	Business and Occupation
BMP	best management practices
CCTV	closed-circuit television
CHI	Computational Hydraulics Inc.
CIP	Capital Improvement Plan
City	City of Cosmopolis
CPI-W	Consumer Price Index for Urban Wage Earners and Clerical Workers
DAHP	Washington State Department of Archaeology and Historic Preservation
Ecology	Washington State Department of Ecology
EPA-SWMM	Environmental Protection Agency-Stormwater Management Model
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
GIS	geospatial information system
HDR	HDR Engineering, Inc.
H&H	hydrologic and hydraulic
HEC-RAS	Hydrologic Engineering Center River Analysis System
ID	identifier
LiDAR	Light Detection and Ranging
MOIP	Multi-Objective Improvement Plan
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OCB	Office of Chehalis Basin
RCW	Revised Code of Washington
R&R	Renewal and replacement
USGS	United States Geological Survey
SWCP	Stormwater Comprehensive Plan
USD	United States dollar
WDFW	Washington State Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WSE	water surface elevation
WWHM	Western Washington Hydrology Model

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Executive Summary

The City of Cosmopolis (City) has developed this Stormwater Comprehensive Plan (SWCP) as a first step in building a long-term roadmap for managing the City's existing stormwater system. Historically, the City has experienced severe flooding driven by several interconnected challenges including low-lying topography, proximity to the Chehalis River, high rainfall, and both aging and undersized stormwater infrastructure. The City is home to approximately 2,300 residents and contains communities which could be defined as overburdened within Washington State: "...minority, low-income, tribal, or indigenous populations or geographic locations in Washington State that potentially experience disproportionate environmental harms and risks [due to frequent flooding]". Historically, the City has operated with a limited budget; the City's 2026 operations and maintenance budget totals $44,391.

In the State of Washington, the Department of Ecology (Ecology) manages municipal stormwater systems under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) program. Due to the size of the City's system, Cosmopolis is not permitted under an MS4 permit; instead, it is managed through a mix of local ordinances, best management practices (BMPs), and voluntary compliance with state stormwater standards.

This SWCP was developed collaboratively by City staff and HDR Engineering, Inc. (HDR) in 2025 and 2026. This is the City's first comprehensive stormwater planning document and is intended to provide an evaluation of the current City stormwater system leveraging staff knowledge, supplemented by hydrologic and hydraulic modeling analyses. Based on the results of these analyses, HDR has developed a 10-year Capital Improvement Plan (CIP) highlighting six major projects, as shown in Table ES-1. Project costs range from approximately $769,000 to $9.0 million per project, reflecting planning-level (Class 5) estimates. Additionally, these six projects were prioritized based on how strongly they address flooding risks, regulatory needs, system limitations, reliability concerns, and environmental improvements.

Table ES-1. Summary of recommended CIP projects

Priority	Project Name	Planned construction year	Project cost
1	Mill Creek Tide Gate Study and Design	2028	$769,300
2	Mill Creek Tide Gate Improvements	2029	$4,172,800
3	Mill Creek Altenau St., H St., and G St. Culvert Crossing Replacement	2030	$8,998,300
4	Mill Creek F St., E St. and C St. Culvert Crossing Replacement	2035	$8,681,600
5	F St. NE of 1st St. Flooding and E St. Outfall Improvements	2036	$1,986,400
6	J St. at 4th St. Flooding and 2nd St. Outfall Improvements	2038	$3,408,700

Project summary sheets for each of these recommended improvement projects have been developed to provide the City with a high-level scope of work for the project along with initial geotechnical, utilities, permits, and real estate and easement considerations. They are provided in Appendix D.

To support the City's ongoing operations and jumpstart capital improvements planning, this SWCP evaluates the utility's financial capacity to determine whether current revenues are sufficient and to identify potential rate adjustments necessary to ensure long-term system sustainability. This financial analysis highlights a structural gap between existing revenues and future costs; the City's current stormwater revenue (~$70,000 annually) is insufficient to support rising operating costs and anticipated capital needs.

The City's current capital funding strategy relies primarily on securing grants to implement major projects to address ongoing flooding issues. While this approach helps limit the need for large rate increases, it introduces risk because grant funding is not guaranteed and often cannot fund capital projects resulting from routine wear and tears of an aging system.

Without adjustments to rates and external grant support, projected costs will exceed revenues, leading to increasing financial deficits over time and growing flooding risks due to system failure. As a result, the City is encouraged to gradually increase rate-funded capital contributions to ensure ongoing system reliability and reduce the risk of costly emergency repairs, while continue applying for grants to fund big-ticket infrastructure upgrades. Results of this financial analysis suggest two primary rate-related changes:

- Consider implementing phased rate increases (5% annually for five years, followed by ~2% annually)
- Consider transitioning to a more equitable rate structure (based on impervious surface area)

In addition to these recommendations, external funding remains a practical supplemental resource for helping the City meet projected revenue needs. This SWCP highlights a variety of grants and loan opportunities for Washington State stormwater utilities. Typically, utilities serving overburdened or disadvantaged communities gain preferential access to funding and more favorable financial terms such as grants, principal forgiveness, and below market interest loans. In collaboration with the nearby Cities of Aberdeen and Hoquiam, Cosmopolis participated in a community analysis to better understand citywide demographics and how the City can establish effective stormwater engagement processes. This analysis is described in Appendix A.

1 Introduction

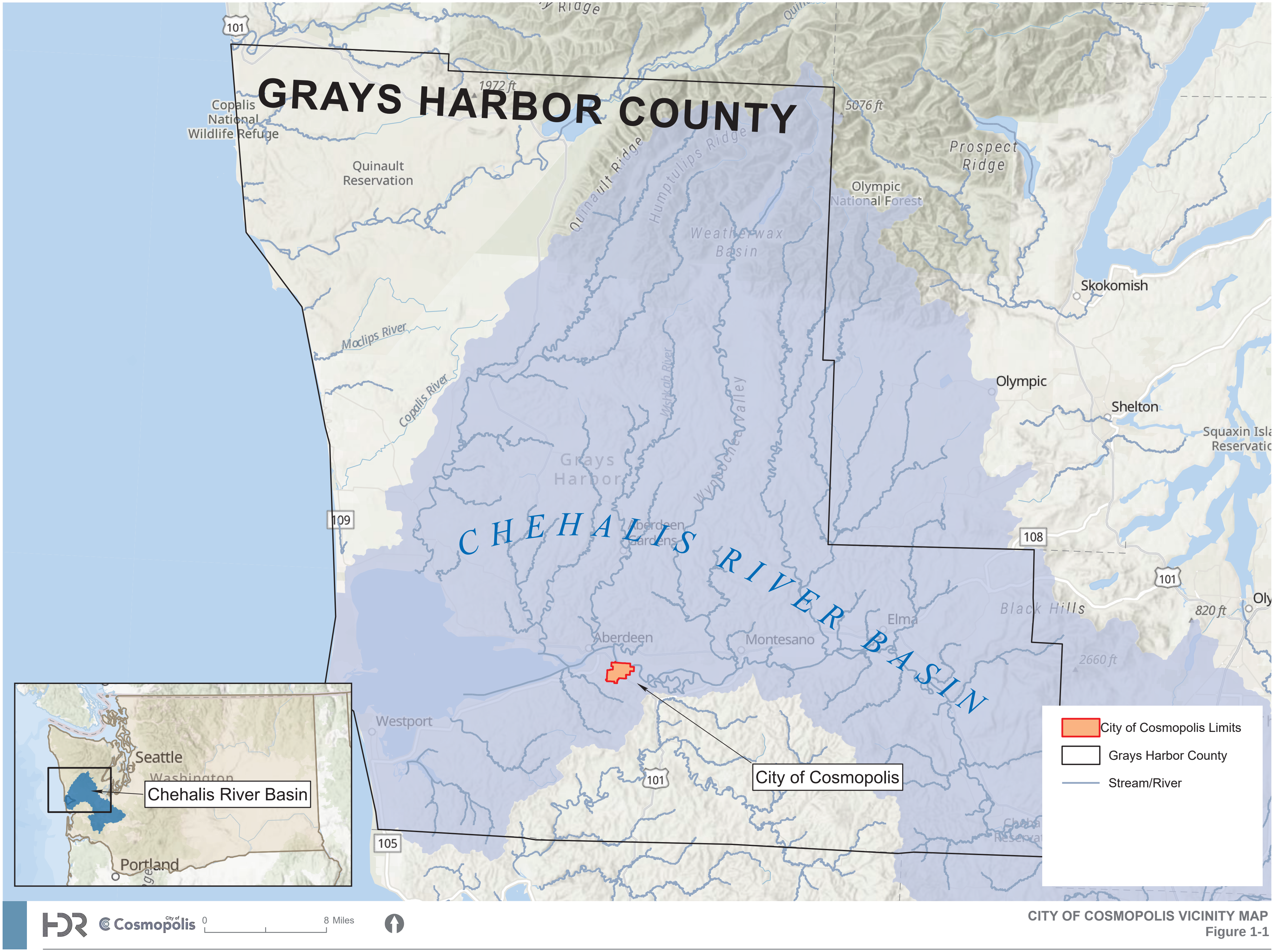
Cosmopolis (City) is a small city located in Grays Harbor County, Washington, on the flat plain of the Chehalis River Valley. The Chehalis River Basin is the second-largest watershed in the state, including more than 3,300 miles of rivers and streams and crossing seven counties, as shown in Figure 1-1. The City operates a stormwater utility to manage, fund, operate, and improve the City's stormwater drainage system.

The City lies on the southern bank of the Chehalis River near its mouth at the head of Grays Harbor, an estuarine bay of the Pacific Ocean. Mill Creek, a short tributary of the Chehalis River, runs through the western part of the City. Historically, significant flooding has occurred within the city limits, and the City has limited capacity to address them. In response, in 2025, the City hired HDR Engineering, Inc. through funding from the Office of Chehalis Basin to develop a Stormwater Comprehensive Plan (SWCP) intended to provide a strategy for managing the stormwater system. This is the City's first comprehensive stormwater planning document.

1.1 Goals and Objectives

The purpose of this SWCP is to advance the City's goals of protecting communities from flooding, maintaining reliable services, and enhancing opportunities for fish passage and recreation. These goals can be achieved by meeting the following five objectives:

1. Review the existing stormwater system and identify study areas to be considered for stormwater planning.
2. Identify overburdened communities within the city limits, evaluate barriers to participation in stormwater management activities, and recommend an inclusive engagement framework.
3. Evaluate the City's existing stormwater infrastructure and its effectiveness in reducing flood risk and improving conditions for fish passage and recreation.
4. Develop a capital investment strategy that addresses identified stormwater challenges and prioritizes these needs into a Capital Improvement Plan (CIP).
5. Prepare a comprehensive rate study that evaluates the full cost of operating and maintaining the existing and expanding stormwater system.



CITY OF COSMOPOLIS VICINITY MAP
Figure 1-1

2 Background

The city's total area is approximately 1.5 square miles, and it is divided into a traditional gridded downtown area and a later-developed suburban residential area southwest of Mill Creek, which runs through the city and discharges into the Chehalis River. U.S. Route 101 is the only major road that goes through the City. According to the 2024 American Community Survey, the City's population is estimated to be 2,202 (U.S. Census Bureau, 2024).

Historically, the area of the city limits was inhabited by the Chehalis Tribe of the lower Chehalis River. After European settlement, the City was incorporated in 1891 and was quickly developed given the geographical advantages for the fur and lumber trades. Over the past century, the Cosmopolis mill, the predecessor of Cosmo Specialty Fibers, contributed significantly to the City's economic growth, but it had also left behind decades of legacy environmental pollutions affecting the City, its communities, and the Chehalis River.

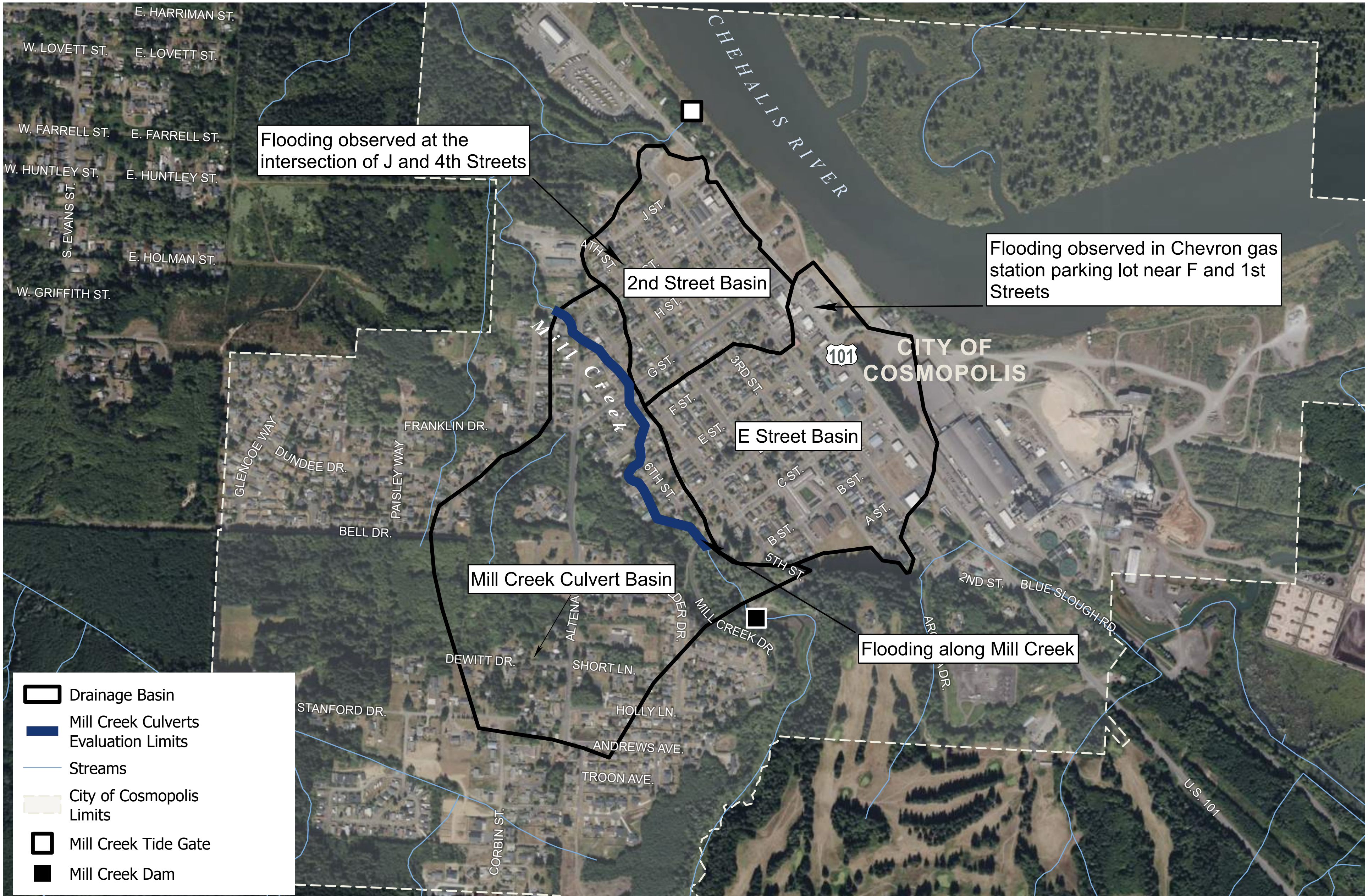
2.1 Geography and Climate

The greater Grays Harbor region is characterized by cool summers and mild winters, and it is affected more by its proximity to the Pacific Ocean than by its distance from the equator. The annual average rainfall is approximately 70 inches with about 10 inches of that occurring as snow. All the stormwater collected within the city limits discharges into the Chehalis River, via either the downtown outfalls or Mill Creek. Like its other neighbors in Grays Harbor County, the low elevations and proximity to the Chehalis River make the City highly susceptible to tidal influences, storm surge, and river flooding. Flooding has long shaped the basin because of its broad, flat topography, and the region has experienced increasingly severe floods in recent decades. Five of the largest recorded floods have occurred in the last 30 years.

2.2 Known Flooding Issues

The study area for this SWCP includes three drainage basins within the City (discussed further in Section 3.1), as shown in Figure 2-1. Across these basins, three primary flooding areas have been identified by City staff and were used to inform the development of this SWCP:

- Along Mill Creek
- Intersection of J and 4th Streets
- Chevron gas station parking lot near F and 1st Streets



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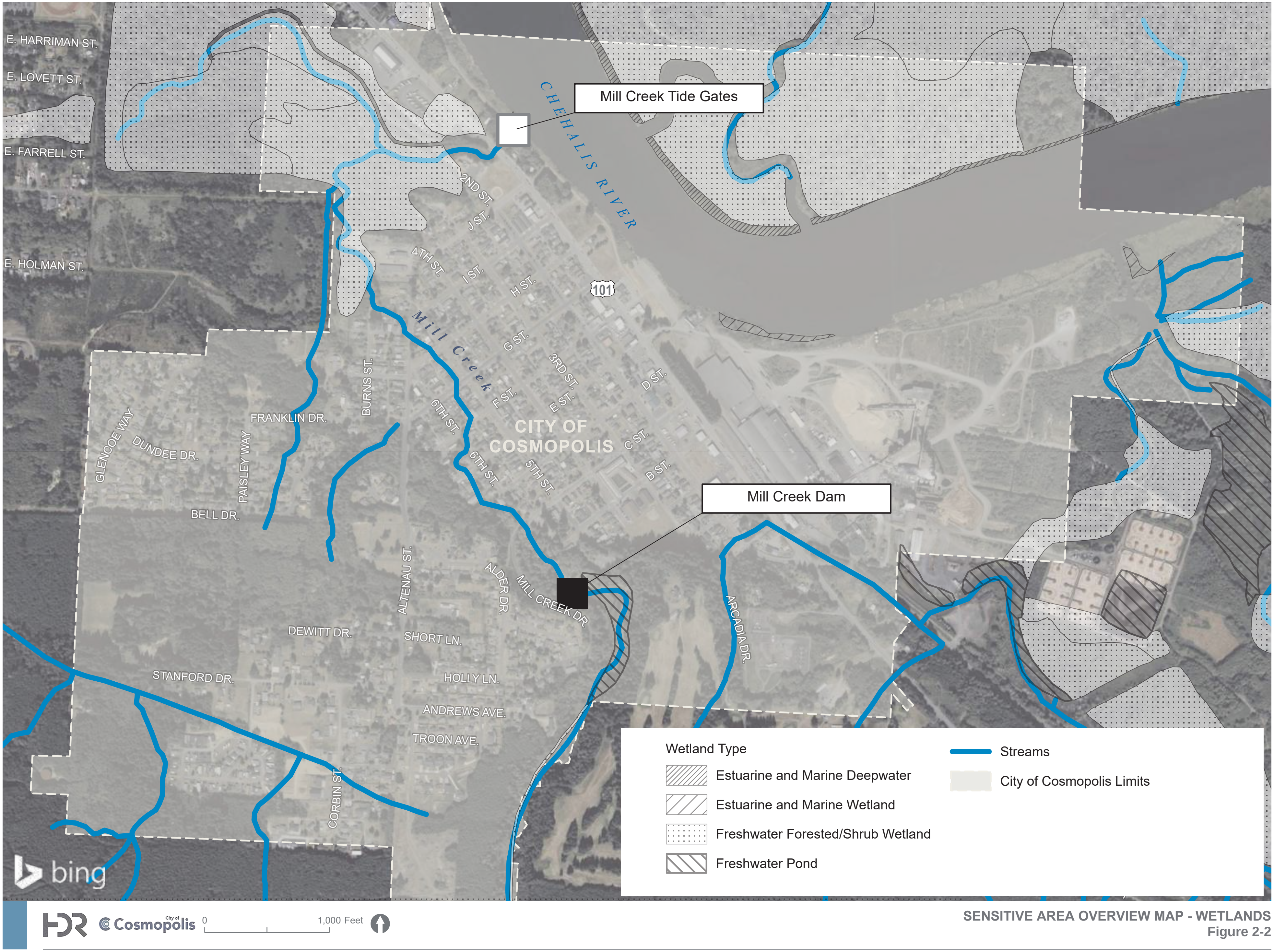
PLAN STUDY AREA AND KNOWN FLOODING ISSUES
Figure 2-1

2.3 Sensitive Areas

Sensitive areas have been identified throughout Grays Harbor County and the city limits, as described below. These sensitive areas require special consideration when evaluating project risks, project complexity, and stakeholder engagement during stormwater planning. The identified sensitive areas impacting the City's stormwater management were used during the project prioritization process described in Chapter 4.

2.3.1 Wetlands

Because of the City's location on the Chehalis River and Mill Creek, shrublands and estuarine wetlands are identified around the downtown area and along Mill Creek near the Mill Creek Dam (U.S. Fish & Wildlife Services, 2024). Stormwater can have significant impacts on endangered and threatened species, especially those that depend on aquatic and riparian habitats like rivers, estuaries, and wetlands. Potential impacts from stormwater planning might include more stringent development regulations and additional measures to improve water quality. These actions may include better source control of pollutants, construction of additional best management practices (BMPs) designed to reduce flooding, erosion, and water quality impacts to receiving waters.



SENSITIVE AREA OVERVIEW MAP - WETLANDS
Figure 2-2

2.3.2 Fisheries

The Chehalis River supports one of the most important and diverse fish communities on the Washington coast. It is a large, rain-dominated river system that plays a critical ecological, cultural, and economic role in Grays Harbor County and the City. While these fish communities are not currently listed as threatened under the Endangered Species Act, populations are in decline. Some salmon runs in the Chehalis Basin have declined by as much as 80%, due to damaged habitat, changing climate conditions, and development. Without action, the basin could lose spring Chinook entirely within the next several decades (Washington State Department of Fish and Wildlife [WDFW], 2025).

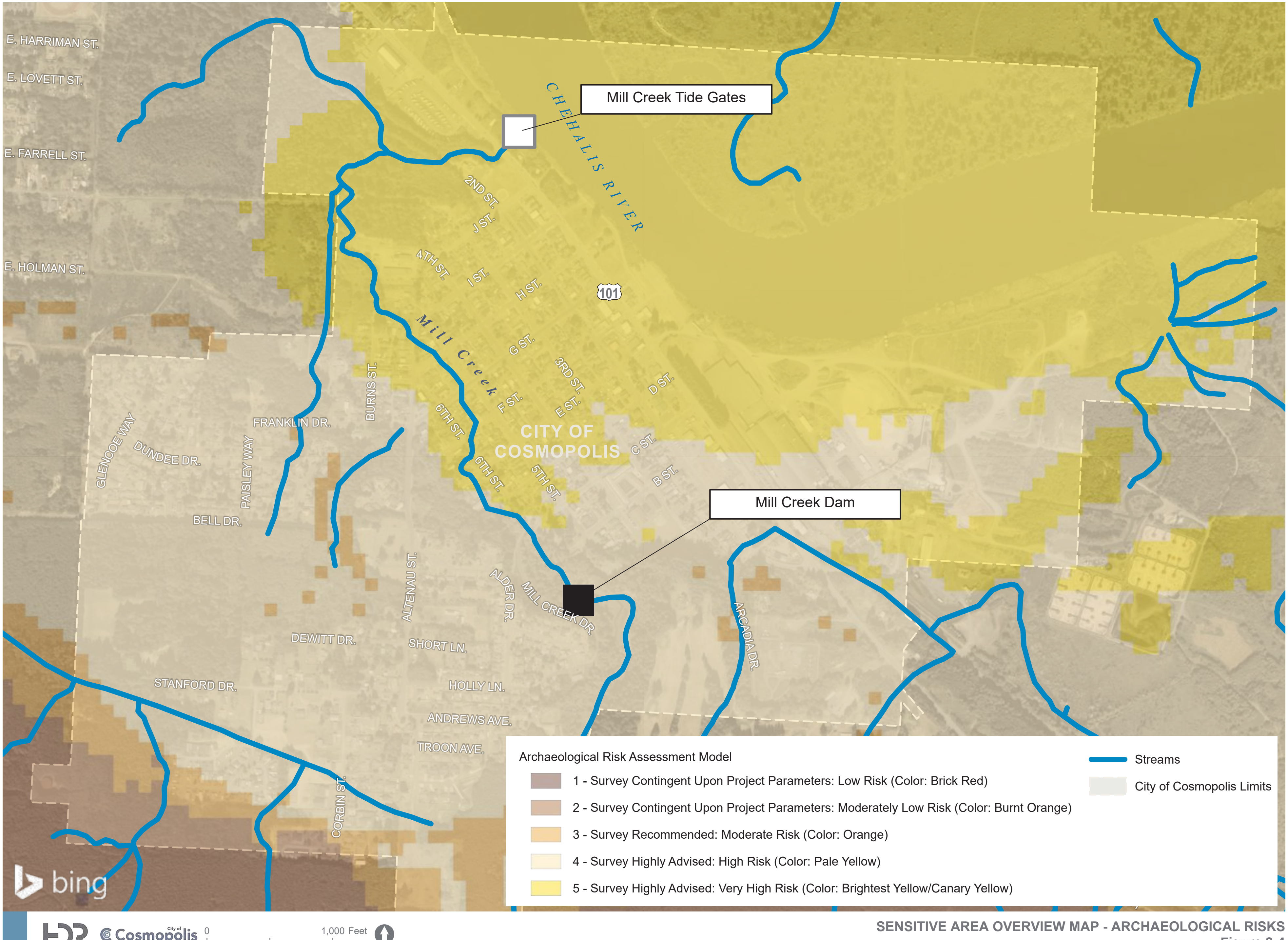
Several fish species including coho salmon, steelhead, spring run cutthroat, and resident trout have been observed in Mill Creek, according to data from the Washington State Department of Fish and Wildlife and the Lewis Conservation District (WDFW, 2026). Although the tide gates on Mill Creek have been deemed as a partial blockage to fish passage, coho salmon have been observed spawning in the upstream portion of Mill Creek. There are opportunities in stormwater planning to improve fish passage for communities in the city and the greater Chehalis River Basin.

0 1,000 Feet

SENSITIVE AREA OVERVIEW MAP - FISH PASSAGE BARRIERS
Figure 2-3

2.3.3 Archaeological Significance

The City's location on the Chehalis River has high cultural and historical value for indigenous tribes that had resided along the river long before European settlement (DAHP, 2025). This high archaeological risk shall be taken account when planning and conducting any excavation projects.



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SENSITIVE AREA OVERVIEW MAP - ARCHAEOLOGICAL RISKS
Figure 2-4

2.4 Applicable Policies and Drivers

In the State of Washington, the Department of Ecology (Ecology) manages municipal stormwater systems under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) program. Due to the size of the City's system, Cosmopolis is not permitted under an MS4 permit; instead, it is managed through a mix of local ordinances, best management practices (BMPs), and voluntary compliance with state stormwater standards, as described in the following subsections.

2.4.1 Municipal Code

The City primarily governs its stormwater and surface water management via two local ordinances:

- **Code of Ordinances, Chapter 2.12 (Storm Drainage):** establishes minimum design and construction standards for storm drainage facilities, require professional stormwater planning and mitigation for developments, and ensure effective management of runoff, erosion, and water quality impacts.
- **Code of Ordinances, Chapter 13.65 (Storm and Surface Water Management):** establishes and funds a city stormwater utility that equitably charges developed properties based on their contribution to runoff, ensuring effective management, maintenance, and mitigation of storm and surface water problems.

2.4.2 Office of Chehalis Basin

The Office of Chehalis Basin (OCB) is housed within Ecology and is responsible for funding, coordinating, and implementing projects that reduce flood damage and restoring aquatic life within the Basin (Office of Chehalis Basin, 2026). The goal of the OCB is to advance the Chehalis Basin Strategy, which includes:

- Helping residents and communities protect homes and businesses from flood damage
- Working with landowners to slow harmful erosion and restore habitats for salmon and other aquatic life
- Preparing the region for more frequent major and catastrophic flooding.

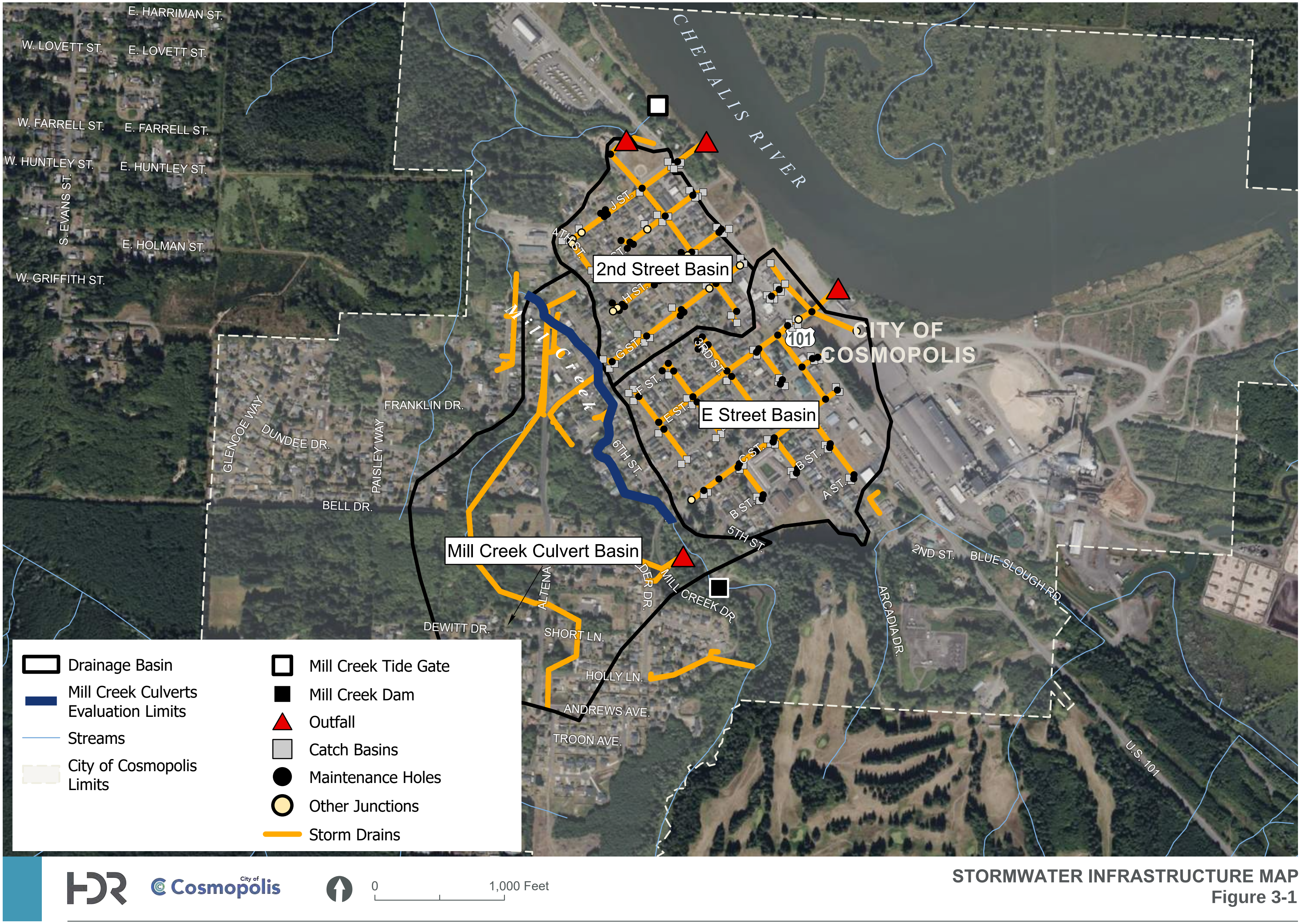
The OCB administers state funding to communities in the Chehalis River Basin, and the City acquires additional funding that aligns with goals of the Chehalis Basin Strategy to support capital improvements that reduce flood damage and restore aquatic life. Efforts to produce this SWCP were funded by a grant received by the OCB in 2025.

3 Hydrologic and Hydraulic Modeling

The City's stormwater drainage system includes a series of catch basins, pipes, and natural flow paths that convey stormwater runoff to the Chehalis River, either directly or via Mill Creek. The hydrologic and hydraulic (H&H) modeling analyses described in this Chapter were designed to evaluate the City's stormwater drainage basins and runoff conditions. Stormwater pipe network data and topography data were used to model the City's stormwater system; within the study area, the following known infrastructure exists:

- Approximately 220 catch basins and manholes
- Approximately 4 miles of pipes
- Two outfalls: one to the Chehalis River and one to Mill Creek.

It is important to note that the City does not currently have a geographic information system (GIS) database or up-to-date asset inventory for its stormwater infrastructure. For this SWCP, the existing pipe system in the downtown area was mapped and reviewed, and a GIS shapefile was developed from a computer-aided design (CAD) file of the stormwater pipes in downtown Cosmopolis. All available diameters, materials, and field-measured or surveyed invert elevations were added to this GIS shapefile. A GIS shapefile for catch basins, manholes, and outfalls was developed based on both the CAD file of stormwater pipes and a marked-up stormwater utility map. In addition to the surveyed topography data, 1-meter light detection and ranging (LiDAR) elevation data from the United States Geological Survey (USGS) were used to analyze the surface-water flow paths within the study area and to delineate the corresponding drainage basins for identified outfalls. A map of the completed stormwater inventory is shown in Figure 3-1.



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STORMWATER INFRASTRUCTURE MAP
Figure 3-1

The objective of this modeling analysis was to diagnose and address the known flooding concerns by:

- Delineating stormwater drainage basins that are affected by localized flooding, particularly in downtown Cosmopolis
- Predicting observed conditions and identifying hydraulic bottlenecks
- Evaluating mitigation alternatives, such as replacing and upsizing existing infrastructure

3.1 Basin Overview

As discussed in Chapter 2 and shown in Figure 3-1, three drainage basins were delineated as a part of this SWCP's modeling efforts: Mill Creek culvert drainage basin, E Street basin, and 2nd Street basin. Of these three basins, only the two downtown basins (E Street and 2nd Street) were modeled as a part of this SWCP. The Mill Creek Culvert Drainage Basin was modeled in a separate effort under the Mill Creek Multi-Objective Improvement Plan (MOIP) and described below.

3.1.1 Mill Creek Culvert Drainage Basin

Mill Creek flows through six culvert crossings that drain runoff from about 102 acres of nearby residential hillsides, and this reach experiences recurring localized flooding around all crossings. After a 2008 dam breach, the City created a Mill Creek Multi-Objective Improvement Plan (MOIP) in 2015 to evaluate flood reduction and fish passage improvements between Mill Creek Pond and downstream tide gates. Concurrent to this SWCP development effort, HDR updated the Mill Creek MOIP by evaluating options to reduce flooding and improve fish passage along a 0.7-mile section of Mill Creek. The draft Mill Creek MOIP technical memorandum (TM) provides more documentation on modeling methods and assumptions related to the culverts on Mill Creek. This TM can be found in Appendix B.

3.1.2 E Street Basin

E Street basin outfalls directly into the Chehalis River via a 24-inch-diameter pipe near the northwest perimeter of the Cosmo Specialty Fibers plant. The drainage basin consists of residential and commercial areas, and the total basin area is 33.1 acres. The basin is relatively flat, with elevation spanning from 16 to 26 feet.

Persistent flooding has been observed in the Chevron parking lot north of U.S. Highway 101 and F Street. To confirm the pipe connections contributing to this flooding issue, City staff and consultants conducted a field visit in December 2025 and measured the approximate invert elevations for pipes near the flooding location. During the visit, a closed-circuit television (CCTV) inspection identified two issues contributing to the flooding: a collapsed pipe connected to the E Street outfall and a sag in the pipe draining the catch basin in the Chevron parking lot.

3.1.3 2nd Street Basin

The 2nd Street basin outfalls into Mill Creek via an 18-inch-diameter pipe near the Cosmopolis Lions Club. The drainage basin consists of mostly residential areas on the west side of downtown Cosmopolis, and the total basin area is 38.1 acres. The basin slope is also flat, with elevations spanning from 11 to 17 feet.

Intermittent flooding has been observed at the intersection of J and 4th streets near the Grays Harbor Road District Maintenance Yard. The invert elevations along 2nd and J streets were surveyed in 2023, and they were used for developing this model.

3.2 Modeling Tools

3.2.1 Hydrologic Modeling

Hydrologic modeling is a tool that simulates how surface water flows within a basin before it is discharged to a water body or enters the stormwater pipe network. The main goal is to determine how much water infiltrates into the ground and how much runs off over land. This analysis is based primarily on land cover and topography data. Given the flat terrain in downtown Cosmopolis, the hydrologic models assumed gradual slopes between available data points.

For the Mill Creek MOIP, previous modeling results from a 2020 Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) informed the basin hydrology, therefore, no further hydrologic analyses were performed in the Mill Creek culvert drainage basin.

The hydrologic modeling for downtown basins was performed using the Western Washington Hydrology Model (WWHM) developed by Ecology. Leveraging long-term recorded precipitation data in western Washington, WWHM simulates hydrology continuously based on input land covers and other in-basin hydrologic features, and outputs peak flow frequency and magnitude. This peak flow was later used as a basis of hydraulic modeling.

3.2.2 Hydraulic Modeling

Hydraulic modeling is a tool that simulates how stormwater flows within pipe systems or in natural flow paths. As opposed to hydrologic modeling's focus on the interaction between water and land, hydraulic models simulate the water level and the energy that water generates as it flows through channelized systems. When the flows are too high for the channel geometry, water levels rise and cause water to spill out of the channels, resulting in flooding upstream.

Hydraulic analyses on the downtown stormwater pipe systems were performed using PCSWMM, a modeling software from Computational Hydraulics Inc. (CHI) leveraging the U.S. Environmental Protection Agency's Storm Water Management Model (EPA-SWMM). The primary components of the PCSWMM hydraulic models are as follows:

- **Conduits** are pipes or channels that convey stormwater from one point to another. They are represented in PCSWMM by name, description, geometry, and set of parameters that define the hydraulic characteristics of the conduit, such as length, diameter or cross section, and roughness. In addition, connectivity is defined by identifying upstream and downstream junction connections.

- **Junctions** are points where two or more conduits meet. Junctions are placed where there is a change in conduit characteristics (e.g., change in slope, diameter, material), They are represented in PCSWMM by name, description, and set of parameters that define the invert and ground or flood elevations.
- **Outfalls** are points where stormwater is discharged from the PCSWMM model. They are represented in PCSWMM by name, description, and set of parameters that define the location of the outfall, such as the elevation and any receiving water body boundary condition (e.g., water-surface elevation or free discharge).

For the Mill Creek MOIP, a commonly used software called Hydrologic Engineering Center River Analysis System (HEC-RAS) was used to model the hydraulics of the Mill Creek channel.

3.3 Model Development

The development of an applicable design storm is critical in H&H modeling. The design storm, which is defined by both rainfall depth and temporal distribution, directly impacts the hydrologic response of drainage basins within the City in terms of peak runoff flow rates and total runoff volumes. This hydrologic response, in turn, serves as the inflow basis for evaluating the City's stormwater drainage system in a hydraulic model.

In lieu of developing design storms or hydrologic models for the Mill Creek MOIP, the MOIP performed hydraulic modeling analysis only on the creek channels affected by the culvert crossings. The HEC-RAS hydraulic model used 100-year peak flow and water surface elevation (WSE) from the 2020 FEMA FIS as starting boundary conditions for the model, as detailed further in Appendix B.

The remaining section focuses on the two downtown basins, the E Street and 2nd Street basins. It discusses the development of the input design storm, the hydrologic model that generates surface flow and runoff, and the hydraulic model that evaluates the stormwater system's response to the surface runoff.

3.3.1 Design Storm and Hydrologic Model

The hydrologic models for downtown basins were performed in WWHM. Because WWHM is based on historical precipitation records, the design storms for these models were based on a continuous rainfall simulation and not from a single event. The hydrologic models computed the 10-year peak flow based on the total impervious and pervious areas, and the results are included in Table 3-1.

Table 3-1. PCSWMM drainage basin area and flow rate summary

Basin	Total impervious (acres)	Pervious area (acres)	Total acres	10-year peak flow (cfs)
E Street	21.9	11.3	33.1	27.3
2nd Street	24.8	13.3	38.1	31.2

A 24-hour triangular hydrograph was applied to the 10-year peak flow to simulate the runoff accumulation within the stormwater system. The peak flow was centered to the middle of the day. This hydrograph was then applied as base flows at the junctions in the hydraulic model.

3.3.2 Hydraulic Model

The hydraulic model for the City's stormwater pipe system was developed based on the City's best available CAD, supplemented by project survey data. However, the majority of junction rim and pipe invert elevation data were not available. Because of the lack of robust data and specific downstream capacity concerns, only the pipes near flooding locations and upstream large-diameter pipes were modeled. These large-diameter pipes range from 12- to 24-inch diameter in the E Street basin, and from 18- to 30-inch diameter in the 2nd Street basin. Modeling these large-diameter pipes in upstream branches with no known flooding concerns can reliably account for their impact on the downstream system's capacity.

For the pipes with unknown slopes, a minimum pipe slope of 0.5 percent was assumed. For locations where the junction rim elevations were not surveyed, it was assumed that the elevations were captured in the project LiDAR elevation data. Figure 3-2 and Figure 3-3 show the pipes, catch basins, and outfalls within the drainage basin boundaries for the E Street and 2nd Street basins, respectively.

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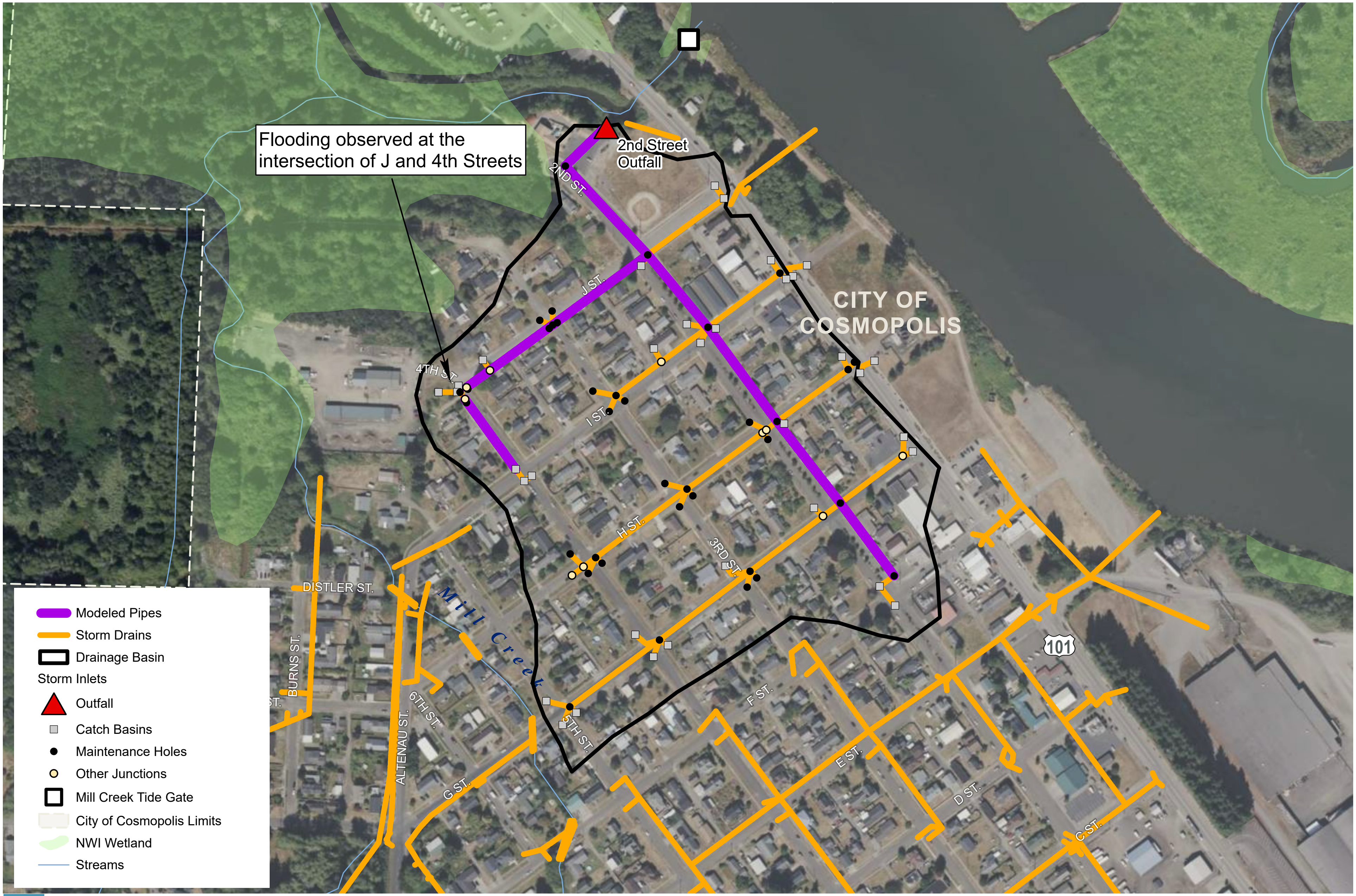
E STREET OUTFALL BASIN AND FACILITY MAP
Figure 3-2



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2ND STREET OUTFALL BASIN AND FACILITY MAP
Figure 3-3

3.4 System Performance and Proposed Improvements

Modeling results from both Mill Creek MOIP and from the PCSWMM analysis identified capacity constraints in the system and confirmed the flooding conditions observed in the field. Proposed improvements, such as replacing and upsizing existing infrastructure, were also evaluated based on these models. These proposed improvements serve as the basis for the 10-year CIP proposed in Chapter 4 of this SWCP.

3.4.1 Mill Creek Culvert Drainage Basin

The HEC-RAS model from the Mill Creek MOIP (Appendix B) showed that the flows in Mill Creek were sensitive to backwatering from the Mill Creek tide gates, which are located at the confluence of Mill Creek and the Chehalis River. In Chapter 5, the CIP recommends that a tide gate study be conducted and tide gate improvements be implemented based on the results of the study. The CIP IDs of these projects are COSI-SW-2026-001 and COSI-SW-2026-002, respectively.

The model also showed that all six street crossings over Mill Creek—C, E, F, G, H, and Altenau streets—would flood during a 100-year peak flow, a basis of analysis used in the FEMA FIS (FEMA, 2020). The Mill Creek MOIP also modeled two proposed flood mitigation alternatives, including upsizing the culvert crossings and adding bypass. The selected improvements were split into lower and upper Mill Creek as two capital improvement projects, with CIP numbers of COSI-SW-2026-003 and COSI-SW-2026-004, respectively. The scopes of these two proposed capital improvement projects are included in Table 3-2.

Table 3-2. Proposed improvements on Mill Creek culverts

Mill Creek Section (CIP ID)	Street	Proposed culvert size, type, and length
Lower Mill Creek (COSI-SW-2026-003)	G	10 ft wide × 5 ft high 3-sided concrete box culvert, 96 ft long
	H	12 ft wide × 5 ft high 3-sided concrete box culvert, 81 ft long
	Altenau	12 ft wide × 5 ft high 3-sided concrete box culvert, 95 ft long
Upper Mill Creek (COSI-SW-2026-004)	C	10 ft wide × 5 ft high 3-sided concrete box culvert, 45 ft long
	E	10 ft wide × 5 ft high 3-sided concrete box culvert, 67 ft long
	F	10 ft wide × 5 ft high 3-sided concrete box culvert, 118 ft long

3.4.2 E Street Basin

The model showed existing capacity constraints in pipes near the E Street outfall under a 10-year peak flow (Figure 3-4 existing conditions profile). Persistent flooding observed at the parking lot northeast of 1st Street was also caused by a pipe collapse identified in a previous CCTV inspection, but this collapse was not modelled.

A proposed scenario was modeled to replace the broken pipe and upsize downstream pipes to improve capacity, as shown in Table 3-3 and Figure 3-5. The profile of the proposed conditions in Figure 3-4 show flooding reduced in parking lot and along E

Street outfall. The improvements shown are included in the CIP as COSI-SW-2026-005 (F Street NE of 1st Street Flooding and E Street Outfall Improvements).

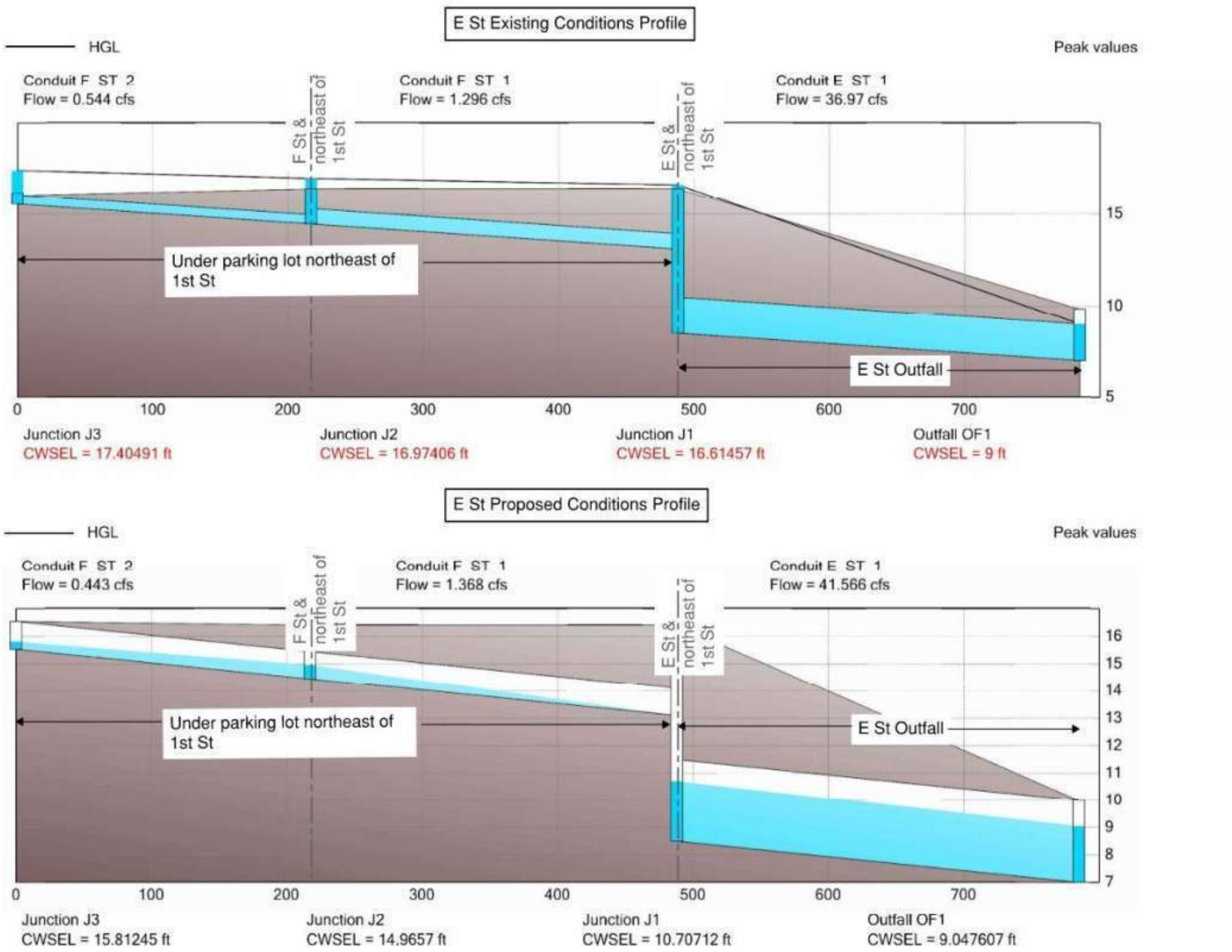
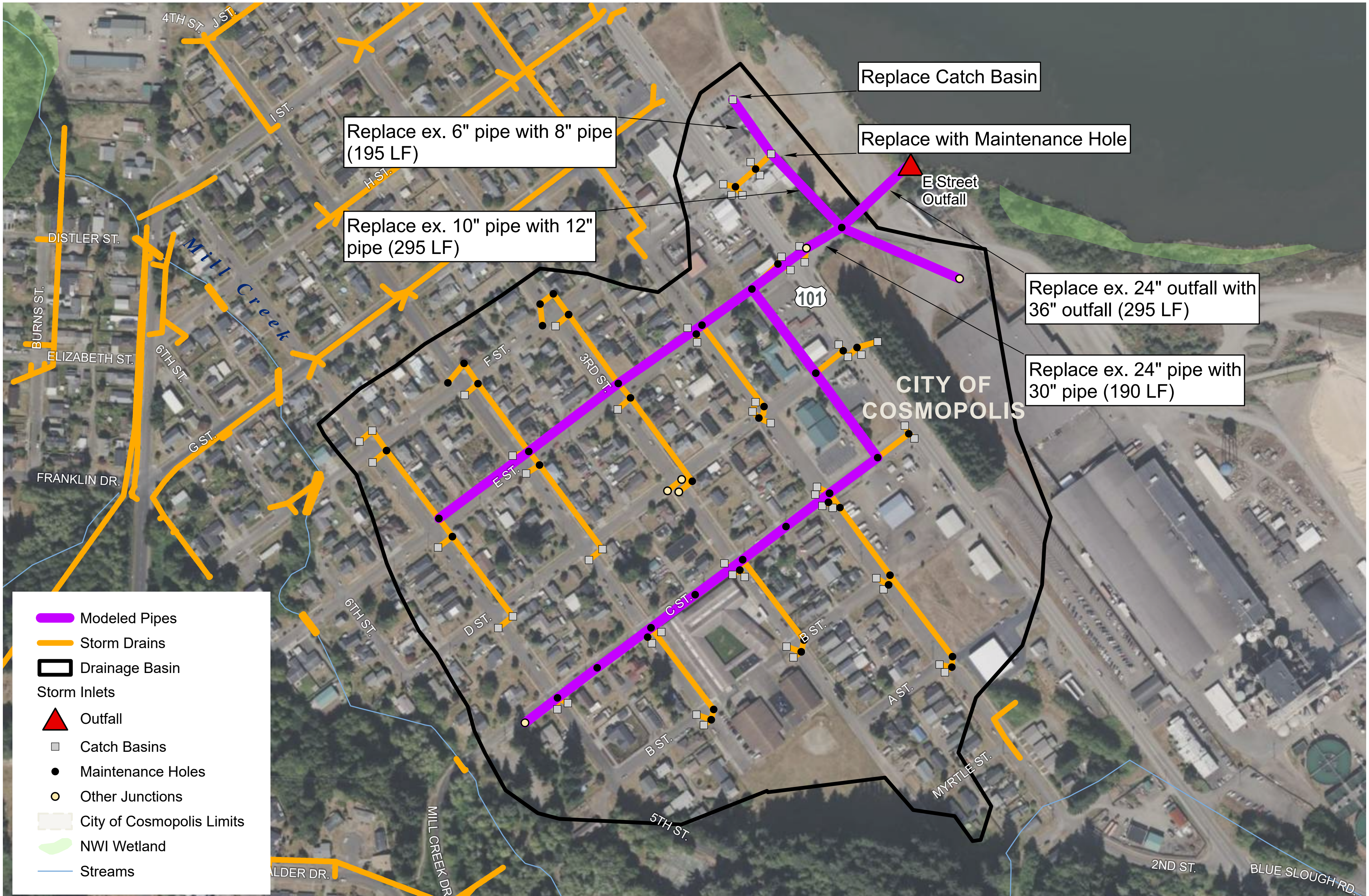


Figure 3-4. Profile of E Street basin existing and proposed conditions

Table 3-3. Proposed improvements in E Street basin

Location	Existing pipe diameter (in)	New pipe diameter (in)	Pipe length (LF)	Other improvements
E Street outfall	24	36	295	--
E Street and 1st Street	24	30	190	--
F Street parking lot	6	8	195	--
F Street parking lot	10	12	295	--
F Street parking lot	--	--	--	Replace catch basins



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E STREET OUTFALL BASIN PROPOSED IMPROVEMENTS
Figure 3-5

3.4.3 2nd Street Basin

The model showed capacity constraints in the 2nd Street outfall and in pipes on J Street under a 10-year peak flow as a result of the flat terrain along J Street (Figure 3-6 existing conditions profile). Survey showed that the pipes on J Street were sloped at around 0.1 percent. These flat conditions resulted in backwater conditions for upstream pipes.

A proposed scenario was modeled to show that replacing pipes near the Lions Club and along J Street with larger pipes and steeper slopes could relieve flooding along J Street, as listed in Table 3-4 and as shown in Figure 3-7. The profile of the proposed conditions in Figure 3-6 show flooding reduced along J Street. These improvements are included in the CIP as "J St. at 4th St. Flooding & 2nd St. Outfall Improvements" (COSI-SW-2026-006).

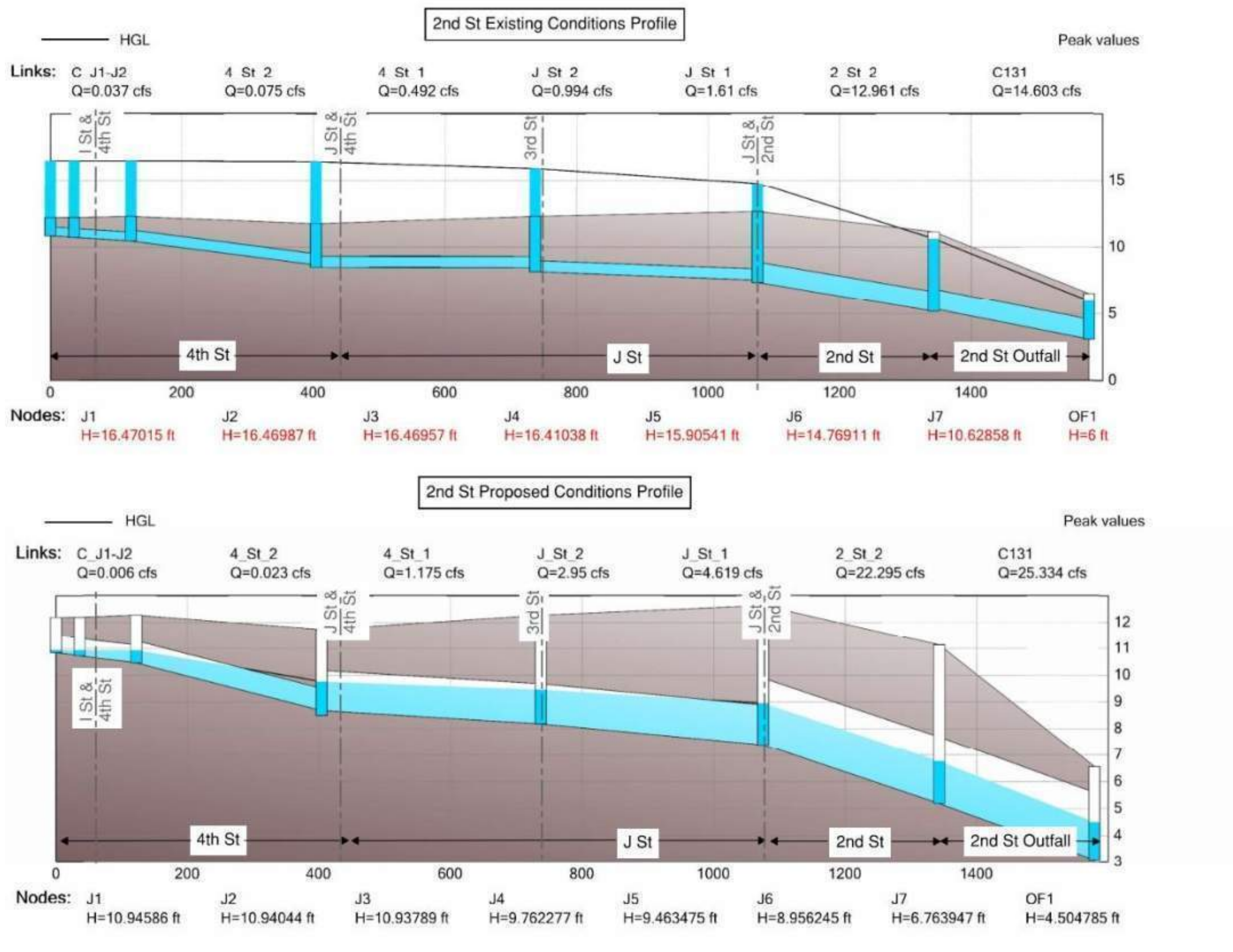
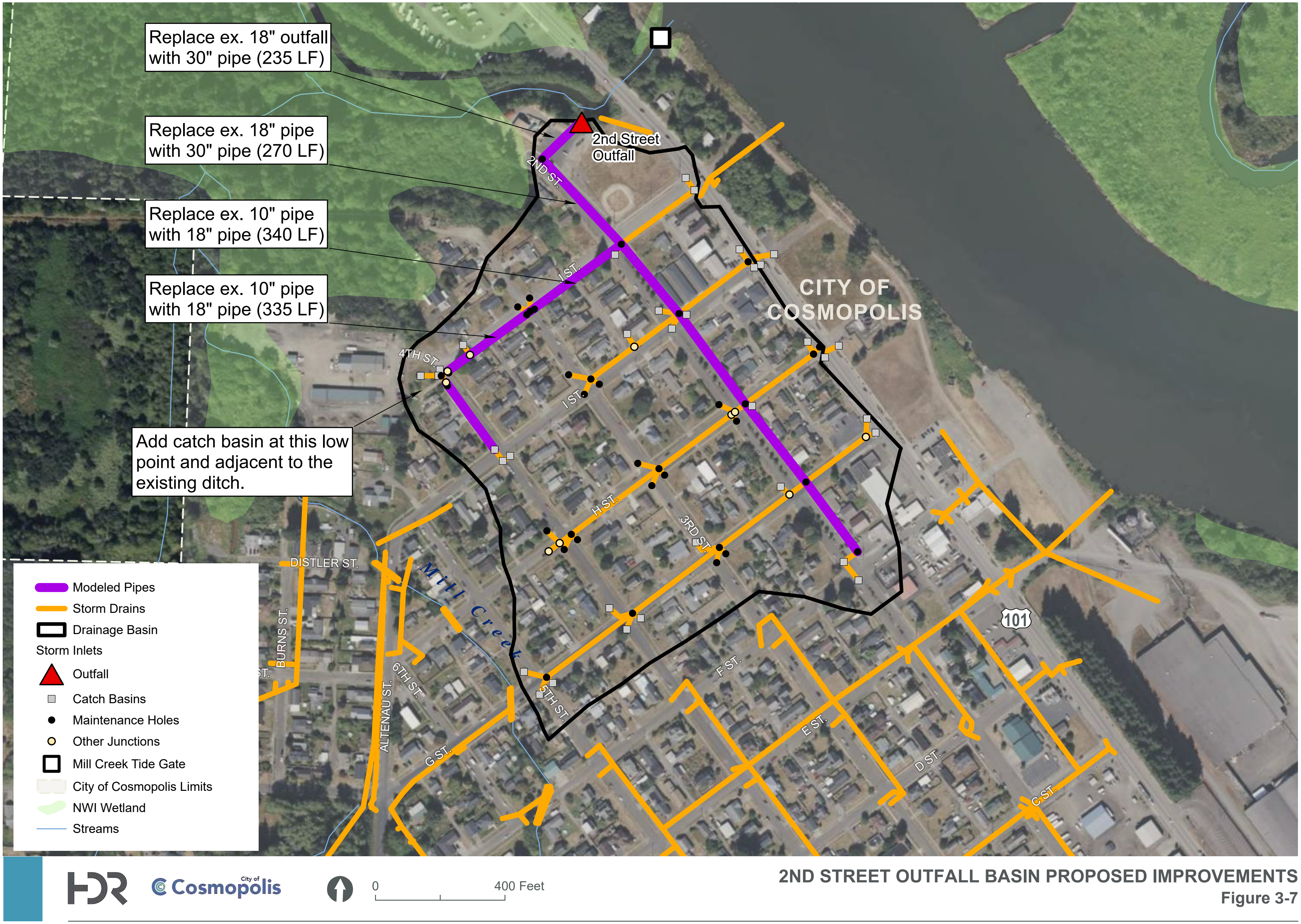


Figure 3-6. Profile of 2nd Street basin existing and proposed conditions

Table 3-4. Proposed improvements in 2nd Street basin

Location	Existing pipe diameter (in)	New pipe diameter (in)	Pipe length (LF)	Other improvements
2nd Street outfall	18	30	235	--
2nd Street and J Street	18	30	270	Abandon existing pipe and replace
J Street and 3rd Street	10	18	340	Reset pipe slope
J Street and 4th Street	10	18	335	Reset pipe slope
J Street and 4th Street	--	--	--	New catch basins



HDR
City of Cosmopolis

2ND STREET OUTFALL BASIN PROPOSED IMPROVEMENTS

Figure 3-7

3.5 Chapter Summary

The H&H modeling analysis from the Mill Creek MOIP showed that all six culverts are currently undersized. The analysis within the E Street and 2nd Street Basins identified capacity constraints. As identified in Table 3-3 and Table 3-4, several segments in the E Street and 2nd Street basins, respectively, would need to be replaced with larger pipes to reduce flooding. The costs of these proposed solutions are estimated in Chapter 4.

4 Capital Improvement Plan

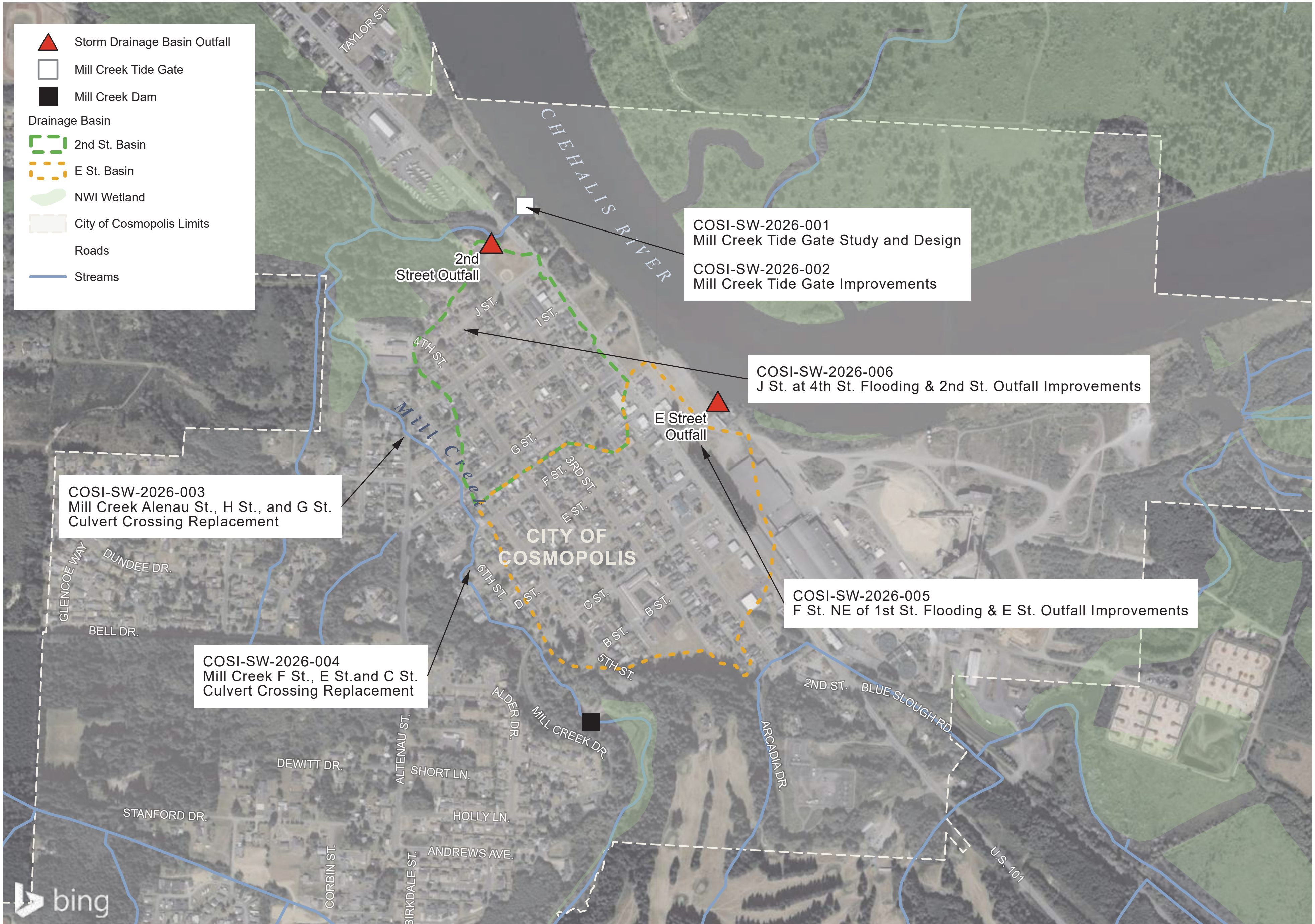
A capital improvement plan (CIP) is a strategic planning tool used to address deficiencies in the City's stormwater system and guide long-term investment in infrastructure. As a part of this SWCP, the improvements proposed in Chapter 3 and the Mill Creek MOIP (Appendix B) were grouped and assigned project numbers. These projects have been evaluated and ranked based on a set of criteria that reflect the City's priorities. These priorities include, but are not limited to, reducing flooding, improving system performance, and supporting community resilience.

4.1 Identified Capital Improvement Projects

H&H modeling analyses in Chapter 3 evaluated several flood reduction solutions along Mill Creek and across downtown. Hydraulic modeling of Mill Creek indicated that all six culverts are undersized and that the system is highly sensitive to the downstream water surface elevation (WSE). These conditions may be alleviated through tide gate operation or targeted infrastructure improvements. For the two localized flooding areas, hydraulic modeling showed that multiple pipes are capacity-constrained, causing backup and flooding in the system. A summary of all identified CIPs are provided in Table 4-1 and are shown in Figure 4-1.

Table 4-1. Summary of proposed CIPs

Basin	Project Number	Project Name
Mill Creek Culvert Drainage Basin	**COSI-SW-2026-001**	Mill Creek Tide Gate Study and Design
	COSI-SW-2026-002	Mill Creek Tide Gate Improvements
	COSI-SW-2026-003:	Mill Creek Altenau Street, H Street, and G Street Culvert Crossing Replacement
	COSI-SW-2026-004	Mill Creek F Street, E Street, and C Street Culvert Crossing Replacement
E Street Basin	**COSI-SW-2026-005**	F Street Northeast of 1st Street Flooding and E Street Outfall Improvements
2nd Street Basin	**COSI-SW-2026-006**	J Street at 4th Street Flooding and 2nd Street Outfall Improvements



CAPITAL IMPROVEMENT PROJECT OVERVIEW MAP
Figure 4-1

4.2 CIP Prioritization Approach

To help prioritize these capital projects, five criteria were developed to assess each project's impact to various City's needs and regulatory requirements. Each project was assessed based on these criteria and assigned a score (0-4). Additionally, each criterion was assigned a weight that signifies the importance of that category relative to the others. The categories and their weighting factors are shown in Table 4-2.

CIP projects were assigned a prioritization score by multiplying the criteria score by the weight of the criteria. The CIP project with the higher total weighted score has higher priority for being implemented. Using these criteria scores, prioritization scores were calculated for each project following the following calculation:

$$\begin{aligned} Priorization\ Score \\ &= Flooding\ Score + Regulatory\ Score + Capacity\ Score \\ &+ Reliability\ Score + Environmental\ Score \end{aligned}$$

The final prioritization scores can be found in Table 4-3. Additional details on this process are also provided in Appendix C.

Table 4-2. CIP prioritization criteria

Criteria Category	Description	Scoring (0-4)	Weight (0-1)
Flooding Impact	How often and how severely an area floods, including how widespread the flooding is and the level of damage it causes when it happens.	Areas with multiple neighborhoods flooding or potential high damage costs due to flooding receive a higher score.	0.25
Regulatory Drivers	How much a project helps meet regulatory requirements, especially related to fish passage.	Barriers located farther downstream in a watershed affect a larger portion of the watershed and therefore receive higher priority.	0.23
Capacity	How limited the existing infrastructure is at handling current or future flows.	Systems that are already undersized, or that cause more damage when they fail, receive higher priority.	0.21
Reliability	How dependable the infrastructure is, including how long it is expected to last and how much maintenance is required to keep it functioning.	Infrastructure with higher maintenance needs or shorter remaining life has a higher score.	0.20
Environmental	The project's impact on water quality benefits.	Projects that provide a great water quality benefit receive a higher score.	0.11

Table 4-3. CIP prioritization scores

CIP Project Name	Reliability Score	Capacity Score	Flooding Score	Regulatory Score	Environmental Score	Raw Score	Weighted Score
Mill Creek Tide Gate Study and Design	2	4	4	4	3	2.83	3.49
Mill Creek Tide Gate Improvements	2	4	4	4	2	2.67	3.38
Mill Creek Altenau Street, H Street, and G Street Culvert Crossing Replacement	2	4	4	3	2	2.50	3.15
Mill Creek F Street, E Street, and C Street Culvert Crossing Replacement	2	3	3	2	2	2.00	2.46
F Street Northeast of 1st Street Flooding and E Street Outfall Improvements	2	2	2	0	1	1.17	1.43
J Street at 4th Street Flooding and 2nd Street Outfall Improvements	1	2	2	0	1	1.00	1.23

4.3 CIP Cost Opinions Development

Project cost estimates are based on 2026 dollars with 2 percent annual inflation until the assumed construction start year. The estimates are planning-level Association for the Advancement of Cost Engineering (AACE) Class 5 estimates, useful for setting budgets. Actual costs may vary within a range of plus 100 percent to minus 50 percent and increase with inflation over time. The estimates contain the following elements:

- **Construction costs**: cost of materials and installation
- **Construction contingency:** 30 percent of direct and indirect project costs
- **Allied costs (engineering, administration, legal financing and construction administration):** approximately 30 percent of project costs; varies based on project complexity factors established in the estimate inputs

Total project costs are presented in Table 4-4.

4.4 CIP Project Ranking and Summaries

Based on the scoring criteria and weighting factors described in Section 4.3, proposed projects were rated and ranked and are listed in priority order in Table 4-4. Project rankings indicate a recommended implementation order, but the CIP remains flexible and can be updated as conditions, funding, or priorities evolve.

Table 4-4. CIP project summary table

Recommended improvement project	Project ID	Priority	Planned construction year	Project cost (CIP year USD)
Mill Creek Tide Gate Study and Design	COSI-SW-2026-001	1	2028	$769,300
Mill Creek Tide Gate Improvements	COSI-SW-2026-002	2	2029	$4,172,800
Mill Creek Altenau St., H St., and G St. Culvert Crossing Replacement	COSI-SW-2026-003	3	2030	$8,998,300
Mill Creek F St., E St. and C St. Culvert Crossing Replacement	COSI-SW-2026-004	4	2035	$8,681,600
F St. NE of 1st St. Flooding and E St. Outfall Improvements	COSI-SW-2026-005	5	2036	$1,986,400
J St. at 4th St. Flooding and 2nd St. Outfall Improvements	COSI-SW-2026-006	6	2038	$3,408,700

Project summary sheets were developed for each of the recommended improvement projects and are provided in Appendix D. Project summary sheets include a high-level scope of work for the project along with initial geotechnical, utilities, permits, and real estate and easement considerations. These items will be further evaluated during preliminary design. See Figure 4-1 for an overview map of CIP projects.

4.4.1 Mill Creek Improvements Interdependency

Mill Creek is an important area for the City's stormwater management, as it has a history of significant flood damage during major storm events. Four of the highest-ranked projects focus on flood reduction along the creek. The hydraulic modeling performed in the Mill Creek MOIP (Appendix B) indicates that Mill Creek is strongly influenced by the downstream water surface elevation. As a result, the Mill Creek Tide Gate Study and Design (COSI-SW-2026-001) and Mill Creek Tide Gate Improvements (COSI-SW-2026-002) are ranked as the highest priorities.

The Mill Creek Tide Gate Study and Design (COSI-SW-2026-001), including survey and modeling, is needed to understand how the existing operations may mitigate flooding in upstream basins, both during low- and high-tide scenarios. The study will also evaluate alternatives and develop high-level cost estimates for these proposed solutions, which may include improving the tide gate geometry and adding a pump station. The subsequent Mill Creek Tide Gate Improvements project (COSI-SW-2026-002) will implement the preferred alternative from the tide gate study to reduce flooding along Mill Creek. For this SWCP's planning purpose, it was assumed that tide gates would be replaced, but a pump station would not be added.

The Mill Creek MOIP efforts identified Alternative A, replacing all six culverts, as the best alternative for addressing Mill Creek flooding. Alternative A was split into two projects for the CIP. The two Mill Creek Culvert replacement projects will replace the three downstream culverts (COSI-SW-2026-003) and then the three upstream culverts (COSI-SW-2026-004) to increase capacity and reduce flooding along Mill Creek.

The improved operations at tide gates will likely lower the water surface elevation in Mill Creek during flood events, which could also reduce flooding at Mill Creek culvert crossings and at 4th and J streets (COSI-SW-2026-006). In this way, this CIP project ranking presents potential cost-saving opportunities on future capital improvement projects within Mill Creek's drainage basin.

4.4.2 Downtown Improvements

The two lower-ranked projects address system deficiencies that cause localized flooding identified by the City during staff interviews. F Street Northeast of 1st Street Flooding and E Street Outfall Improvements (COSI-SW-2026-005) will reduce flooding that has consistently been seen in the back parking lot of the Chevron gas station. J Street at 4th Street Flooding and 2nd Street Outfall Improvements (COSI-SW-2026-006) will reduce flooding at the intersection of J and 2nd streets

4.5 Chapter Summary

This chapter converts the modeling results and analysis into a prioritized list of six capital projects focused on flood risk reduction. The highest-priority investments target Mill Creek, starting with a tide gate study and improvements, followed by phased replacement of all six creek crossings. Targeted downtown projects address repeat flooding near F Street and 1st Street and J Street and 4th Street. Individual project costs range from approximately $769,000 to $9.0 million per project and are projected to cost an average of $2.8 million over the next 10 years.

5 Financial Plan

This chapter evaluates the financial capacity of the City's stormwater utility to support ongoing operations and planned capital improvements. It analyzes existing rates, projected operating costs, and future capital needs to determine whether current revenues are sufficient and to identify potential rate adjustments necessary to ensure long-term system sustainability.

As identified in this plan and acknowledged by the City, flood control capital improvements are a high priority. A significant portion of the proposed capital projects are related to flood control. The City's primary strategy for funding these projects is through grant opportunities. Securing grant funding is critical, as stormwater rates would need to increase substantially if grant funding were not available.

An important consideration when pursuing grants is that many require a local matching contribution. Therefore, the City must have readily available funds to serve as matching funds when grant opportunities arise. In addition, the City needs to begin building its reserve fund balance to support renewal and replacement (R&R) projects necessary to keep the stormwater system operating effectively. These factors combined underscore the need for modest rate increases, which will allow the City to build fund balances over time, provide required grant matching funds, and adequately fund R&R projects.

5.1 Legal Considerations

Revised Code of Washington (RCW) 35.92 provides cities the authority to operate public utilities, including stormwater systems, and to set rates sufficient to cover operations, capital costs and debt obligations associated with operating the utility. RCW 90.03.525 limits stormwater rates charged to the Washington State Department of Transportation (WSDOT) for highway right-of-way to 30 percent of comparable stormwater rates and also requires an annual expenditure plan demonstrating that the revenue collected is spent appropriately. Due to this legal limitation, many cities do not charge WSDOT stormwater rates for right-of-way since that would mean the City would have to charge themselves for their roadways. Given these limitations, it is not recommended the City impose stormwater rates on WSDOT.

5.2 Rate Study Approach

A revenue requirement analysis was conducted to compare total utility costs, including operations and maintenance (O&M), capital investment, taxes, transfers, and potential debt service—to existing rate revenues. The analysis determines the adequacy of current rates and informs development of a rate transition plan to align revenues with projected costs over time.

The revenue requirement was developed concurrently with a capital funding plan, recognizing the iterative relationship between capital timing, funding sources, and rate impacts. Where rate increases are significant, the capital funding plan may be adjusted through the use of grants, reserves, debt, or project deferral to reduce near-term rate impacts, consistent with City policies and financial objectives.

This approach is illustrated in Figure 5-1.

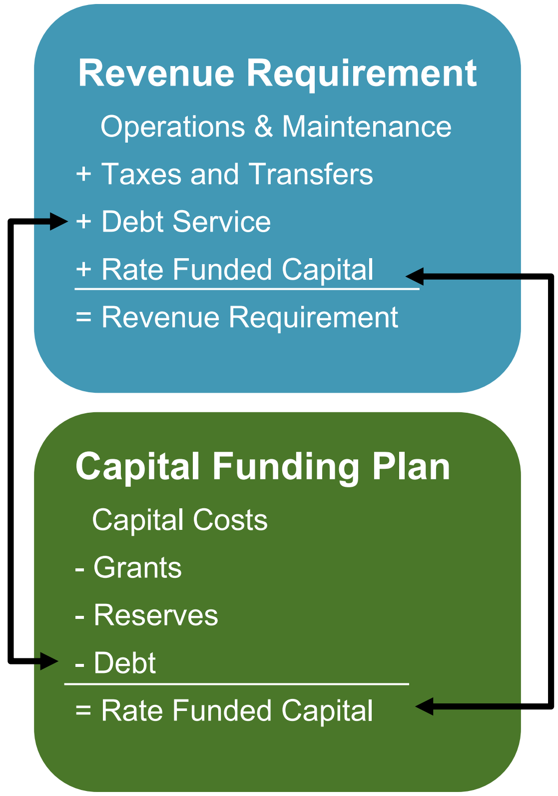


Figure 5-1. Rate study approach and breakdown

5.2.1 Revenue Requirement Analysis

Operations and Maintenance

O&M costs include labor, benefits, fuel, professional services, insurance, and routine system maintenance, including Diking District–related activities. Cost projections are based on historical expenditures and the adopted budget. The 2026 O&M budget totals $44,391, with future costs escalated at an average inflation rate of approximately 4.2 percent.

Taxes and Transfers

Stormwater utilities in Washington State are subject to the Business and Occupation (B&O) tax under RCW 82.04.290, which applies to service and other activities. This tax is structured as a tiered rate: entities with less than $1 million in gross revenue in the previous calendar year are taxed at 1.5 percent, while those with gross revenue exceeding $1 million are taxed at 1.75 percent.

In addition, the City levies a 5 percent utility tax on stormwater revenues, which is dedicated to the equipment replacement reserve in accordance with municipal code.

For purposes of this analysis, taxes are excluded from both revenues and expenditures in the budget and financial projections. For utilities that do not incorporate taxes directly into revenue or expenditure budgeting, care should be taken to ensure that customer rates are set at levels sufficient to recover these taxes, either by embedding them within the rates above what are presented in this chapter or presenting them as a separate line item on customer bills.

The stormwater utility currently operates as a single fund and does not make routine interfund transfers.

Debt Service

The stormwater utility currently carries no outstanding debt. While some utilities avoid borrowing, the use of low-interest loans can support capital delivery while promoting intergenerational equity by aligning costs with the customers who benefit from the infrastructure over time.

Rate-Funded Capital

Rate-funded capital represents direct annual investment in the stormwater system and is essential to asset preservation and regulatory compliance. Industry best practices recommend funding capital at least at the level of annual depreciation, with higher levels required to fully offset inflation, system expansion, and regulatory-driven improvements. Adjustments to the level of rate-funded capital are a key tool for managing rate impacts. Rate funded capital plays a dual role by appearing in both the revenue requirement and the capital funding plan, making it the primary lever for managing rate impacts and financial sustainability.

5.2.2 Capital Funding Plan

The capital funding plan identifies planned stormwater projects and available funding sources, including grants, reserves, debt, and rate-funded capital. Annual capital costs are required to be fully offset by funding sources. The capital projects included in this capital funding plan, as shown in Table 5-1, are identified in Chapter 4.

Grant availability plays a significant role in project timing, and some projects may be deferred if external funding is unavailable. Where rate-funded capital requirements are excessive, projects may be rescheduled or reprioritized to maintain affordability while meeting regulatory and system performance objectives.

The capital plan includes both R&R projects as well as system improvement projects. It should be noted that while certain grant programs the City anticipates pursuing may allow funding for R&R activities, such funding is often limited or not consistently available. As a result, reliance on grants alone may not be sufficient to sustain an appropriate level of renewal and replacement of infrastructure.

Given this constraint, the City should gradually increase the rate-funded portion of capital to better support R&R needs. Building additional rate capacity for capital funding will position the City to implement a more proactive R&R program, reducing the risk of system failures and avoiding higher long-term costs associated with reactive repairs.

Table 5-1. Capital funding plan (in $1,000 dollars)

	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Capital Projects												
Mill Creek Tide Gate Study and Design	$0	$462	$308	$0	$0	$0	$0	$0	$0	$0	$0	$0
Mill Creek Tide Gate Improvements	0	0	3,577	596	0	0	0	0	0	0	0	0
Mill Creek Alenau St., H St., & G St. Culvert Crossing Replacement	0	0	0	3,599	3,599	1,800	0	0	0	0	0	0
Mill Creek F St., E St.& C St. Culvert Crossing Replacement	0	0	0	0	0	0	0	0	3,473	3,473	1,736	0
F St. NE of 1st St. Flooding & E St. Outfall Improvements	0	0	0	0	0	0	0	0	0	1,324	662	0
J St. at 4th St. Flooding & 2nd St. Outfall Improvements	0	0	0	0	0	0	0	0	0	0	0	,272
Total Capital Projects	**$0**	**$462**	**$3,884**	**$4,195**	**$3,599**	**$1,800**	**$0**	**$0**	**$3,473**	**$4,797**	**$2,398**	**$2,272**
Funds Retained for future Capital Project	$0	$21	$22	$23	$24	$25	$26	$27	$28	$29	$30	$31
Total Capital Costs	**$0**	**$483**	**$3,906**	**$4,218**	**$3,623**	**$1,825**	**$26**	**$27**	**$3,501**	**$4,826**	**$2,428**	**$2,303**
Capital Funding												
Reserves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Grants	0	462	3,884	4,195	3,599	1,800	0	0	3,473	4,797	2,398	2,272
Bonds	0	0	0	0	0	0	0	0	0	0	0	0
Low Interest Loans	0	0	0	0	0	0	0	0	0	0	0	0
Rate Funded Capital	0	21	22	23	24	25	26	27	28	29	30	31
Total Capital Funding	**$0**	**$483**	**$3,906**	**$4,218**	**$3,623**	**$1,825**	**$26**	**$27**	**$3,501**	**$4,826**	**$2,428**	**$2,303**

From the capital funding plan, rate-funded capital is used in the revenue requirement analysis and rates must be set to recover this cost in the year it occurs. The debt assumption in the capital funding plan also is used in the revenue requirement in the form of debt service, or debt payments; however, this is no proposed debt service during the planning period.

Grants and Loans

Table 5-2 provides a brief description of available grants and loans for Washington State stormwater utilities.

Table 5-2. Available grant and loan opportunities

Program	Funding Type	Administering Agency	Eligible Stormwater Uses	Notes:
Clean Water State Revolving Fund (CWSRF)	Low-interest loans; some principal forgiveness	U.S. EPA / Ecology	Stormwater facilities, retrofits, green infrastructure, planning, design, construction	Below-market interest rates; repayment up to 30 years; competitive; not for O&M; often paired with grants
Centennial Clean Water Program	Grants and loans	Ecology	Stormwater retrofits, nonpoint source projects, planning, design	State-funded; grants primarily for financially distressed communities or nonpoint projects; competitive and biennial appropriations
Clean Water Act Section 319 Program	Grants	U.S. EPA / Ecology	Nonpoint source pollution control, green infrastructure, urban runoff treatment	Requires watershed-based plan; generally, up to 60% federal share; no loan repayment; supplemental funding only
Stormwater Financial Assistance Program (SFAP)	Grants	Ecology	Municipal stormwater retrofits, planning, design, construction	State-funded program targeted specifically to stormwater; often paired with other Ecology funding sources; competitive
Community-Based Public-Private Partnership (CBP3) Program	Planning and implementation grants	Ecology	Performance-based stormwater retrofit programs, alternative procurement	Supports feasibility, RFP development, and pilot projects; not a construction funding source by itself; emphasizes outcomes
Section 319 + Centennial (Combined Use)	Grants (blended match)	Ecology	Nonpoint source stormwater and water-quality projects	Centennial funds are often used as match for Section 319 grants through Ecology's combined funding process
Office of Chehalis Basin (OCB)	Grant	Ecology	Stormwater Projects including Conveyance, Flood mitigation, Detention, Tide Gates, Replacement/rehabilitation	Typically, large discrete projects that focus on public safety, environmental and climate resilience

Existing Revenue

The stormwater utility is funded exclusively through rate revenue, budgeted at approximately $70,000 annually for this analysis. Future revenue projections assume no customer growth over the 10-year horizon. Existing revenue reflects collections prior to any future rate adjustments.

Revenue Requirement Results

The revenue requirement is calculated by combining operations and maintenance (O&M) costs and transfer assumptions, with rate-funded capital needs identified in the capital funding plan. The existing rate revenue requirements are shown in Table 5-3.

Rate Transition Planning

A rate transition plan is developed within the revenue requirement analysis to gradually align revenues with projected operating and capital costs. The plan will consider rate stability, affordability, reserve targets, and adopted financial policies. The revenue requirement analysis yielded a rate transition plan of 5 percent for the next 5 years and then inflationary adjustments, 2 percent, thereafter. An example of such rate adjustment is proposed in Table 5-3.

Table 5-3. Financial plan (in $1,000 dollars)

	Budget		Projected											
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Revenue with no Rate Adjustments	$61	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70	$70
O&M	$41	$44	$46	$47	$49	$50	$52	$54	$55	$57	$59	$61	$63	$65
Capital Funded From Rates	0	0	0	21	22	23	24	25	26	27	28	29	30	31
Debt Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes and Transfers	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenue Requirement	$41	$44	$46	$68	$71	$73	$76	$79	$81	$84	$87	$90	$93	$96
Cumulative Balance (Deficiency)	$20	$26	$24	$2	($1)	($3)	($6)	($9)	($11)	($14)	($17)	($20)	($23)	($26)
% Cumulative Balance (Deficiency)	33.2%	36.6%	34.6%	2.5%	-1.2%	-4.8%	-8.6%	-12.4%	-16.4%	-20.4%	-24.5%	-28.7%	-33.0%	-37.4%
Rate Revenue Adjustment			**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**
Revenue from Rate Adjustment			$4	$7	$11	$15	$19	$21	$23	$25	$27	$29	$31	$33
Typical Single Family Monthly Bill		**$7.83**	**$8.22**	**$8.63**	**$9.06**	**$9.52**	**$9.99**	**$10.19**	**$10.40**	**$10.60**	**$10.82**	**$11.03**	**$11.25**	**$11.48**
Annual $ Change in Monthly Bill			$0.39	$0.41	$0.43	$0.45	$0.48	$0.20	$0.20	$0.21	$0.21	$0.22	$0.22	$0.23

5.3 Reserve Fund Balance

An important consideration in revenue requirement analysis is the level of available cash reserves, as reported in bars in Figure 5-2. Cash reserves serve multiple purposes, and utilities often maintain separate reserve funds for different needs. While it is common to establish both an operating reserve fund and a capital reserve fund, this is not a strict requirement. For smaller utilities, such as the City's stormwater utility, a single reserve fund is typically sufficient. It is important to ensure that this single reserve fund adequately supports both operational and capital needs.

Operating reserve minimums are commonly benchmarked at levels ranging from 30 to 180 days of operations and maintenance (O&M) expenditures. The appropriate number of days should reflect factors such as the timing of revenue collections and expenditure cycles. For example, utilities that bill customers on a bimonthly basis generally require higher reserve levels than those that bill monthly.

Capital reserves are often based on defined targets, such as a 10-year average of capital expenditures or estimated annual R&R costs. However, for this analysis, a full 10-year average would be unnecessarily high given the current capital improvement plan (Chapter 4) and the expectation that most projects will be funded through grants. Additionally, R&R costs are not yet fully established. An asset management plan, which would include developing these R&R costs, will be recommended as a part of this SWCP.

An important consideration for the City related to renewal and replacement is the scale of ongoing capital needs. Based on the 10-year capital plan totaling approximately $28 million and assuming an average asset useful life of 50 years, the implied annual depreciation would exceed $500,000 per year. This highlights the level of sustained funding required to maintain system assets over time.

Accordingly, as presented in, this analysis assumes a **minimum reserve fund balance** (yellow dashed line) equal to 90 days of O&M expenditures and a **target reserve balance** (solid black line) equal to 90 days of O&M expenditures plus 10 percent of the 10-year average capital plan costs, escalated at 3 percent. A 90-day operating reserve is considered sufficient to address normal business cycle variability and unexpected operational cash flow needs. The capital reserve component provides a prudent starting point for accumulating funds to support capital projects not funded through grants. In Figure 5-2, the blue and green bars represent actual and estimated fund balances provided by the City. The red bars represent the increase in fund balance as unused funds are added to the reserve fund.

The distinction between the minimum and target reserve levels is important. Over the planning horizon, the reserve balance should be maintained at or trending toward the target level. It is expected that the fund balance will fluctuate annually as reserves are drawn down and replenished to support capital expenditures.

The minimum reserve fund balance, by contrast, serves as a threshold that triggers evaluation of whether rate adjustments or other financial actions are necessary to restore the fund balance to an acceptable level.

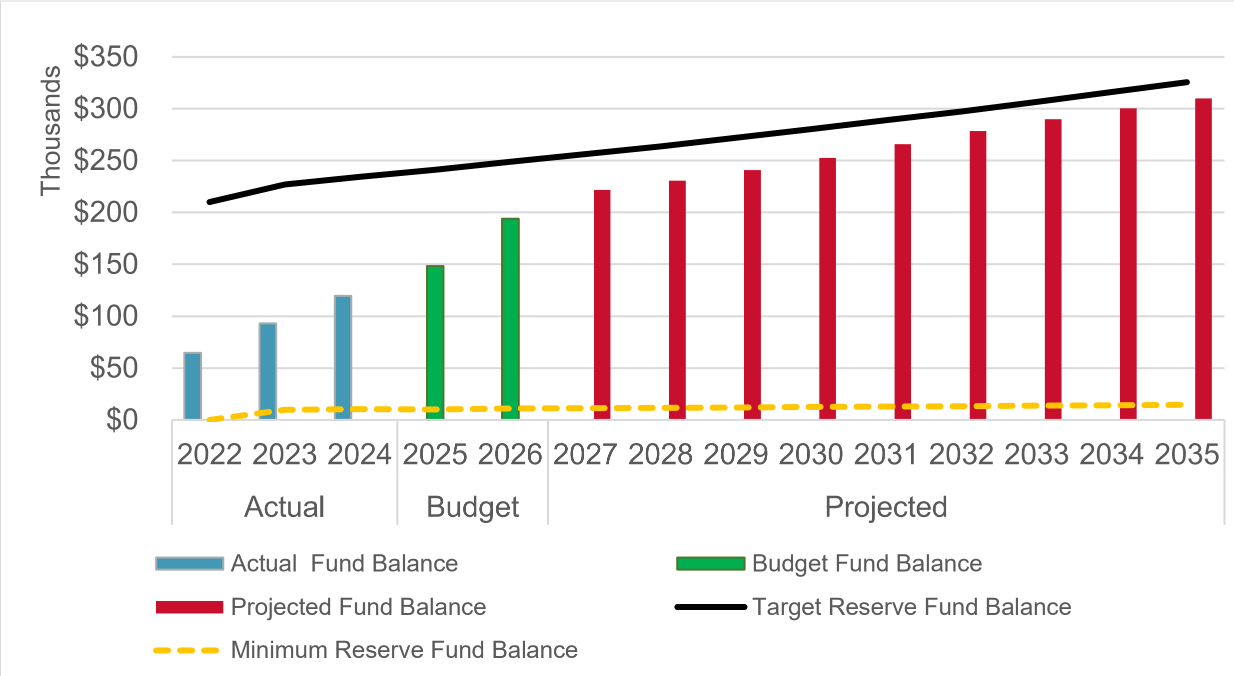


Figure 5-2. Reserve fund balance analysis
Minimum Reserve Fund Balance = 90 Days O&M
Target Reserve Fund Balance = minimum reserve fund balance plus 10 percent of average annual capital costs

5.4 Existing Rates

The City currently employs a two-tier flat monthly stormwater rate based on parcel size:

- Parcels ≤ 20,000 square feet
- Parcels > 20,000 square feet

Table 5-4. Historic stormwater rates

	2022	2023	2024	2025	2026
Stormwater Rates					
Parcels less than or equal to 20,000 square feet	$7.00	$7.16	$7.37	$7.56	$7.83
Parcels greater than 20,000 square feet	14.00	14.33	14.74	15.12	15.71

Rates have been increased annually based on the June-to-June Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), as required by City code. This automatic inflationary adjustment is a sound financial practice that helps maintain purchasing power.

While the parcel-based structure broadly reflects differences in service demand, it can result in inequities among customers with similar impervious surface areas but different parcel sizes. Because impervious area is more directly correlated to stormwater runoff and cost of service, many stormwater utilities have transitioned to impervious-surface–based rate structures. This issue is identified for future consideration but does not change the rate study methodology used in this chapter.

5.5 Proposed Rates

Based on the revenue requirement analysis, proposed future rate were developed and are shown below.

Table 5-5. Historic stormwater rates

	Current 2026	2027	2028	2029	2030	2031
Parcels ≤ 20,000 square feet	$7.83	$8.22	$8.63	$9.06	$9.52	$9.99
$ Change per Month		0.39	0.41	0.43	0.45	0.48
Parcels > 20,000 square feet	$15.71	$16.50	$17.32	$18.19	$19.10	$20.05
$ Change per Month		$0.79	$0.82	$0.87	$0.91	$0.95

The above rates are assuming the same rate structure as the City currently uses.

An issue that exists with the current rate structure is the bill charged to each customer is not necessarily proportional to the impact to the stormwater system. This is because a customer is charged either one rate if their parcel is less than 20,000 square feet and another if it is greater than 20,000 square feet. That means that a customer who has a parcel of 20,001 square feet is charged the same rate as a customer with 200,000 square feet despite the second parcel being ten times the size of the first parcel.

An alternative rate structure could be based on an average single family residential parcel, which is commonly used by stormwater utilities to better align rates with service demand. Under this approach, an average single family parcel is assumed to be 12,000 square feet, and all single family customers would be charged a uniform rate equivalent to that parcel size, regardless of their actual parcel size. This alternative rate structure better reflects the proportional impact of larger parcels than the current rate structure.

Non-single family parcels would be billed based on the number of single family “equivalent units” they represent. There are two common methods for calculating these equivalents:

Whole Unit Method

Each non-single family parcel is charged in whole units, with a minimum of one unit. For example, a parcel with an area of 13,000 square feet would be billed as two single family units, since it exceeds the 12,000 square foot threshold.

Fractional Unit Method

Parcels are billed based on their actual size relative to the average single family parcel. Using the same example, a 13,000 square foot parcel divided by 12,000 square feet equals 1.08 units, so the customer would be billed 1.08 single family units times the applicable stormwater rate. While this method is more precise, many utilities still apply a minimum charge of one full unit.

Table 5-6 illustrates these alternative rate structures. The rates shown are based on County parcel data and assume an annual revenue target of $73,500.

Table 5-6. Alternative rate structures

	2027	2028	2029	2030	2031
Whole Units					
Single Family Unit	$5.88	$6.17	$6.48	$6.81	$7.15
$ Change per Month		0.29	0.31	0.33	0.34
Fractional Units					
Single Family Unit	$5.99	$6.28	$6.60	$6.93	$7.27
$ Change per Month		0.29	0.32	0.33	0.34

Using the whole unit method, a customer with a 13,000 square-foot parcel would pay 2 × $5.88, or $11.76 per month (2027 rate). Under the fractional unit method, the same customer would be charged 1.08 × $5.99, or $6.46 per month.

For single-family parcels, this approach would generally result in lower monthly bills, reducing the typical charge from $7.83 to approximately $5.88–$5.99, with potentially greater reductions for parcels larger than 20,000 square feet.

Impacts to non-single-family parcels would vary depending on parcel size. The average non-single-family parcel is approximately 71,967 square feet, which would result in a monthly bill of approximately $35.28 under the fractional unit method and $35.89 under the whole unit method—an increase from the current flat rate of $15.71 per month.

It should be noted that, although the unit rates decrease under the alternative rate structures, total revenue is projected to remain consistent with the revenue requirement. This is because non-single-family parcels are charged based on increments of 12,000 square feet of parcel area, resulting in higher total charges for larger parcels. The broader distribution of charges across larger properties offsets the lower unit rates and maintains overall revenue levels.

One potential implementation strategy the City could consider is maintaining the current rate for single-family parcels while transitioning to the alternative rate structure. Under this approach, the single-family rate would remain unchanged for the next five years, meaning most single-family customers would not experience rate increases during that period. For non-single-family parcels, rates would be adjusted to the calculated unit costs under the alternative structures, with a minimum bill set equal to the single-family rate.

If implemented, this approach would likely result in total revenues exceeding those shown in the revenue requirement analysis, while providing rate stability for single-family customers. This strategy may help ease the transition to a more equitable rate structure while gradually increasing revenue capacity. The impacts to single-family parcels under the current structure, the alternative structure, and the scenario in which single-family rates remain unchanged for five years are illustrated in Figure 5-3.

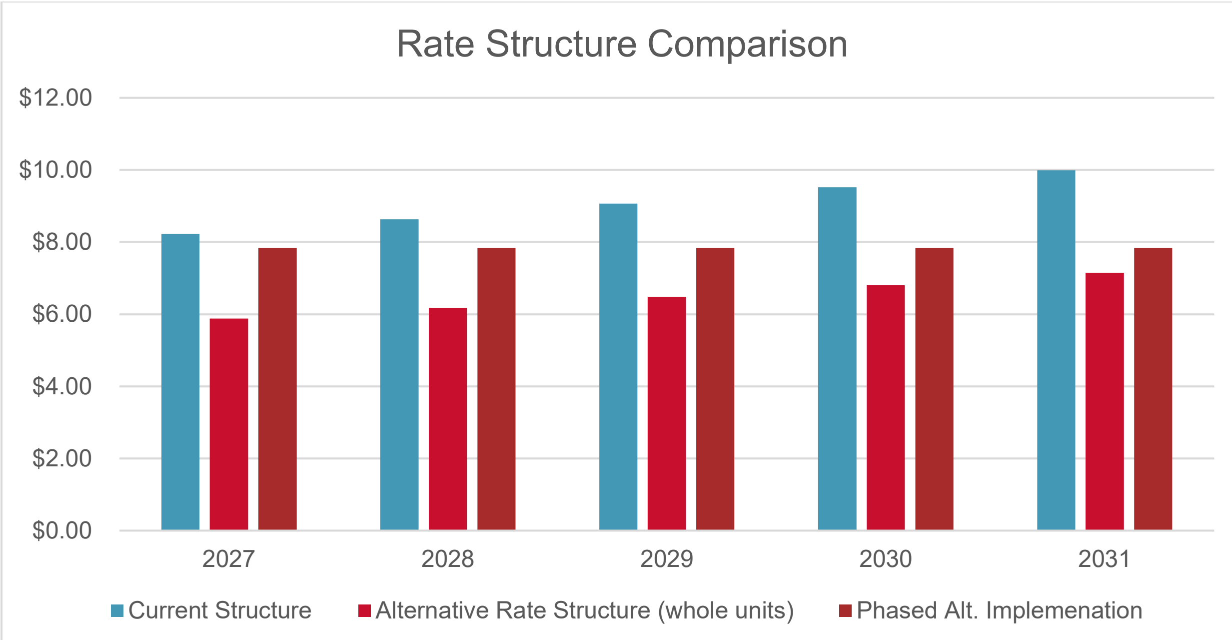


Figure 5-3. Impact of rate structure changes on single-family rates

As the chart illustrates, the current rate structure increases steadily on an annual basis. In contrast, the alternative rate structure shows a decrease in the first year, followed by gradual increases in subsequent years.

The phased alternative implementation, on the other hand, remains flat over the initial five-year period. Over time, the alternative rate structure begins to converge with the phased approach as increases are applied in later years.

The alternative rate structures above were calculated using parcel data taken from Grays Harbor County GIS files.

5.6 Financial Policies

Reserve Fund Guidelines

Operating reserves are used to maintain cash flow, respond to emergencies, mitigate revenue disruptions, and smooth the funding of capital expenditures. Reserve policies typically define minimum, target, and maximum balance thresholds.

Minimum operating reserves are commonly expressed in terms of days of operations and maintenance (O&M) expenditures, with approximately 45 days typical for utilities with monthly billing cycles. Utilities that do not maintain a separate capital reserve fund may require higher operating reserve levels to support both operational and capital needs. Maximum reserve balances are often capped between 180 and 365 days of O&M, depending on funding practices and the extent to which debt financing is utilized.

The target reserve balance, which falls between the minimum and maximum levels, represents an optimal funding level. This target is intended to cover O&M requirements, provide a buffer for emergencies, and set aside funds for future capital investments. The portion of reserves allocated to capital will depend on the City's policies related to debt financing and the availability of grant funding.

For example, if the City's policy were to avoid debt financing and grant funding were unavailable, it may be appropriate to maintain capital reserves equal to the 10-year average of projected capital expenditures. However, for the City, it is anticipated that the majority of future capital projects will be funded through grants. As a result, a lower capital reserve component is appropriate, such as 10 percent of the 10-year average capital costs, as outlined in the Reserve Fund section of this chapter.

Debt Policy

Debt is often viewed negatively; however, for utilities with significant infrastructure investment needs, the strategic use of debt can provide important financial and equity-related benefits. One such benefit is the principle of intergenerational equity, which holds that it is more equitable to spread the cost of long-lived capital assets across both current and future utility customers. By financing capital improvements through debt and repaying that debt with rate revenues over time, the costs of infrastructure investments are aligned with the customers who benefit from those assets throughout their useful lives. When used appropriately, debt can also help reduce the need for large, near-term rate increases by spreading capital costs over multiple years.

Adoption of a formal debt policy provides guidance for the prudent use of borrowing and supports sound financial management. Such a policy typically limits debt issuance to capital projects with long service lives, prioritizes the use of low-interest or subsidized financing where available, and establishes thresholds or limits on debt service relative to revenues. A clearly defined debt policy helps ensure that borrowing decisions are consistent with long-term financial sustainability while maintaining rate stability and equity among customer generations.

Debt Service Coverage

Debt service coverage ratios are commonly used to evaluate a utility's financial capacity and creditworthiness. A minimum coverage ratio of 1.25 is frequently required by lenders and bond covenants, meaning that net revenues must exceed annual debt service obligations by at least 25 percent after accounting for operation and maintenance costs, taxes, and required transfers.

While such a policy is not directly applicable to cities without outstanding debt, adoption of a minimum debt service coverage ratio establishes a prudent financial framework for future financing. If the City were to issue debt in the future, having an established coverage policy in place would provide clear guidance for rate setting, support financial stability, and enhance the City's readiness to access capital markets.

Consumer Price Index-Based Rate Adjustments

The City's Municipal Code Section 13.65.050(3) provides for annual Consumer Price Index (CPI)-based adjustments to stormwater rates and states:

> "The above rates shall take effect on January 1, 2022. Thereafter, the monthly stormwater rates shall be increased on an annual basis, effective January 1st of each subsequent year, based upon a percentage which corresponds with the CPI-W All Urban Consumers, June to June index, for that year."

Adjusting utility rates using an inflation index such as the CPI is a recommended best practice and should be continued. Regular inflationary adjustments help prevent gradual erosion of purchasing power and reduce the need for infrequent, larger rate increases.

However, the City should periodically reassess its stormwater rates and adjust as necessary to realign revenues with actual utility costs. CPI measures changes in consumer prices and may not adequately reflect inflationary pressures specific to utility operations, such as labor costs, construction and materials pricing, regulatory compliance requirements, and capital replacement needs. As a result, reliance on CPI alone may lead to revenues that do not keep pace with utility cost growth over time. Periodic rate resets in excess of CPI-based adjustments may therefore be necessary to maintain long-term financial sustainability.

In addition, the City could consider amending the municipal code to establish lower and upper bounds on annual inflation-based rate adjustments. Many jurisdictions include provisions specifying that the annual CPI adjustment shall not be less than zero percent nor exceed a defined maximum, commonly five percent. Establishing such bounds provides predictability and stability for customers while preserving the City's ability to apply inflation-based adjustments that support financial sustainability and limit excessive year-to-year rate volatility.

One-Time Revenues

One-time revenues should not be used to fund ongoing operations. These revenues are best applied to non-recurring expenses, reserves, or capital projects to avoid future structural deficits.

Capital Funding Targets

Establishing a target level of rate-funded capital investment is critical to maintaining system condition, minimizing long-term lifecycle costs, and reducing future rate volatility. Several methods may be used to determine an appropriate level of rate-funded capital. One approach is to target annual capital funding equal to annual depreciation expense, or a multiple thereof. However, using depreciation as a benchmark requires knowledge of the system's annual depreciation expense. Many cities in Washington operate on a cash basis of accounting and do not calculate or report depreciation annually, meaning this information may not be readily available.

An alternative approach is to adopt a policy that targets rate funding for a reasonable and sustainable level of system renewal and replacement. Under this method, the City would first estimate the total replacement cost of the stormwater system and then divide that amount by an assumed average useful life to determine an annualized R&R funding target. Establishing such a policy-based funding target helps ensure that rates provide sufficient ongoing support for capital reinvestment, even in the absence of formal depreciation accounting, and supports long-term financial sustainability.

5.7 Chapter Summary and Conclusions

This Stormwater Management Rate Study evaluates the City's ability to financially sustain stormwater operations and deliver planned capital improvements over the long term. The analysis compares existing and projected revenues to operating costs, capital needs, and policy requirements, with a particular focus on funding high-priority flood mitigation projects.

Recommended Actions

- Pursue grant funding to improve the system while minimizing impacts to customer rates.
- Phase in rate adjustments that support multiple objectives:
    - Provide local matching funds for grants
    - Build funding capacity for a proactive R&R program
    - Establish and maintain adequate financial reserves for emergencies
- Conduct a rate study approximately every five years to align revenues with inflation and evolving cost drivers.
- Consider revising the City's stormwater rate structure to better reflect proportional system impacts.

Flood mitigation improvements represent the majority of planned capital investments. The City's primary funding strategy relies on securing grants; however, most grant programs require local matching funds and sufficient cash availability to execute projects. In addition, the stormwater utility must build reserves to support the ongoing renewal and replacement of aging infrastructure. Without these financial resources particularly grant funding stormwater rates would need to increase significantly to fully fund capital needs through user charges alone.

The revenue requirement analysis indicates that absent rate adjustments, expenditures for operations and modest levels of rate-funded capital will exceed revenues over time, resulting in structural deficits. Operations and maintenance costs are projected to rise steadily due to inflation, while increased rate-funded capital will be necessary to support grant leveraging, preserve existing assets, and meet industry best practices.

A phased rate transition plan is recommended to address these financial pressures while maintaining affordability and rate stability. The analysis supports annual rate increases of 5 percent for five years, followed by ongoing adjustments at approximately the rate of inflation (about 2 percent annually). This approach allows the utility to gradually align revenues with costs, build reserve balances, generate funding for grant matches, and reduce financial risk over time.

The City should also consider restructuring the stormwater rate to better align the cost of service with customer impact. This could include implementing a rate structure that scales based on parcel size or impervious area, ensuring a more equitable distribution of costs.

6 Recommended Next Steps

Based on the analysis completed to date on this system, HDR has compiled the following recommendations for the City's consideration:

- Continue pursuing external grant funding for projects identified in the CIP.
- Develop an asset management plan for the City's stormwater infrastructure. The plan may include the following components:
    1. A complete asset inventory to understand the number of assets the City owns and where they are geographically.
    2. Condition assessment of all City stormwater assets to identify the need for maintenance and/or replacement.
    3. An R&R cost model based on known and/or estimate asset condition and asset replacement schedule. This will help the City calculate the target reserve fund balance.
- Consider adjusting the City's stormwater rates and rate structure to build the operational and capital reserves for proactive asset management and to better reflect proportional system impacts
- Implement recommended customer engagement activities for overburdened communities to ensure ample outreach and increase public support.

7 References

U.S. Census Bureau

2024 American Community Survey 5-Year Estimates

City of Cosmopolis, WA

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2025 Cultural Resource Risk Assessment Model

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