

FINAL
Stormwater System
Plan Update

Prepared for
City of Fife,
Washington
March 3, 2015

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Table of Contents

List of Figures	iv
List of Tables	iv
List of Abbreviations	v
1. Introduction.....	1-1
1.1 Background	1-1
1.2 Purpose.....	1-1
2. Drainage Area Characterization.....	2-1
2.1 Location and Boundaries.....	2-1
2.2 Population and Land Use	2-1
2.3 Climate and Rainfall.....	2-1
2.4 Topography and Surface Hydrology	2-1
2.5 Geology and Groundwater	2-3
2.6 Critical Areas	2-4
3. Existing Stormwater Program	3-1
3.1 Drainage Facilities and Management Responsibility	3-1
3.2 Stormwater Program Organization, Staffing, and Services	3-1
4. Capital Improvement Program.....	4-1
4.1 Project Identification Methodology	4-1
4.2 Cost Estimating Methodology and Limitations.....	4-6
4.3 CIP Project Cost Estimate Summary	4-6
5. Utility Rate Study	5-1
5.1 Past Financial Performance	5-1
5.2 Capital Funding Sources.....	5-1
5.3 Financial Analysis.....	5-2
5.4 Financial Forecast.....	5-2
5.5 Current and Projected Stormwater Utility Rates	5-3
5.6 Utility Rate Study Conclusions.....	5-3
Appendix A: Capital Improvement Program Fact Sheets and Cost Estimate Spreadsheets.....	A-1
Appendix B: City of Fife Stormwater Program Utility Rate Study (FCS Group, 2014)	B-1

List of Figures

Figure 1. City of Fife Vicinity Map with Stormwater Utilities2-2
Figure 2. CIP project locations4-5

List of Tables

Table 1. Stormwater System Capital Improvement Program4-1
Table 2. Stormwater System CIP Cost Estimate Summary4-6
Table 3. Current and Projected Stormwater Utility Rates (2013-22) – Front-Loaded Rate Increase
Alternative5-3

List of Abbreviations

BC	Brown and Caldwell
CIP	Capital Improvement Program
City	City of Fife
CMP	corrugated metal pipe
Ecology	Department of Ecology
FTE	full-time equivalent
I-5	Interstate 5
O&M	operations and maintenance
Permit	Western Washington Phase II Municipal Stormwater Permit
Planning	Planning and Community Development
Update	<i>Stormwater System Plan Update</i> (this document)
WSDOT	Washington State Department of Transportation

Section 1

Introduction

This section summarizes previous stormwater utility planning and outlines the purpose of this City of Fife 2014 *Stormwater System Plan Update*.

1.1 Background

The City of Fife (City) first began developing a consolidated stormwater program in 2001. The *City of Fife City-Wide Comprehensive Stormwater Management Plan* (Otak, 2002) summarized these initial stormwater analyses including potential impacts of new development, neighboring jurisdictions and regulatory compliance issues, facility inventory and mapping, and identification of staffing and local drainage needs. The 2002 plan included a series of recommended stormwater program enhancements; an estimate of needed resources, costs, and funding mechanisms; and a prioritized implementation plan for activities and projects. The City has implemented many of the 2002 plan recommendations during the past 10 years, including formation of a City stormwater utility to provide steady funding for drainage and water quality management. Since 2007 the City has been complying with the Western Washington Phase II Municipal Stormwater Permit (Permit). The Washington State Department of Ecology (Ecology) issued new versions of the Permit in 2012.

1.2 Purpose

This *Stormwater System Plan Update* (Update) has been prepared by Brown and Caldwell (BC) to help the City identify and prioritize its stormwater program needs for the next 10 years. The objective is to maintain compliance with the new Permit and address local drainage and flooding concerns where needed to meet the City's desired level of service. A Rate Analysis Study has been performed to calculate the level of funding needed for the recommended stormwater utility capital improvements and program administration costs including planning level cost estimates for compliance with new permit requirements.

This Update is intended only as a supplement to the 2002 Plan, and is thus presented as summary descriptions of the analyses prepared with full documentation provided as appendices. The Update consists of the following components:

- An updated description of the existing City drainage area and overall stormwater program facilities and management.
- A Capital Improvement Program (CIP), which includes a prioritized list of capital projects to address local drainage and flooding concerns based upon input provided by City staff. Methodology for identification of projects and development of conceptual level cost estimates is summarized in the main body of the text, while detailed cost estimates and project Fact Sheets are provided in Appendix A.
- A Financial Analysis and Stormwater Utility Rate Study identified annualized existing and future costs for the stormwater program, evaluated funding sources, and presented projected financial performance of the utility assuming a series of rate increases. Results and recommendations of the Rate Study are summarized herein, while the full Rate Study text is provided as Appendix B. The Financial Analysis and Stormwater Utility Rate Study was performed by FCS Group as a subconsultant to BC.

Section 2

Drainage Area Characterization

This section presents a characterization of the drainage area, including location and boundaries, population and land use, climate and rainfall, topography and surface hydrology, groundwater, and critical areas.

2.1 Location and Boundaries

The city of Fife is located in northwestern Pierce County, Washington, in the lower reaches of the Hylebos and Wapato creek drainage basins, directly adjacent to the city of Tacoma, the Port of Tacoma, and Commencement Bay. The city encompasses approximately 5.6 square miles of land area. It is bordered to the south by the Puyallup River, and to the north and east by the cities of Milton and Edgewood, and unincorporated Pierce County, as shown in Figure 1.

The city is transected by Interstate 5 (I-5), which runs through Fife in an east-west direction. Fife is heavily industrialized and urbanized on both sides of I-5, with development steadily expanding to the east into the city's less developed and agricultural lands. Residential land uses encompass a small portion of the city, and are concentrated in the southeastern corner of the city.

2.2 Population and Land Use

The current residential population within the city is approximately 9,235 (2012 Washington State Office of Financial Management). The recent rate of residential development is slow (2010 census estimate = 9,173); however, during an average working day the population within the city increases significantly due to the number of businesses located within city limits. The City's *Land Use Plan* expects that future commercial and industrial growth will be concentrated in the eastern parts of the city.

2.3 Climate and Rainfall

The weather patterns in and around the city of Fife are typical of many communities that lie west of the Cascade Mountain Range and within the Puget Sound basin. Average annual rainfall is approximately 45 inches per year, with only a small portion of the precipitation falling as snow during the winter. Rainfall occurs primarily anytime from about the third week of October through the month of June. Consecutive rainfall events are common, particularly during the months of November through February. Temperatures range from 35 to 45 degrees Fahrenheit during the winter to 75 to 85 degrees Fahrenheit during the summer.

2.4 Topography and Surface Hydrology

The city lies within an abandoned floodplain from the Puyallup River, which is located on top of an old mudflow from Mount Rainer. The topography is flat, with only a few feet of difference in elevation from one end of the city to the other. Surface water runoff within the city is collected and conveyed through natural and man-made drainage systems. As shown in Figure 1, five major drainage basins are located within the city. Erdahl Ditch, Wapato Creek, Fife Ditch, and Hylebos Creek drain directly into Commencement Bay. The Ox-Bow Area drains to the Puyallup River, which flows into the bay.

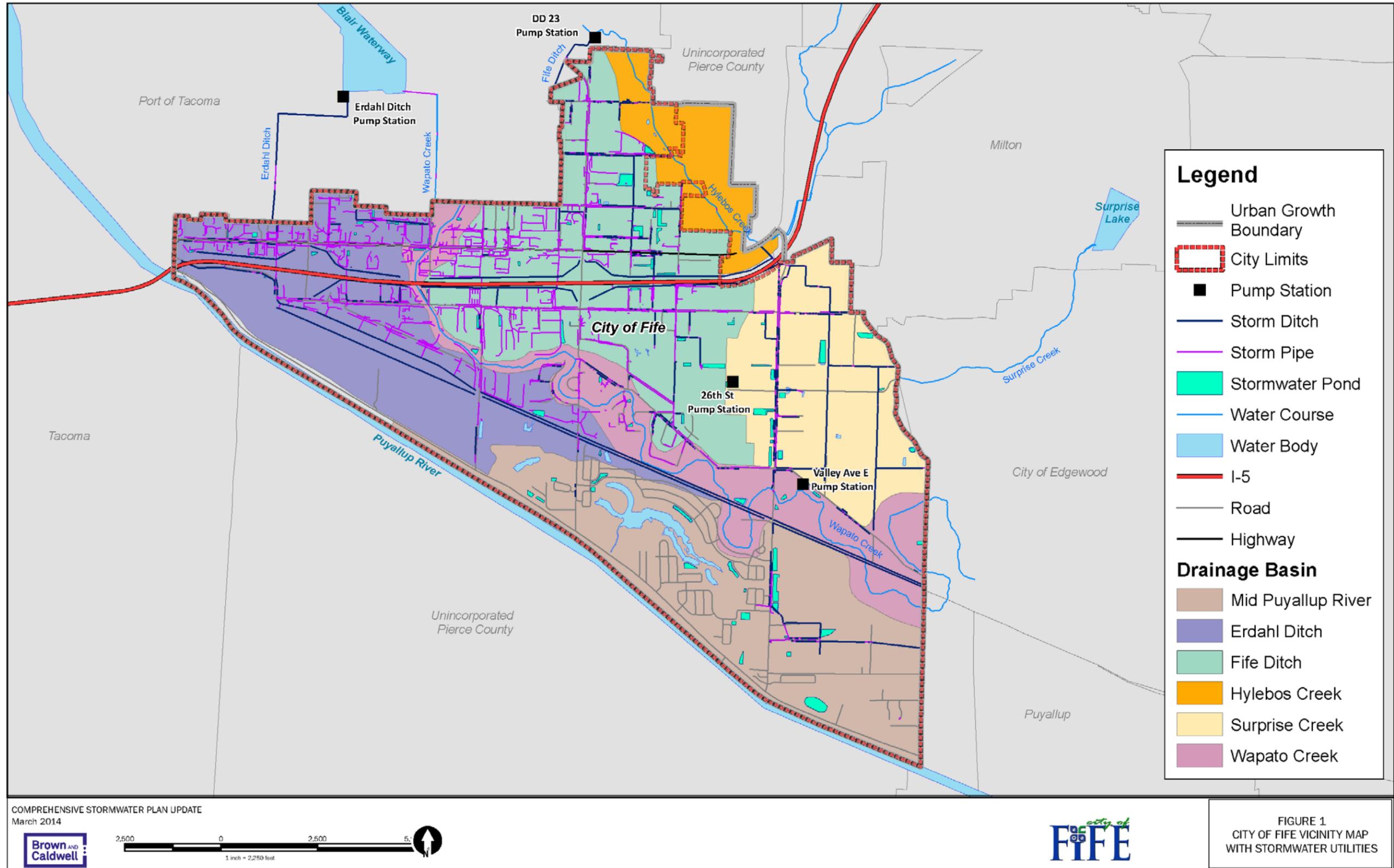


Figure 1. City of Fife Vicinity Map with Stormwater Utilities

The primary natural drainage channels are Hylebos and Wapato creeks. These two natural channels are augmented by Simons Creek (the only named tributary of Wapato Creek) and several man-made ditches and canals. Many of the man-made drainage features were built by the two local drainage districts, Drainage Districts 21 and 23.

Drainage District 21 was dissolved within city limits on December 31, 2009. City staff now maintain the major ditches that drain into Wapato Creek from Frank Albert Road upstream to city limits at Freeman Road. Drainage District 23 maintains the major ditches, outfall, and pump station that form the Fife Ditch drainage basin. The Fife Ditch basin discharges to saltwater downstream of the mouth of Hylebos Creek, and flows directly into the Hylebos Waterway of Commencement Bay.

Historically, the runoff that drains into the Fife Ditch system flowed directly into Hylebos Creek and then into Commencement Bay. However, with the nearly flat topography and the creation of the extensive system of ditches to de-water local agricultural fields, a separate drainage basin has been created. This system has its own collection and conveyance system, with its own pump and outfall directly to the Hylebos Waterway. The Fife Ditch Pump Station, which is more than 50 years old, is owned and operated by Drainage District 23.

Wapato Creek generally parallels the course of the Puyallup River just north of the levee that was constructed along the north bank of the river. The upper reaches of Wapato Creek, in the vicinity of north Puyallup, have been diverted directly into the Puyallup River via a large regional drainage system. This buried infiltration and conveyance system generally parallels Meridian Avenue, and traverses from one side of the basin near the foothills of Edgewood to where it discharges directly into the Puyallup River near the northwest corner of the city of Puyallup. This watershed is impacted by the increased development within the upper reaches of the watershed, lying largely within the cities of Milton and Edgewood.

The Erdahl Ditch drainage system is man-made and likely originally discharged into Wapato Creek and/or directly into the Blair Waterway or Commencement Bay. It has been channeled and conveys surface water runoff down to a large pump station that is currently owned and operated by the City. This pump system was built in 1985, through an economic development grant from the federal government, with support from the Port of Tacoma. The City replaced the inlet pipe, headwall, and pump in 2008.

Only a small portion of the Hylebos Creek drainage system lies within the city of Fife. However, the lower reaches of this drainage system flood regularly. Regional floodwaters often collect and back up into the northeast corner of the city. Much of the lower reaches of the Hylebos are designated as floodplain, and are thus subjected to restricted development and fill standards.

Surprise Lake is located in the foothills above the city and receives drainage from both Milton and Edgewood. The lake discharges into a steep ravine, under Freeman Road, and onto the flat agricultural fields within the city. This tributary meanders through and along fields in ditches down to and along 74th Avenue East, passes under I-5 in the vicinity of 70th Street, and discharges into Hylebos Creek.

2.5 Geology and Groundwater

The city is located primarily on the alluvial plain formed by the Puyallup River and is underlain by sediments, including alluvial deposits and layered glacial and interglacial deposits. Geology of the area is typical of alluvial floodplains and is composed of primarily fine-grained deposits of clay, silt and sand. Beneath this layer of alluvial deposits are glacial deposits of tills, sand and gravel that were deposited from melt water streams and ice.

Shallow groundwater, found throughout the city, is one of the reasons the original landowners installed ditches and pumps to de-water their fields. During most winters, groundwater is at or near the ground

surface in many areas of the city. Most new developments deposit a few feet of compacted fill material before building. Infiltration is not common due to high groundwater conditions.

2.6 Critical Areas

The city's location, lying in the lower reaches of two major drainage systems, has historically allowed water to stand for long periods and form numerous wetland areas. Many of these natural wetland areas have been filled in over time; however, many vacant lots and parcels of land retain extensive wetland and riparian areas. Few areas within Fife city limits remain in a natural state; however, recent development has included restoration of a portion of the creek corridor. A portion of the upper reaches of Wapato Creek is currently protected from development by the City. Other critical areas protected by the City include flood potential hazards, environmental resources, fish and wildlife habitat, lahar zones, erosion areas, and aquifer recharge areas.

Section 3

Existing Stormwater Program

This section briefly describes the City's existing stormwater program.

3.1 Drainage Facilities and Management Responsibility

The City of Fife Public Works Department manages the City's drainage facilities in cooperation with Drainage District 23. Generally, the drainage district is responsible for operating and maintaining the Fife Ditch and the Fife Ditch Pump Station. The City is responsible for review of stormwater drainage and treatment plans for new development and redevelopment on private land, operating and maintaining the Erdahl Pump Station, and for maintaining Wapato Creek, Erdahl Ditch, and the tributary drainages. Most of the tributary drainages lie primarily within existing road rights-of-way. The City also operates the Puyallup River tide gate, associated culvert, and the upstream Firwood Ditch system. The City works cooperatively with the Puyallup Tribe of Indians, Pierce County, and the Radiance and Saddle Creek Homeowners Associations who each own a portion of the wetlands complex through which water flows from the Firwood Ditch to the Puyallup River

The City's stormwater system consists of the following:

- 3 pump stations (Erdahl Ditch, 26th Street, and Valley Avenue East – See Figure 1)
- 8 water quality and detention storm ponds
- 1 underground detention vault/pipe gallery
- Over 20 water quality vaults
- 53 miles of storm drainage pipes and culverts (closed conveyance)
- 29 miles of ditches (open conveyance)
- Over 2,000 catch basins
- 5 miles of open streams
- Numerous wetlands and riparian areas

City-owned stormwater facilities are complemented by the numerous onsite detention and water quality enhancement facilities constructed by private landowners and businesses.

In addition to the physical facilities listed above, the City values the real estate upon which the facilities exist. For example, the City paid over \$1 Million for the three parcels on which the 26th Street storm pond and pump station are located. The City estimates the total value of the stormwater utility facilities at approximately \$30 Million. The City will continue to evaluate the need for additional land area to serve as potential future sites for stormwater quality and detention facilities. The CIP presented in Section 4 includes an allocation of \$500,000 (CIP 16) for potential property acquisition.

3.2 Stormwater Program Organization, Staffing, and Services

The City's existing stormwater program uses staff, equipment, and resources from the Planning and Community Development (Planning) and Public Works departments. Planning implements the City's Growth Management Plan, manages the development review process, establishes drainage policy-related ordinances, participates in regulatory compliance, and provides regional planning coordination. Approximately 1.1 staff (full-time equivalents [FTEs]) are involved in stormwater-related activities on an annual basis within the Planning Department.

Public Works provides stormwater engineering and maintenance. The engineering services are composed of capital facility design and construction, setting design criteria, inspection, and enforcement, with some participation in development review and permitting processes. The maintenance services include stormwater facility/inspection and maintenance, public and emergency response, regional coordination of drainage facility operation, and regulatory compliance. Approximately 2.3 FTEs are involved in stormwater-related activities on an annual basis within the Public Works Department.

Section 4

Capital Improvement Program

This section describes recommended improvement projects for the City’s stormwater and surface water utility to improve the condition and function of the City’s storm drainage system. The list of projects was developed by considering both the severity of the drainage problem (flood frequency and consequence) and the total number of projects that City staff could manage within a 10-year time frame. City staff played a primary role in establishing the projects to be included in the CIP. This section contains sufficient detail about each project to allow the City to proceed with budgeting, design, and construction.

The recommended CIP projects are listed in Table 1. Project order in Table 1 is not a reflection of priority based upon need. Scheduling of projects will be determined on a year-by-year basis, often selected to be concurrent with related projects for other City utilities, and with input and approval from the City Council. CIP 13 is expected to occur between 2015 and 2017 in conjunction with planned I-5 repair work by the Washington State Department of Transportation (WSDOT).

4.1 Project Identification Methodology

Drainage problems were identified with the assistance of City employees, several of whom have many years of experience with the City’s storm drainage system and its problem areas. These employees helped provide a thorough accounting of existing problems. Methods of addressing these drainage problems and associated service deficiencies form the core of the CIP.

The budget for this *Stormwater System Plan Update* did not allow for additional data collection or analysis of drainage problems. BC relied on City staff knowledge and other available information to develop CIP recommendations for the identified problems. Therefore, many of the recommended projects include survey and/or hydrologic and hydraulic modeling to better define the problem and support design of solutions. CIP 5, specifically, was developed by the City based upon knowledge of the drainage concerns and outside of the CIP development effort performed by BC.

Table 1 summarizes the results of the problem identification and the proposed projects. Figure 2 shows the problem and project locations. Appendix A contains additional details about each problem and project.

Table 1. Stormwater System Capital Improvement Program

Project number	Project name	Problem summary	Project description
CIP 1	Erdahl Pump Station	One of the three pumps at the pump station vibrates during operation. Also, the pump station does not have telemetry to allow for remote operation or relay of alarms. This is a concern because the pump station is located in a remote, secured area not controlled by the City.	This project will assess the condition of the Erdahl Pump Station. The assessment will examine the age and condition of all equipment and structures and observe the station while operating through its full capacity range. Needed repairs will be identified based on the condition assessment. At a minimum, the pump identified as vibrating will be repaired as part of this project and controls for remote monitoring and operation of the pump station will be installed.

Table 1. Stormwater System Capital Improvement Program			
Project number	Project name	Problem summary	Project description
CIP 2	20th Street E and 48th Avenue Court E Drainage	Water ponds on 48th Avenue Court East during moderate or greater rainfall events. Approximately three times in 13 years, ponded water has been at or above approximately 1–2 feet depth in the roadway, which is equivalent to the top of a nearby telephone pedestal on the west side of street. A siphon is located downstream of this area that may influence conveyance capacity of the infrastructure draining this location.	This project includes data collection (surveying stormwater infrastructure near and downstream of the flooding location) and analysis (hydrologic and hydraulic modeling). The results will be used to develop a conceptual design for a capital project to reduce flooding. Design and construction of this concept is not included in this project.
CIP 3	26th Street E and Berry Lane	The parcels at the northwest corner of 26th Street East and Berry Lane East experience frequent flooding. The cause of flooding is unknown.	This project includes data collection (surveying) and analysis (hydrologic and hydraulic modeling) to determine the source(s) and cause(s) of flooding. This project also includes construction of a proposed solution to reduce the flooding, which is assumed to be installing increased conveyance capacity for cost estimating purposes.
CIP 4	Valley Avenue E and Wilton Lane E	The earthen open channel along the south side of Valley Avenue East experiences high water levels at the southwest corner of Valley Avenue East and Wilton Lane East during large storms, according to the adjacent property owner. The property has not experienced flooding; however, the high water level is of concern because it occurs close to the property.	This section of open channel will be replaced with conveyance of sufficient capacity to lower the hydraulic grade line. The project will coincide with replacement of Valley Avenue East (a project in the City’s Transportation Plan).
CIP 5	Firwood Condominiums	The Firwood Condominiums, located in southwest Fife, experience flooding both on private property and in the public right-of-way along 79th and 80th Avenue Court East.	This project will connect the existing subsurface infiltration system to a City-owned pond. Additional privately funded improvements within the condo neighborhood will be required to connect to the new drains.
CIP 6	Freeman Road E Storm Pond	Freeman Road East along the eastern boundary of the city of Fife has no stormwater management infrastructure. The City purchased a parcel adjacent to Freeman Road East to provide a location for a stormwater management facility.	This project will result in construction of a stormwater storage facility (i.e., pond) on the City-owned parcel adjacent to Freeman Road East. The project will involve two phases: (1) a predesign study including survey and analysis followed by (2) pond design and construction.
CIP 7	15th Street E and 58th Avenue E	According to the 2002 Plan, flooding occurs during large storm events along the east branch of the Fife Ditch near 15th Street East. The culverts beneath 15th Street East were identified as undersized based on observed backwater in the open channel upstream of the 15th Street East crossing.	This project, as defined in the previous stormwater comprehensive plan, will upsize the 30- and 48-inch-diameter culverts to 54-inch-diameter corrugated metal pipe (CMP) culverts to increase the flow capacity of the channel as it crosses 15th Street East.
CIP 8	12th Street E and 58th Avenue E	According to the 2002 Plan, flooding occurs during large storm events along the east branch of the Fife Ditch near 12th Street East. The corrugated metal pipe culverts beneath 12th Street East were identified as undersized based on observed backwater in the open channel upstream of the 12th Street East crossing.	This project, as defined in the previous stormwater comprehensive plan, will upsize the existing 68-by-44-inch box culvert and 30-inch-diameter corrugated metal pipe culvert with twin 10-by-4-foot concrete box culverts to increase the flow capacity of the channel as it crosses 12th Street East.

Table 1. Stormwater System Capital Improvement Program

Project number	Project name	Problem summary	Project description
CIP 9	4th Street E and 56th Avenue E	Flooding occurs approximately twice annually, as a result of rainfall, along 56th Avenue East in the public right-of-way. A storm ditch is located along the east side of 56th Avenue East, which is an assumed contributor to the flooding.	This project will include data collection (survey) and analysis (hydrologic and hydraulic models) to assess the hydraulic capacity of the storm ditch along the eastern side of 56th Avenue East. As a result of the project, a capital project concept will be developed. Design and construction of this concept is not included in this project.
CIP 10	4th Street E and 54th Avenue E, Fife Ditch	According to the 2002 Plan, flooding at the 4th Street East crossing of the Fife Ditch occurs during large storms. The 2002 Plan indicates flooding is likely due to Fife Ditch backwater effects at the 4th Street East crossing during wet weather, affecting drainage laterals upstream and causing flooding on an unused parcel of land to the south. The inverts of the existing culverts were described as being about 6 inches above the channel bottom, which further restricts discharge capacity.	As specified in the 2002 Plan, this project will remove the two existing culverts and return the ditch to an open channel at the crossing. 4th Street East will be modified so the street ends at the ditch crossing. Access to the unused parcel of land to the south and the WSDOT woodchip pile to the north will be via State Route 509. The City has partially addressed flooding concerns by participating in a project to improve the Drainage District 23 pump station.
CIP 11	8th Street E and 54th Avenue E, Fife Ditch	According to the 2002 Plan, flooding occurs during large storms along the east branch of the Fife Ditch upstream of the 54th Avenue East crossing. The 2002 Plan indicates that the existing culverts are undersized, which can cause flooding upstream due to effects of backwater.	As specified in the 2002 Plan, this project will upgrade the existing culverts at 54th Avenue East and 8th Street East. More specifically, the existing twin 68-by-44-inch culverts will be replaced with twin 10-by-4-foot box culverts.
CIP 12	27th Street E	Flooding occurs in the backyards of homes just south of the 27th Street East cul-de-sac. During these private property flooding events, stormwater can be seen at the rim of a recently installed catch basin in the cul-de-sac north of the homes. The cause of flooding in the backyards of the affected homes is unknown.	This project will include data collection (survey) and analysis (hydrologic and hydraulic models) to assess the hydraulic capacity of the collection system in the area. As a result of the project, a capital project concept will be developed. Design and construction of this concept is not included in this project.
CIP 13	Interstate 5 and Erdahl Ditch	A 48-inch-diameter pipe beneath I-5 connects drainage from along 20th Street East south of I-5 to the Erdahl Ditch north of I-5.	A second 48-inch-diameter pipe will be constructed parallel to the existing pipe beneath I-5. Construction of the second parallel pipe (as part of this project) will increase conveyance capacity of stormwater to the Erdahl Ditch and ensure future capacity and increased reliability.
CIP 14	20th Street E, west of Port of Tacoma Road E	A drainage channel crosses 20th Street East via a 110-foot-long, 30-inch-diameter concrete culvert. According to the 2002 Plan, the discharge capacity of the culvert restricts flow during large storm events, resulting in backwater conditions and flooding of 20th Street East.	The proposed project, as described in the 2002 Plan, is to replace the existing 30-inch-diameter culvert with a 48-inch-diameter concrete culvert to increase conveyance capacity.
CIP 15	Firwood Ditch Freeman Road Pipe Replacement	Pipe identified as in need of replacement by City staff.	Replace existing 24-inch-diameter reinforced concrete pipe in kind.

Table 1. Stormwater System Capital Improvement Program			
Project number	Project name	Problem summary	Project description
CIP 16	Property Acquisition	None	Property acquisition (actual locations to be determined) would be utilized for potential future uses (restoration) and stormwater improvements rather than to address immediate drainage concerns.
CIP 17	Brookville Gardens Community Park	Stormwater quality improvements are required for compliance with the City’s adopted stormwater manual and to serve as a demonstration of the feasibility of rain gardens and green roof facilities.	This project will include construction of seven rain gardens and three green roofs at the Brookville Gardens Community Park.
CIP 18	Pacific Highway, 54 th Avenue E to 65 th Avenue E	High traffic volumes along Pacific Highway generate pollution in the form of stormwater. The current storm drainage system serving the north side of the roadway does not contain any runoff treatment facilities prior to discharge to the Fife Ditch.	This project will install 15 new stormwater quality curbside “tree in concrete box” water quality units on the north side of Pacific Highway to match the existing 6 units fronting the Emerald Queen Casino/Parking Garage/Tacoma Market on the south side of Pacific Highway.

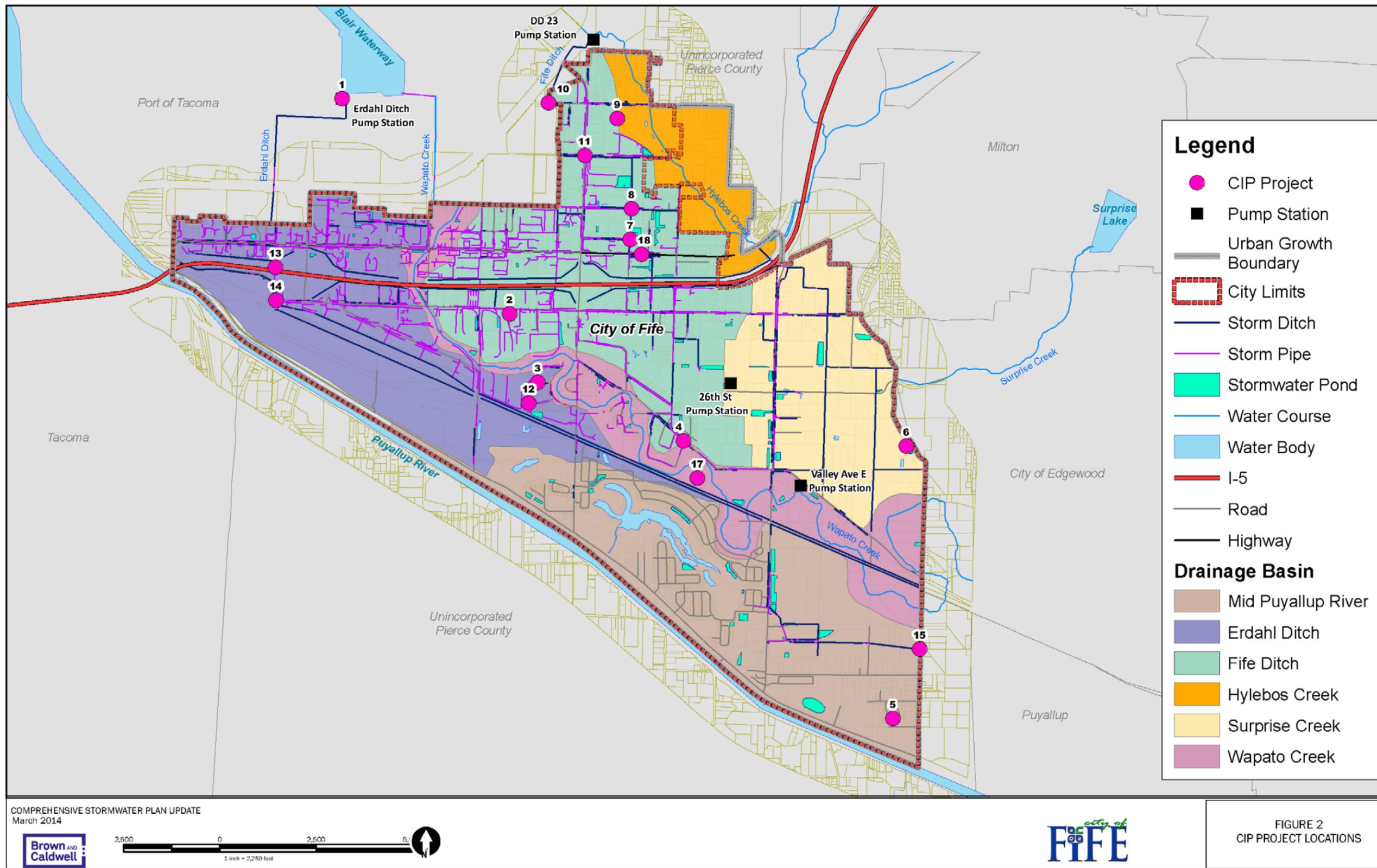


Figure 2. CIP Project Locations

4.2 Cost Estimating Methodology and Limitations

Planning-level cost estimates were developed for each project presented in Table 1¹. The estimated costs include design and engineering, construction, taxes, and contingency costs. Unit costs for construction items were based on recent City bid tabulations, WSDOT bid tabulations, and BC project experience. Design and engineering costs, and project contingencies were estimated as a percentage of construction costs.

A selection of projects in this plan were proposed in the previous comprehensive plan. Cost estimates for these projects were updated by reviewing the line items, quantities, and unit costs. If line items no longer applied to the project, then they were removed. Likewise, if additional line items were needed, then they were added.

As described above, the scope and budget for this *Stormwater System Plan Update* did not allow for additional data collection or analysis. The absence of this information increased the uncertainty related to project selection and sizing. The design, engineering, and contingency cost estimates were increased to acknowledge this uncertainty. The cost estimates should be regarded as suitable for general planning purposes only. Additional data collection and analysis would help to reduce this uncertainty and allow more accurate cost estimation.

4.3 CIP Project Cost Estimate Summary

The CIP project cost estimates are summarized in Table 2, and described in more detail in Appendix A.

Project number	Project name	Estimated cost (2013 dollars)
CIP 1	Erdahl Pump Station	\$130,000
CIP 2	20th Street E and 48th Avenue Court E Drainage	\$60,000
CIP 3	26th Street E and Berry Lane	\$170,000
CIP 4	Valley Avenue E and Wilton Lane E	\$90,000
CIP 5	Firwood Condominiums	\$340,000
CIP 6	Freeman Road E Storm Pond	\$430,000
CIP 7	15th Street E and 58th Avenue E	\$200,000
CIP 8	12th Street E and 58th Avenue E	\$260,000
CIP 9	4th Street E and 56th Avenue E	\$60,000
CIP 10	4th Street E and 54th Avenue E, Fife Ditch	\$150,000
CIP 11	8th Street E and 54th Avenue E, Fife Ditch	\$770,000
CIP 12	27th Street E	\$60,000
CIP 13	Interstate 5 and Erdahl Ditch	\$1,210,000
CIP 14	20th Street E, west of Port of Tacoma Road E	\$190,000
CIP 15	Firwood Ditch Freeman Road Pipe Replacement	\$90,000

¹ Project costs for CIP 17 and 18 were independently estimated by the City in 2013 and not revised for this Update.

Table 2. Stormwater System CIP Cost Estimate Summary		
Project number	Project name	Estimated cost (2013 dollars)
CIP 16	Property Acquisition	\$500,000
CIP 17	Brookville Gardens Community Park	\$315,000
CIP 18	Pacific Highway, 54 th Ave E to 65 th Ave E	\$360,000
Total CIP cost		\$5,385,000

Section 5

Utility Rate Study

A Utility Rate Study was performed by FCS Group to provide reasonable assurance that the City has and will have the financial ability to operate and maintain its stormwater utility, while having the capacity to obtain sufficient funds to construct the CIP presented in Section 4. This section summarizes the FCS Group report, which is provided in its entirety in Appendix B.

5.1 Past Financial Performance

City stormwater utility revenues and operation and maintenance (O&M) expenditures were evaluated for the most recent 5-year period (2008–12). Throughout this period, total revenue and O&M expenditures have been relatively constant and have generated positive cash flow from operations. These operating surpluses have been used to fund capital improvements. The utility spent almost \$1.3 million on capital expenditures in 2008, spending down the utility’s existing cash reserves considerably. Since then, the utility has not undertaken any substantial capital projects, while continuing to generate operating surpluses. As a result, the utility had \$1.4 million in unrestricted cash reserves at the beginning of 2013. Furthermore, the utility does not have any outstanding debt. Based on this general evaluation of the stormwater utility’s revenues and expenditures, it can be concluded that the utility is in a healthy financial position.

5.2 Capital Funding Sources

The City may fund the stormwater CIP from a variety of sources. In general, these sources can be summarized as (1) governmental grant and loan programs, (2) publicly issued debt (tax-exempt or taxable), and (3) cash resources and revenues. These sources are described in detail in Appendix B.

An ideal funding strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. It is recommended that the City pursue these funding avenues but assume for planning purposes that bond financing will be utilized to meet needs above the utility’s available cash resources. The Capital Financing Strategy developed to fund the CIP assumes the following funding priorities:

1. Available grant funds
2. Accumulated capital cash reserves
3. Annual use of excess cash (above minimum balance targets) from operating reserves
4. Capital reserves and other miscellaneous capital resources, including government program loans to the extent that they are accessible
5. Revenue bond financing
6. Direct rate funding

5.3 Financial Analysis

The City's stormwater utility operates as an enterprise fund and is thus responsible for funding all of its related costs. It is not dependent on general tax revenues or general fund resources. The primary source of funding for the utility is stormwater service charges. The City controls the level of service charges by ordinance, and subject to statutory authority, can adjust user charges as needed to meet financial objectives.

The financial plan can only provide a qualified assurance of financial feasibility if it considers the total system costs of providing stormwater service—both operating and capital. To meet these objectives, the following financial analyses were performed:

- **Capital Funding Plan:** This plan identifies total CIP obligations, and then defines a strategy for funding the CIP, including an analysis of available resources from rate revenues, existing reserves, capital facilities charges, debt financing, and any special resources that may be readily available (e.g., grants, developer contributions, etc.). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue resources available for capital funding.
- **Financial Plan:** This forecast identifies annual non-capital costs associated with the operation, maintenance, and administration of the stormwater system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, and reserve contributions, as well as any coverage requirements associated with long-term debt.

The financial analyses, including underlying assumptions and City financial policies, are presented in detail in Appendix B.

5.4 Financial Forecast

The financial forecast projects the amount of annual rate revenue needed to meet the utility's financial obligations. The analysis incorporates operating revenues, O&M expenses, debt service payments, rate funded capital needs, and any other identified revenues or expenses related to utility operations, and determines the sufficiency of the current level of rates. Revenue needs are also impacted by debt covenants (typically applicable to revenue bonds) and specific fiscal policies and financial goals of the utility.

Two revenue sufficiency criteria were developed for the financial forecast to reflect the financial goals and constraints of the utility: (1) cash needs must be met and (2) debt coverage requirements must be realized. In order to operate successfully with respect to these goals, both tests of revenue sufficiency must be met. The cash flow and debt coverage tests, along with the underlying data and assumptions, are presented in detail in Appendix B.

Results of the financial forecast indicate that revenues under the existing rates are not sufficient to fund utility needs, both operating and capital. It is projected that the utility will need to increase its stormwater rates by at least 9.25 percent annually. Alternatively, stormwater rates could be front-loaded by implementing higher initial rate increases followed by smaller, inflationary based increases in the future. The goal of front-loaded rate increases is to bring in more capital funding resources in the short-term to address pressing capital project needs. Implementing this accelerated rate approach eliminates the need for revenue bond financing. The front-loaded financial forecast assumes annual 20 percent increases for the years 2014 through 2016, followed by 3 percent increases through 2022.

It is important to note that these projections are based upon current assumptions and the CIP identified in Section 4. Circumstances might change over time, causing rate adjustments to be higher or lower once actual costs are known. It is imperative that the City track its costs as they become available and compare them to assumptions used in the study. If significant changes occur, the City should revisit the analysis and make appropriate changes.

5.5 Current and Projected Stormwater Utility Rates

The City currently charges its customers a monthly base rate per parcel. In addition to the monthly base rate, there is a service charge based on the percentage amount of impervious surface area on each parcel. The City offers a rate reduction for the service charge component if that property is served by privately owned and maintained stormwater management facilities.

Tables 3 provides the City’s current (2013) stormwater categories and associated rates as a basis of comparison to projected stormwater rates based assuming the front-loaded rate increase strategy presented in Section 5.4.

Table 3. Current and Projected Stormwater Utility Rates (2013-22) – Front-Loaded Rate Increase Alternative											
Development Category	Description	Existing Rates	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Annual Rate Adjustment		20.0%	20.0%	20.0%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Cumulative Rate		20.0%	44.0%	72.8%	78.0%	83.3%	88.6%	94.5%	100.3%	106.3%
	Adjustment										
Base rate per parcel		\$2.00	\$2.40	\$2.88	\$3.46	\$3.56	\$3.67	\$3.78	\$3.89	\$4.01	\$4.13
Service Charge per 500 sq. ft. of ISA (a)											
Undeveloped	ISA < 20%										
One acre or less		\$0.065	\$0.078	\$0.094	\$0.112	\$0.116	\$0.119	\$0.123	\$0.126	\$0.130	\$0.134
Plus: for area over one acre		0.050	0.060	0.072	0.086	0.089	0.092	0.094	0.097	0.100	0.103
Lightly Developed	ISA > 20% & < 40%	0.100	0.120	0.144	0.173	0.178	0.183	0.189	0.194	0.200	0.206
Moderately Developed	ISA > 40% & < 60%	0.300	0.360	0.432	0.518	0.534	0.550	0.566	0.583	0.601	0.619
Heavily Developed	ISA > 60% & < 80%	0.400	0.480	0.576	0.691	0.712	0.733	0.755	0.778	0.801	0.825
Very Heavily Developed	ISA > 80%	0.500	0.600	0.720	0.864	0.890	0.917	0.944	0.972	1.002	1.032

(a) ISA = Impervious Surface Area

5.6 Utility Rate Study Conclusions

The City’s current rates are projected to be insufficient to fully fund the proposed CIP within a 10-year horizon and meet the forecasted obligations of the utility. New financial obligations for which the utility will require additional rate revenues are driven by the capital financing impacts (i.e., cash financing of capital projects and/or debt service payments for new bond issues). To generate adequate cash capital to fund utility obligations and meet annual cash flow, a series of rate increases will be needed in years 2014 through 2022.



After review of the alternative rate increase strategies and their projected impacts to stormwater utility rates, the City Council approved the front-loaded rate increase strategy in December 2013. The front-loaded rate increase allows the City to more quickly address needed stormwater utility improvements and eliminates the need for revenue bond financing. This Stormwater System Plan Update serves as formal adoption of the rate increase and Capital Improvement Program.

Appendix A: Capital Improvement Program Fact Sheets and Cost Estimate Spreadsheets



Capital Improvement Project – Table of Contents

- Project 1: Erdahl Pump Station
- Project 2: 20th Street East and 48th Avenue Court East Drainage
- Project 3: 26th Street East and Berry Lane
- Project 4: Valley Avenue East and Wilton Lane East
- Project 5: Firwood Condominiums
- Project 6: Freeman Road East Storm Pond
- Project 7: 15th Street East and 58th Avenue East
- Project 8: 12th Street East and 58th Avenue East
- Project 9: 4th Street East and 56th Avenue East
- Project 10: 4th Street East and 54th Avenue East, Fife Ditch
- Project 11: 8th Street East and 54th Avenue East, Fife Ditch
- Project 12: 27th Street East
- Project 13: Interstate 5 and Erdahl Ditch
- Project 14: 20th Street East, west of Port of Tacoma Road East
- Project 15: Firwood Ditch Freeman Road Pipe Replacement
- Project 16: Property Acquisition
- Project 17: Brookville Gardens Community Park
- Project 18: Pacific Highway, 54th Avenue East to 65th Avenue East

Capital Improvement Project 1: Erdahl Pump Station

Problem Identification: City maintenance staff.

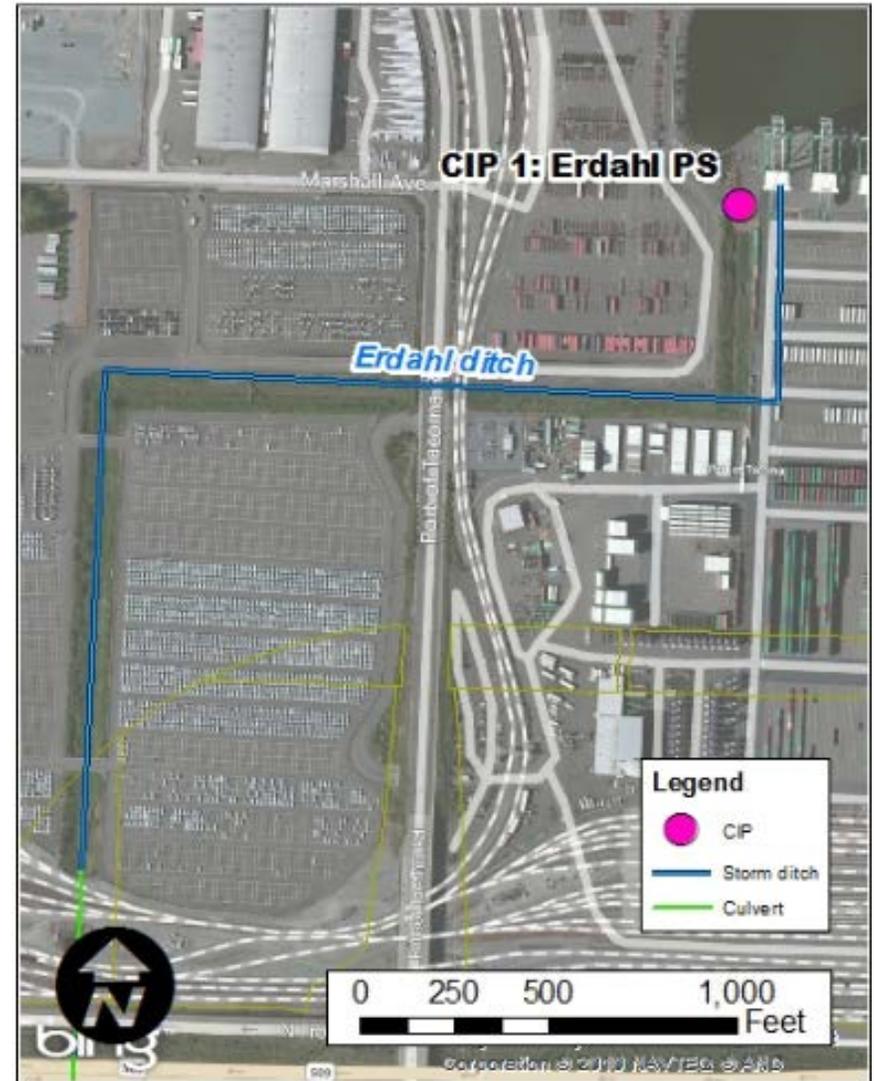
Problem Summary: The Erdahl Pump Station, located within Port of Tacoma property, is the outlet of the Erdahl Ditch. The pump station has three pumps; two operate normally with the third pump (Pump 3) providing peak capacity during high flows. Pump 3 has experienced vibration during operation. In addition, the pump station does not have telemetry to allow for remote operation or relay of alarms, which is noteworthy because of the pump station location being at the Port of Tacoma.

Project Description: This project will assess the condition of the Erdahl Pump Station. When a pump is experiencing severe vibration, it can be from a number of causes, including but not limited to: worn impellers, pump operating out of its preferred operating range, insufficient submergence and subsequent cavitation, rags or debris in the pump, soft foot (foundation coming loose from grout base), pump mechanical imbalance, or most commonly, poor intake conditions. The assessment will examine the age and condition of all equipment and structures and observation of the station while operating through its full capacity range. Original pump submittals and as-built installation drawings will be requested and reviewed. Assessment should occur during a storm event or at least a period of heavy rainfall and high flows. Operators and maintenance staff will also be interviewed. As a result of the condition assessment, necessary repairs will be identified for completion. Specifically, at a minimum, Pump 3 will be repaired. In addition, installing controls for remote monitoring and operation of the pump station will be evaluated.

Project Justification: The consequence of Pump 3 failure is significant, considering the pump operates during high flows in the Erdahl Ditch, and without the pump flooding would likely occur. Furthermore, there is no redundancy at this pump station, which reinforces the value of Pump 3 operation. Therefore, this project is justified to ensure proper drainage is maintained in the City of Fife during wet weather.

Cost Assumptions:

- Pump station condition assessment
- Pump 3 repair



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$130,000
Total Funding	\$130,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE			Project ID: CIP-1	
Project Name: Erdahl Pump Station				
Project Type: Pump Station				
Description: Assess the condition of the Erdahl Pump Station. As a result of the condition assessment, necessary repairs will be identified for completion. At a minimum, repair of Pump 3 will be specified and completed as part of this project. In addition, installing controls for remote monitoring and operation of the pump station will be evaluated.				
Construction Costs				
Item	Unit	Unit Cost	Quantity	Cost
Miscellaneous				
Pump station condition assessment (incl in design)	LS	\$ 9,000	0	\$ -
Repair Pump 3	LS	\$ 35,000	1	\$ 35,000
Installing controls - remote monitoring and operation	LS	\$ 50,000	1	\$ 50,000
Sub-Total:				\$ 85,000
Mobilization			10%	\$ 8,500
Sub-Total:				\$ 93,500
WA State Sales Tax			9.4%	\$ 8,789
Sub-Total:				\$ 102,289
Construction Contingencies			30%	\$ 30,687
Sub-Total:				\$ 132,976
Design and Construction Management			0%	\$ -
Project Cost				\$ 132,976
Estimate Notes and Assumptions				
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.				
2. Costs provided reflect 2013 dollars.				
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), utility conflicts, shoring, dewatering, easements and property acquisitions.				

Capital Improvement Project 2: 20th Street East and 48th Avenue Court East Drainage

Problem Identification: City maintenance staff.

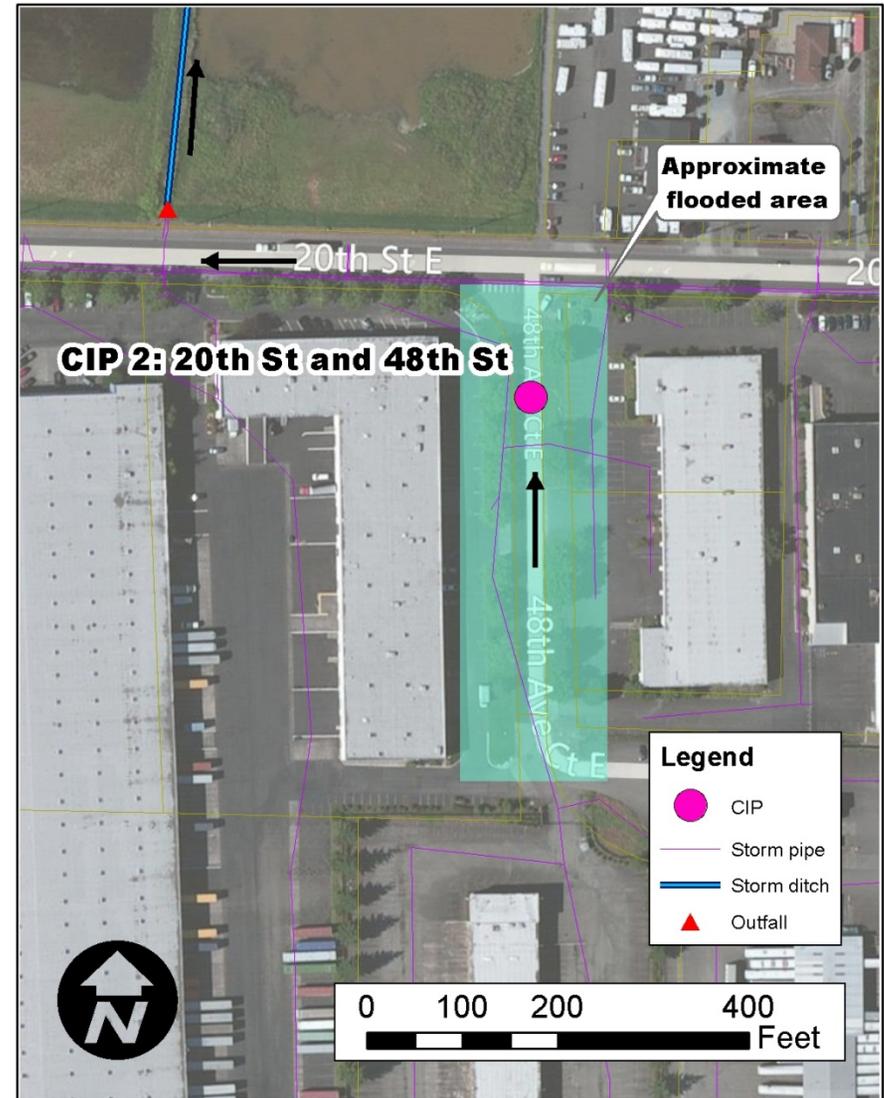
Problem Summary: Water ponds on 48th Avenue Court East during moderate or greater rainfall events, or about once every other year. Approximately three times in 13 years, ponded water has been at or above approximately 1-2 feet depth in the roadway, which is equivalent to the top of a nearby telephone pedestal on the west side of street. There is a siphon located downstream of this area that may influence conveyance capacity of the infrastructure draining this location.

Project Description: This project includes surveying stormwater infrastructure near and downstream of the flooding location. This infrastructure is assumed to consist mostly of piped conveyance. The survey information will be used to complete hydrologic and hydraulic analysis to identify the cause of flooding. The cost estimate for this project assumes completion of the study described above. As a result of this project, a capital project to reduce the flooding will be conceptualized

Project Justification: This project addresses flooding in the public right-of-way, and therefore justifies the use of public funds.

Cost Assumptions:

- Hydrologic and hydraulic modeling
- Survey



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$60,000
Total Funding	\$60,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE			Project ID: CIP-2	
Project Name: 20th Street East and 48th Avenue Court East Drainage				
Project Type: Conveyance				
Description: Survey, modeling, and alternatives analysis				
Construction Costs				
Item	Unit	Unit Cost	Quantity	Cost
Assessment/Analysis				
Survey	LS	\$ 10,000	1	\$ 10,000
Hydrologic/Hydraulic Analysis	LS	\$ 20,000	1	\$ 20,000
Analysis of Alternatives	LS	\$ 15,000	1	\$ 15,000
Conceptual Design	LS	\$ 15,000	1	\$ 15,000
			Sub-Total	\$ 60,000
			Mobilization	0% \$ -
			Sub-Total:	\$ 60,000
			WA State Sales Tax	0.0% \$ -
			Sub-Total:	\$ 60,000
			Construction Contingencies	0% \$ -
			Sub-Total:	\$ 60,000
			Design and Construction Management	0% \$ -
			Project Cost	\$ 60,000
Estimate Notes and Assumptions				
1. Costs provided reflect 2013 dollars.				

Capital Improvement Project 3: 26th Street East and Berry Lane

Problem Identification: City maintenance staff.

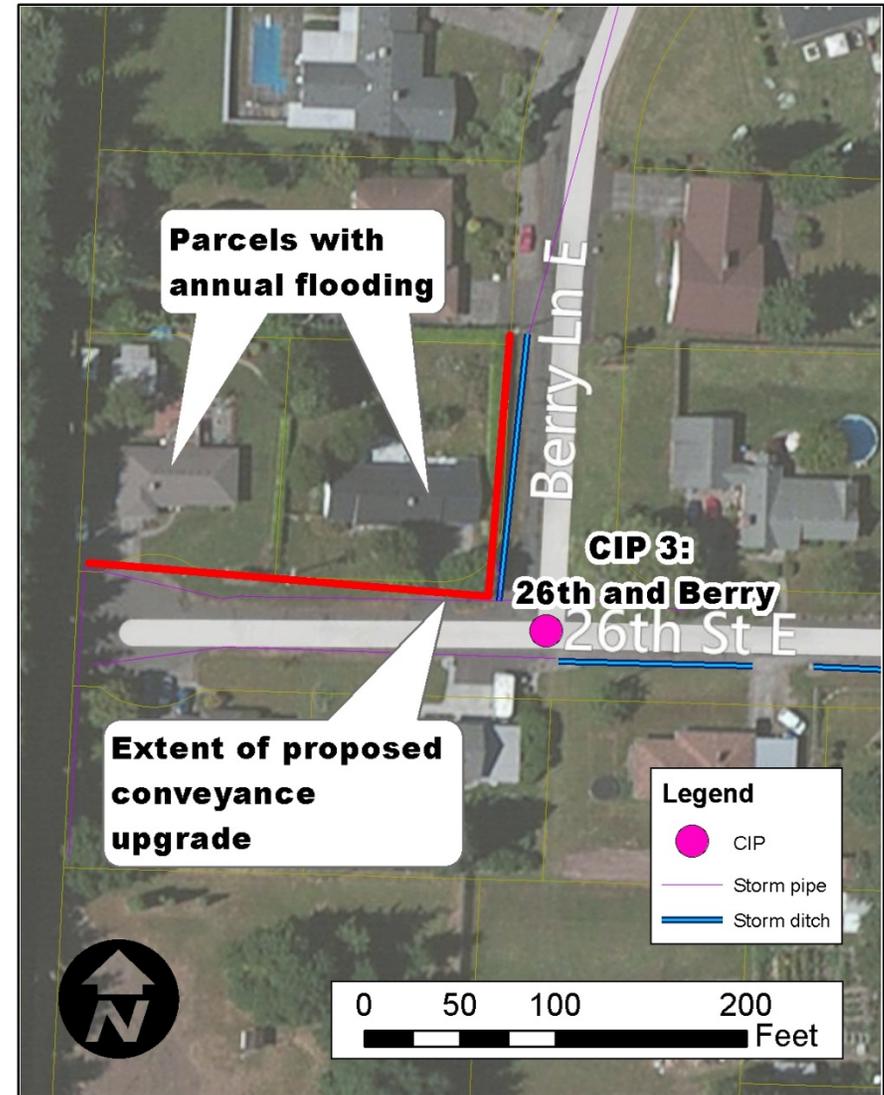
Problem Summary: The parcels at the northwest corner of 26th Street East and Berry Lane East experience annual flooding. The source of flooding is stormwater. The flow direction of stormwater conveyance in the vicinity of the flooded parcels is unknown.

Project Description: This project includes surveying the piped and open channel stormwater conveyance in the vicinity of the flooding. The survey information will be used to prepare plans for bidding to install piping for increased conveyance capacity.

Project Justification: The flooding identified at this location is not in the public right-of-way; however, the cause of flooding is likely public stormwater infrastructure. Therefore, the City is responsible for addressing the problem.

Cost Assumptions:

- Hydrologic and hydraulic modeling
- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$170,000
Total Funding	\$170,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-3		
Project Name: 26th Street East and Berry Lane				
Project Type: Conveyance				
Description: Increase capacity of stormwater conveyance in vicinity of project location. Source of problem is unknown at this time; however, this cost estimate assumes installation of approximately 300 LF of 12-in diameter storm pipe will provide capacity to reduce flooding.				
Construction Costs				
Item	Unit	Unit Cost	Quantity	Cost
Demolition				
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000
General				
Project Temporary Traffic Control	LS	\$ 1,500	1	\$ 1,500
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	8	\$ 360
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500
Special Conditions				
Utility Relocation	LS	\$ 5,000	1	\$ 5,000
Storm Sewer				
Structure Excavation Class B Inc. Haul	CY	\$ 20	224	\$ 4,489
Structure Excavation Class B	CY	\$ 10	0	\$ -
Gravel Borrow, incl. Haul	CY	\$ 30	113	\$ 3,381
Corrugated Polyethylene Storm Sewer Pipe 18 In. Diam.	LF	\$ 60	400	\$ 24,000
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	3	\$ 7,500
Catch Basin Type 1	EA	\$ 1,200	0	\$ -
Adjust Catch Basin	EA	\$ 350	0	\$ -
Connection to Existing Structure	EA	\$ 450	0	\$ -
Shoring or Extra Excavation	SF	\$ 4	0	\$ -
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000
Restoration				
Crushed Surfacing Base Course	TN	\$ 35	158	\$ 5,531
Crushed Surfacing Top Course	TN	\$ 25	40	\$ 988
HMA Class 1/2"	TN	\$ 120	59	\$ 7,111
Topsoil Type A	CY	\$ 60	15	\$ 889
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	1200	\$ 600
Sub-Total				\$ 74,849
Mobilization 10%				\$ 7,485
Sub-Total:				\$ 82,334
WA State Sales Tax 9.4%				\$ 7,739
Sub-Total:				\$ 90,073
Construction Contingencies 30%				\$ 27,022
Sub-Total:				\$ 117,095
Design and Construction Management 60%				\$ 54,044
Project Cost				\$ 171,139
Estimate Notes and Assumptions				
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.				
2. Costs provided reflect 2013 dollars.				
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.				
4. Traffic control shall be verified by the City.				
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.				
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.				
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.				

Capital Improvement Project 4: Valley Avenue East and Wilton Lane East

Problem Identification: City maintenance staff.

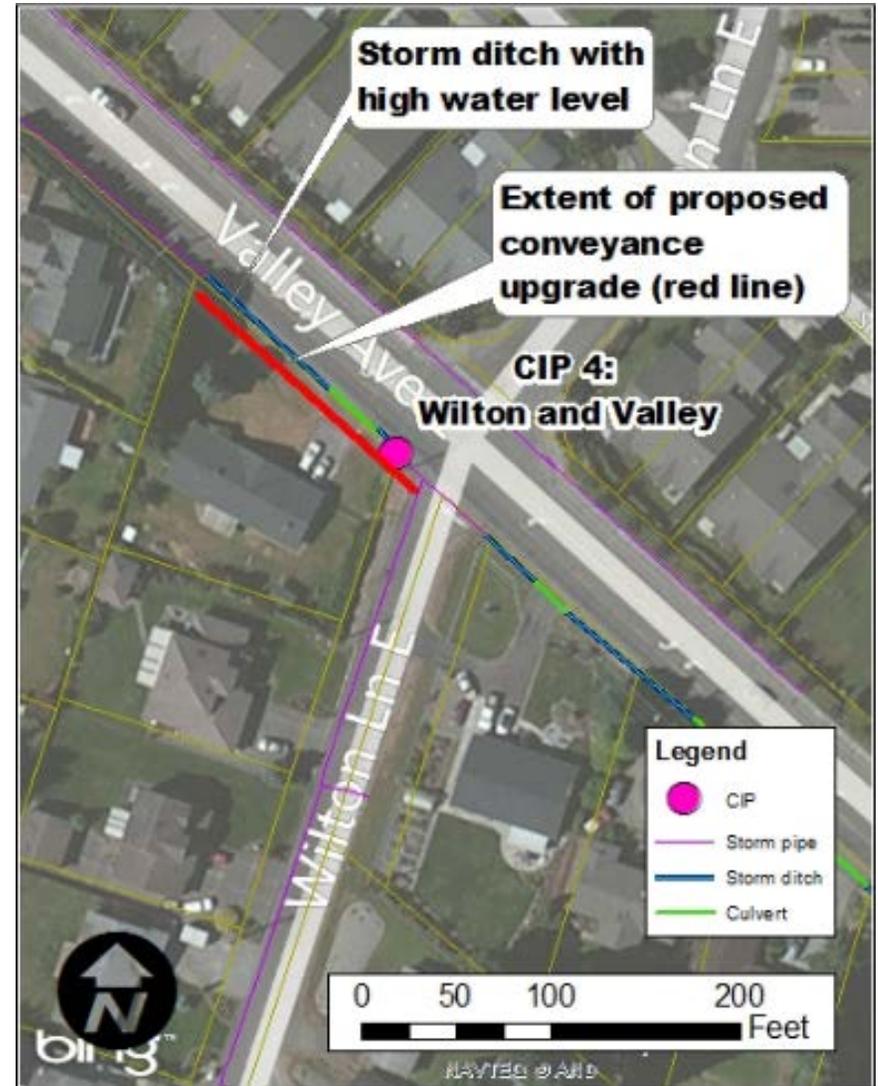
Problem Summary: The earthen open channel along the south side of Valley Avenue East experiences a high water level during large storms.

Project Description: This section of open channel will be replaced with buried piping. The project will require survey and modeling analysis to support the determination of hydraulic modifications to the channel. The project cost assumes the high water will be addressed by converting the open channel to closed conduit during the replacement of Valley Avenue East. Valley Avenue East is scheduled for widening in the City of Fife Transportation Plan. The stormwater piping will be installed in conjunction with the road widening.

Project Justification: Flooding has been identified at this location and the future risk of flooding is perceived to be high. The proposed road construction provides an opportunity to address the flooding risk while reducing construction costs.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$90,000
Total Funding	\$90,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-4			
Project Name: Valley Avenue East and Wilton Lane East					
Project Type: Conveyance					
Description: Convert open channel to closed conduit conveyance in response to property owner complaints of high water surface in the open channel. This project is assumed to coincide with upgrade of Valley Avenue East roadway.					
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 2,000	1	\$ 2,000	
General					
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	80	\$ 3,600	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500	
Special Conditions					
Utility Relocation	LS	\$ 5,000	1	\$ 5,000	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	61	\$ 1,230	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	190	\$ 5,689	
Corrugated Polyethylene Storm Sewer Pipe 12 In. Diam.	LF	\$ 40	180	\$ 7,200	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	2	\$ 5,000	
Catch Basin Type 1	EA	\$ 1,200	2	\$ 2,400	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	2	\$ 900	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	0	\$ -	
Crushed Surfacing Top Course	TN	\$ 25	0	\$ -	
HMA Class 1/2"	TN	\$ 120	0	\$ -	
Topsoil Type A	CY	\$ 60	22	\$ 1,333	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	2400	\$ 1,200	
				Sub-Total	\$ 49,052
				Mobilization 3%	\$ 1,472
				Sub-Total:	\$ 50,523
				WA State Sales Tax 9.4%	\$ 4,749
				Sub-Total:	\$ 55,273
				Construction Contingencies 30%	\$ 16,582
				Sub-Total:	\$ 71,854
				Design and Construction Management 30%	\$ 16,582
				Project Cost	\$ 88,436
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					

Capital Improvement Project 5: Firwood Condominiums

Problem Identification: City maintenance staff.

Problem Summary: The Firwood Condominiums, located in southwest Fife, experience flooding both on private property and in the public right-of-way along 79th and 80th Avenue Court East. The condominium stormwater system consists of subsurface infiltration (e.g., dry wells) for stormwater management. The site’s proximity to the Puyallup River may affect the subsurface infiltration system performance. Specifically, high seasonal groundwater levels resulting from the influence of the river may inhibit infiltration of stormwater.

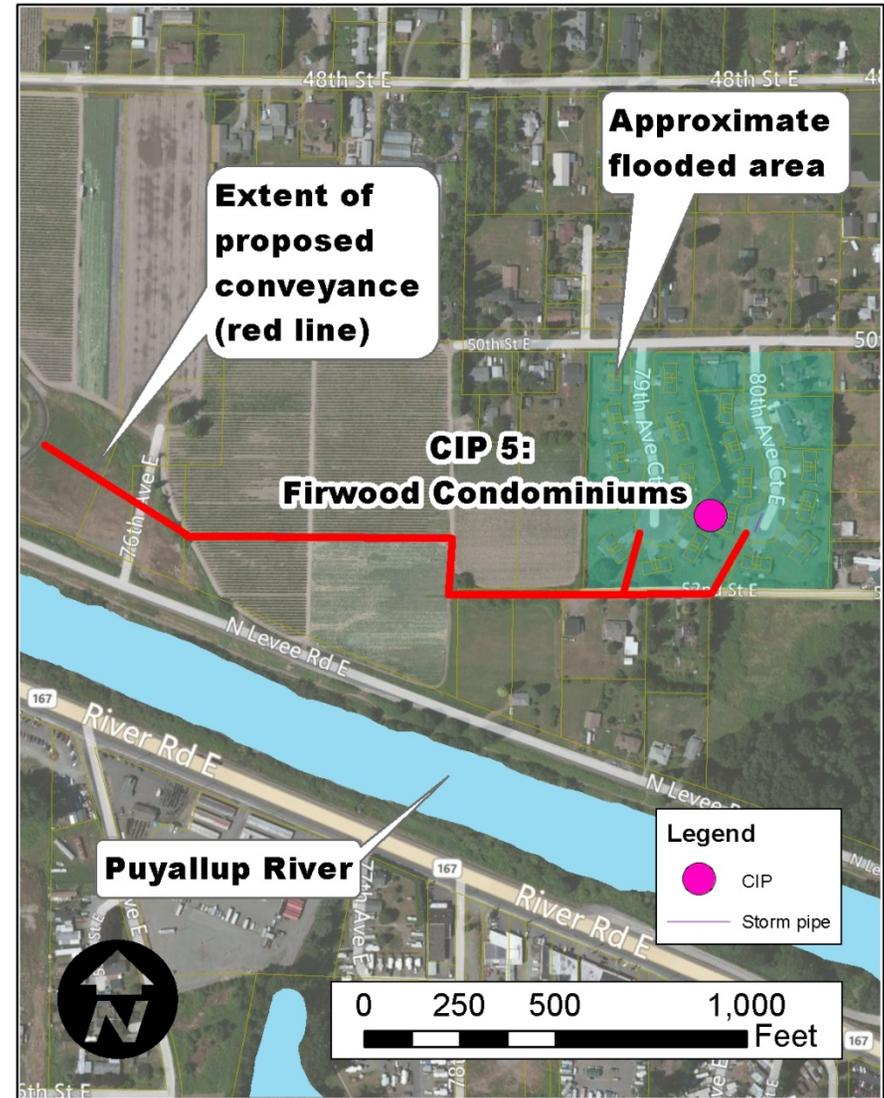
Project Description: This project will provide drainage improvements in 79th/80th Avenue Court East. The requested funds are not adequate to address all problems in the area, but will fund topographic survey, preliminary design/elevation setting, construction of a swale to the City-owned pond to the west, storm pipe under 52nd Street, and pipelines between 52nd Street and the condominium cul-de-sacs. The pipelines at the cul-de-sacs will be set at an elevation appropriate for further extension to serve the area. The extent of preliminary design will be adequate to allow budget setting for future extension of the system throughout the Firwood Condominium neighborhood.

Project Justification: Fife has completed or is in the process of completing all of the capital projects in its current (2002) Stormwater Comprehensive Plan except for those associated with Drainage District 23 and the District’s Fife Ditch system. In the absence of an interlocal agreement with the District, it is appropriate that Fife move forward with selection of other capital projects.

The neighborhood drainage system cannot be accessed for maintenance without essentially reconstructing the entire system. It would be more cost effective to simply connect the system to Fife’s existing pond. While pavement restoration would make a piped system throughout the entire neighborhood cost prohibitive, the provision of a connection point in each cul-de-sac will all the condominium association to construct swales on their common grounds that would connect to the new drains.

Cost Assumptions:

- Survey
- Design and Construction Management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$340,000
Total Funding	\$340,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-5			
Project Name: <u>Firwood Condominiums</u>					
Project Type: <u>Conveyance</u>					
Description: <u>Drainage improvements at Firwood Condominiums</u>					
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 5,000	0	\$ -	
General					
Project Temporary Traffic Control	LS	\$ 1,000	1	\$ 1,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	40	\$ 1,800	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 5,000	
Special Conditions					
Utility Relocation	LS	\$ 5,000	1	\$ 5,000	
Conveyance					
Structure Excavation Class B Inc. Haul	CY	\$ 20	293	\$ 5,861	
Ditch Excavation Class B Inc Haul, Leg 1	CY	\$ 15	416	\$ 6,233	
Ditch Excavation Class B Inc Haul, Leg 2	CY	\$ 15	3527	\$ 52,900	
Ditch Excavation Class B Inc Haul, Leg 3	CY	\$ 15	367	\$ 5,500	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	225	\$ 6,746	
Corrugated Polyethylene Storm Sewer Pipe 12 In. Diam.	LF	\$ 40	625	\$ 25,000	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	5	\$ 12,500	
Catch Basin Type 1	EA	\$ 1,200	0	\$ -	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	0	\$ -	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	0	\$ -	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	128	\$ 4,494	
Crushed Surfacing Top Course	TN	\$ 25	32	\$ 802	
HMA Class 1/2"	TN	\$ 120	48	\$ 5,778	
Topsoil Type A	CY	\$ 60	15	\$ 889	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.20	50700	\$ 10,140	
				Sub-Total	\$ 150,644
				Mobilization 10%	\$ 15,064
				Sub-Total:	\$ 165,708
				WA State Sales Tax 9.4%	\$ 15,577
				Sub-Total:	\$ 181,285
				Construction Contingencies 30%	\$ 54,385
				Sub-Total:	\$ 235,670
				Survey, H&H Modeling, Design and Construction Management 60%	\$ 108,771
				Project Cost	\$ 344,441
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					

Capital Improvement Project 6: Freeman Road East Storm Pond

Problem Identification: City maintenance staff.

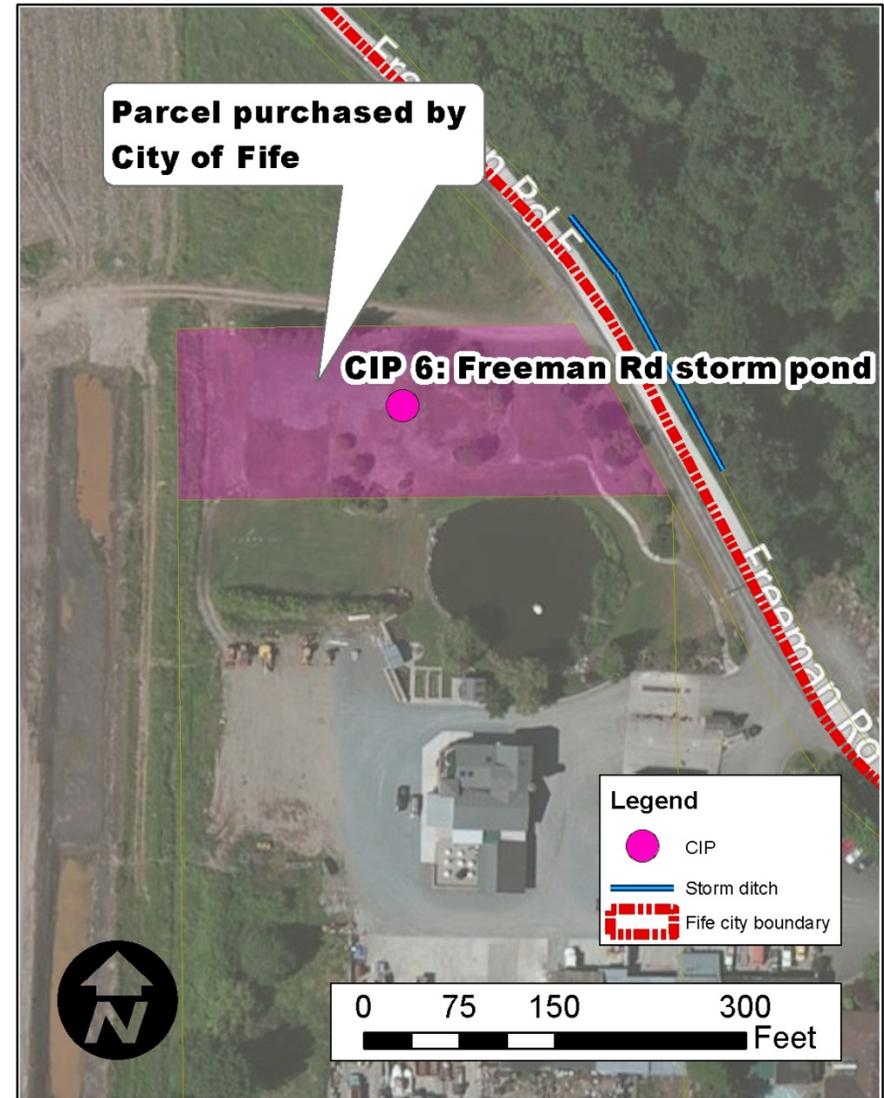
Problem Summary: Freeman Road East along the eastern boundary of the City of Fife currently has no stormwater management infrastructure. As the City expands, stormwater conveyance infrastructure will likely be placed within the existing public right-of-way along Freeman Road East. The City has purchased a parcel adjacent to Freeman Road East, which is intended for stormwater management as buildout occurs.

Project Description: This project will result in construction of a stormwater storage facility (i.e., pond) on the City-owned parcel adjacent to Freeman Road East. The project will involve two phases: 1) a pre-design study including survey and analysis followed by 2) pond design and construction. The pre-design will identify the tributary area managed by the proposed pond, and determine the extent of benefit to the downstream system. If the pre-design study confirms the facility will provide sufficient benefit, then a final design of the pond will be completed and construction will occur.

Project Justification: The parcel was purchased by the City of Fife for use as public stormwater infrastructure. The priority for this project is lower than more immediate needs (e.g., eliminate existing flooding) because this area of the City is relatively undeveloped upon the parcel and use in connection with stormwater management.

Cost Assumptions:

- Hydrologic and hydraulic modeling
- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$430,000
Total Funding	\$430,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-6			
Project Name: Freeman Road East Storm Pond					
Project Type: Storage					
Description: Construct stormwater facility on City-owned parcel					
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 5,000	1	\$ 5,000	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 1,500	0	\$ -	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	0	\$ -	
Temporary Erosion and Sediment Control	LS	\$ 20,000	1	\$ 20,000	
Special Conditions					
Utility Relocation	LS	\$ 5,000	1	\$ 5,000	
Storm Facility					
Structure Excavation Class B Inc. Haul	CY	\$ 20	812	\$ 16,249	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	1431	\$ 42,916	
Corrugated Polyethylene Storm Sewer Pipe 24 In. Diam.	LF	\$ 75	125	\$ 9,375	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	1	\$ 2,500	
Catch Basin Type 2 60 In. Diam.W/Flow Restrictor	EA	\$ 5,600	1	\$ 5,600	
Quarry Spalls	TN	\$ 125	20	\$ 2,500	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 10,000	1	\$ 10,000	
Miscellaneous Site Improvements					
Coated Chain Link Fence Type 3	LF	\$ 15	760	\$ 11,400	
Double 12 Ft. Coated Chain Link Gate	EA	\$ 1,500	1	\$ 1,500	
Identification/Interpretive Sign	EA	\$ 1,500	1	\$ 1,500	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	422	\$ 14,778	
Crushed Surfacing Top Course	TN	\$ 25	422	\$ 10,556	
HMA Class 1/2"	TN	\$ 120	0	\$ -	
Topsoil Type A	CY	\$ 60	559	\$ 33,557	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	45302	\$ 22,651	
Trimming And Cleanup	LS	\$ 1,000	1	\$ 1,000	
				Sub-Total	\$ 221,081
				Mobilization 10%	\$ 22,108
				Sub-Total:	\$ 243,189
				WA State Sales Tax 9.4%	\$ 22,860
				Sub-Total:	\$ 266,049
				Construction Contingencies 30%	\$ 79,815
				Sub-Total:	\$ 345,864
				Design and Construction Management 30%	\$ 79,815
				Project Cost	\$ 425,679
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					

Capital Improvement Project 7: 15th Street East and 58th Avenue East

Problem Identification: Previous comprehensive plan.

Problem Summary: According to the previous stormwater comprehensive plan, flooding occurs during large storm events along the east branch of the Fife Ditch near 15th Street East. The culverts beneath 15th Street East were identified as undersized based on observed backwater in the open channel upstream of the 15th Street East crossing.

Project Description: This project, as defined in the previous stormwater comprehensive plan, will upsize the 30-inch and 48-inch culverts to 54-inch corrugated metal pipe (CMP) culverts to increase the flow capacity of the channel as it crosses 15th Street East. Additional analysis to confirm the 54-inch CMP culverts will provide sufficient capacity will not be completed prior to final design and construction; therefore, this is assumed to have occurred in the previous stormwater comprehensive plan.

Project Justification: Flooding identified at this location is likely caused by public stormwater infrastructure and has the potential to disrupt use of the public right of way. The City is responsible for addressing the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$200,000
Total Funding	\$200,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-7			
Project Name: 15th St E and 58th Ave E		Prev Plan CIP #: 4			
Project Type: Conveyance					
Description: Replacement of culvert beneath 15th St E to enhance conveyance. Project is detailed in previous comprehensive plan.					
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	80	\$ 3,600	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500	
Special Conditions					
Utility Relocation	LS	\$ 2,500	1	\$ 2,500	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	200	\$ 4,000	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	150	\$ 4,500	
Corrugated Polyethylene Storm Sewer Pipe 54 In. Diam.	LF	\$ 240	80	\$ 19,200	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -	
Catch Basin Type 1	EA	\$ 1,200	0	\$ -	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Headwall and wingwalls	EA	\$ 15,000	2	\$ 30,000	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000	
In-stream flow diversion	LS	\$ 10,000	1	\$ 10,000	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	59	\$ 2,074	
Crushed Surfacing Top Course	TN	\$ 25	15	\$ 370	
HMA Class 1/2"	TN	\$ 120	17	\$ 2,000	
Topsoil Type A	CY	\$ 60	0	\$ -	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	0.0	\$ -	
				Sub-Total	\$ 96,744
				Mobilization 10%	\$ 9,674
				Sub-Total:	\$ 106,419
				WA State Sales Tax 9.4%	\$ 10,003
				Sub-Total:	\$ 116,422
				Construction Contingencies 30%	\$ 34,927
				Sub-Total:	\$ 151,349
				Design and Construction Management 40%	\$ 46,569
				Project Cost	\$ 197,918
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					

Capital Improvement Project 8: 12th Street East and 58th Avenue East

Problem Identification: Previous comprehensive plan.

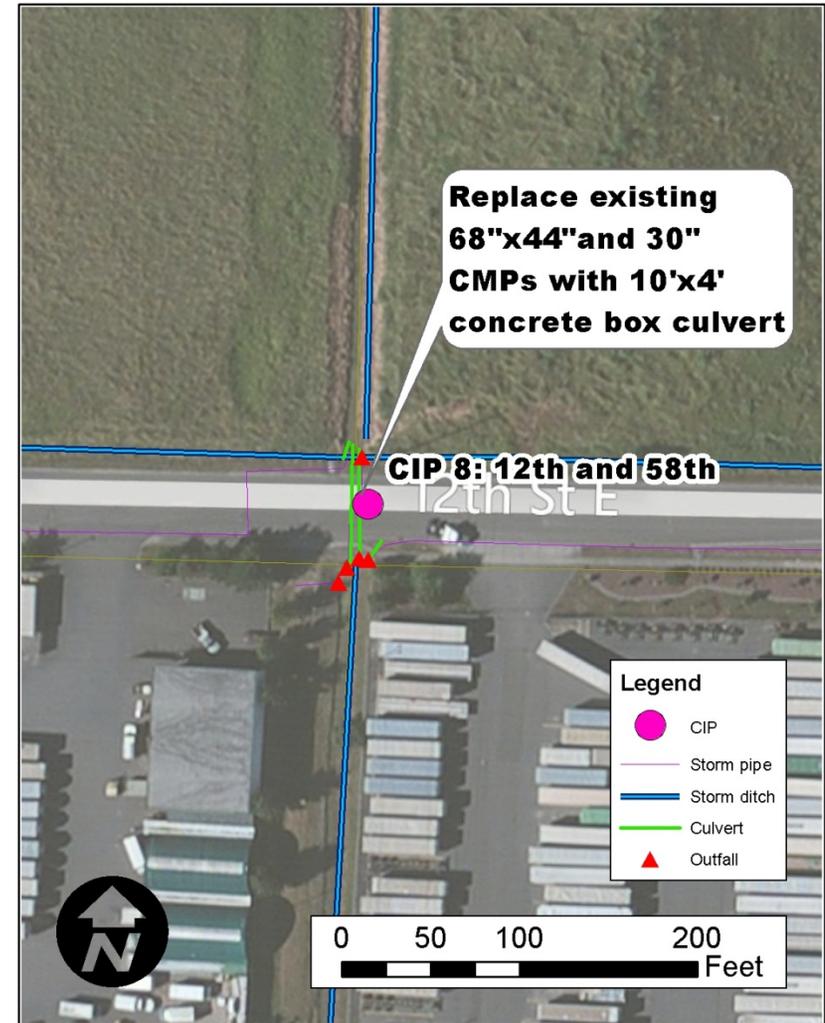
Problem Summary: According to the previous stormwater comprehensive plan, flooding occurs during large storm events along the east branch of the Fife Ditch near 12th Street East. The corrugated metal pipe culverts beneath 12th Street East were identified as undersized based on observed backwater in the open channel upstream of the 12th Street East crossing.

Project Description: This project, as defined in the previous stormwater comprehensive plan, will upsize the existing 68-inch by 44-inch box culvert and 30-inch corrugated metal pipe culvert with twin 10-foot by 4-foot concrete box culverts to increase the flow capacity of the channel as it crosses 12th Street East. Additional analysis to confirm the 10-foot by 4-foot concrete box culverts will provide sufficient capacity will not be completed prior to final design and construction; therefore, this is assumed to have occurred in the previous stormwater comprehensive plan.

Project Justification: Flooding identified at this location is likely caused by public stormwater infrastructure and has the potential to disrupt use of the public right-of-way. The City is responsible for addressing the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$260,000
Total Funding	\$260,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-8			
Project Name: 12th St E and 58th Ave E		Prev Plan CIP #: 4			
Project Type: Conveyance					
Description: Replacement of culvert beneath 12th St E to enhance conveyance. Project is detailed in previous comprehensive plan.					
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	80	\$ 3,600	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500	
Special Conditions					
Utility Relocation	LS	\$ 2,500	1	\$ 2,500	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	400	\$ 8,000	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	300	\$ 9,000	
4-ft x 10-ft Box Culvert	LF	\$ 1,200	60	\$ 72,000	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -	
Catch Basin Type 1	EA	\$ 1,200	0	\$ -	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	0	\$ -	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000	
In-stream flow diversion	LS	\$ 10,000	1	\$ 10,000	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	59	\$ 2,074	
Crushed Surfacing Top Course	TN	\$ 25	15	\$ 370	
HMA Class 1/2"	TN	\$ 120	22	\$ 2,667	
Topsoil Type A	CY	\$ 60	0	\$ -	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	0.0	\$ -	
				Sub-Total	\$ 128,711
				Mobilization 10%	\$ 12,871
				Sub-Total:	\$ 141,582
				WA State Sales Tax 9.4%	\$ 13,309
				Sub-Total:	\$ 154,891
				Construction Contingencies 30%	\$ 46,467
				Sub-Total:	\$ 201,358
				Design and Construction Management 35%	\$ 54,212
				Project Cost	\$ 255,570
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					

Capital Improvement Project 9: 4th St East and 56th Ave East

Problem Identification: City maintenance staff.

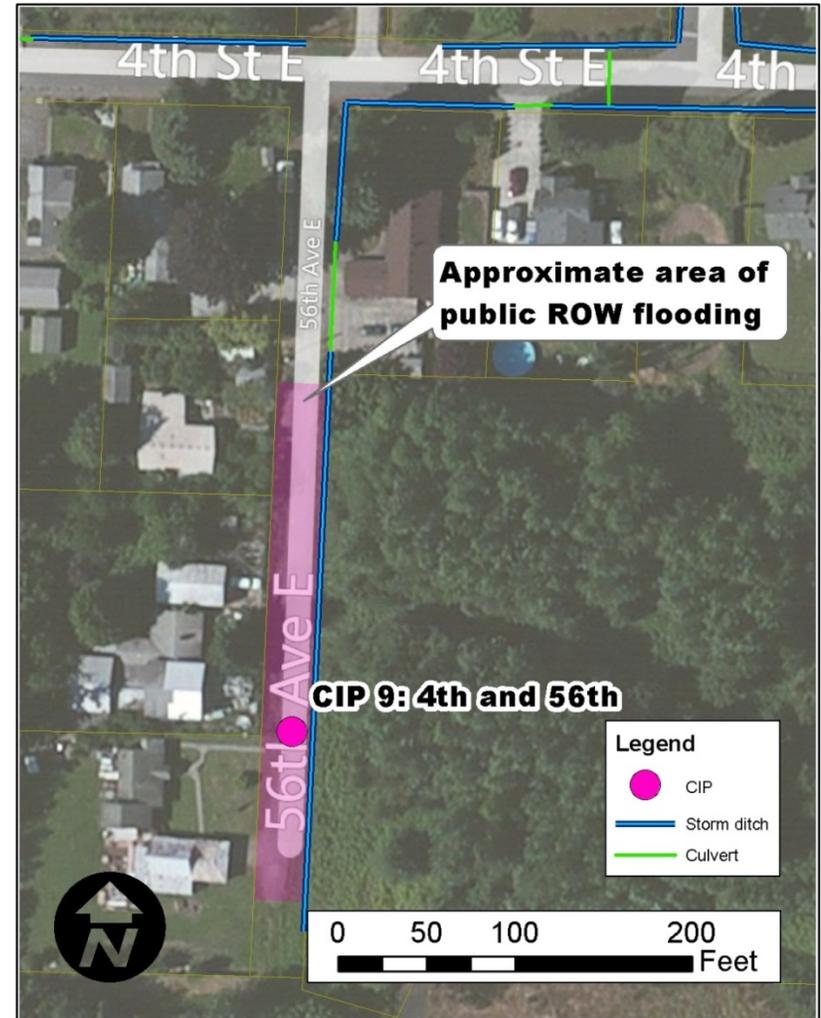
Problem Summary: Flooding occurs approximately twice annually, as a result of rainfall, along 56th Avenue East in the public right-of-way. There is a storm ditch along the east side of 56th Avenue East, which is an assumed contributor to the flooding. SR-167 is planned to be constructed to the south.

Project Description: This project will include a survey, which will be used to develop a hydraulic model for assessing the hydraulic capacity of the storm ditch along the eastern side of 56th Avenue East. A hydrologic model of the area tributary to the ditch will be built to estimate stormwater inflow. The hydraulic model will also be used to develop hydraulic modification alternatives to minimize the risk of future flooding. As a result of the modeling and alternatives analysis, a capital project concept will be developed.

Project Justification: The flooding identified at this location is within the public right-of-way. The City is responsible for addressing the problem.

Cost Assumptions:

- Hydrologic and hydraulic modeling
- Survey



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$60,000
Total Funding	\$60,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE			Project ID: CIP-9	
Project Name: 4th Street East and 56th Avenue East				
Project Type: Conveyance				
Description: Survey, modeling, and alternatives analysis				
Construction Costs				
Item	Unit	Unit Cost	Quantity	Cost
Assessment/Analysis				
Survey	LS	\$ 10,000	1	\$ 10,000
Hydrologic/Hydraulic Analysis	LS	\$ 20,000	1	\$ 20,000
Analysis of Alternatives	LS	\$ 15,000	1	\$ 15,000
Conceptual Design	LS	\$ 15,000	1	\$ 15,000
Sub-Total				\$ 60,000
Mobilization				0% \$ -
Sub-Total:				\$ 60,000
WA State Sales Tax				0.0% \$ -
Sub-Total:				\$ 60,000
Construction Contingencies				0% \$ -
Sub-Total:				\$ 60,000
Design and Construction Management				0% \$ -
Project Cost				\$ 60,000
Estimate Notes and Assumptions				
1. Costs provided reflect 2013 dollars.				

Capital Improvement Project 10: 4th Street East and 54th Avenue East, Fife Ditch

Problem Identification: Previous comprehensive plan.

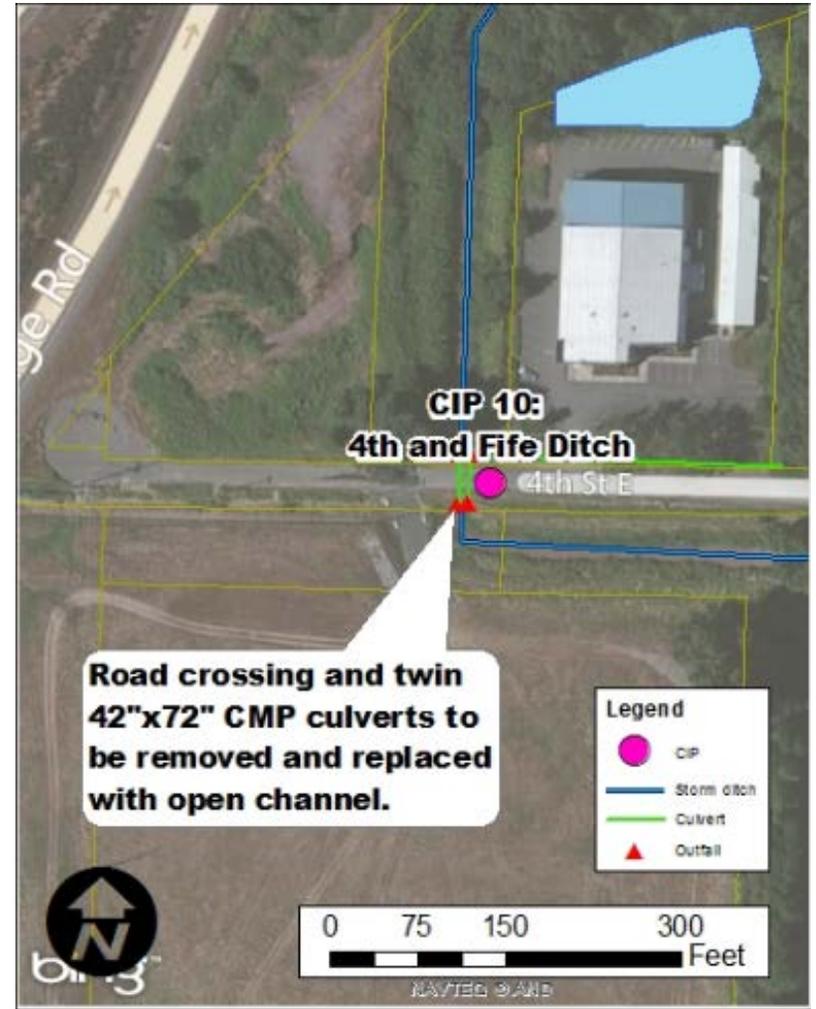
Problem Summary: According to the previous stormwater comprehensive plan, flooding at the 4th Street East crossing of the Fife Ditch occurs during large storms. Flooding at this location is considered lower priority as 4th Street East dead ends at a parcel of land containing a woodchip pile used by the Washington State Department of Transportation (WSDOT). Flooding is likely due to Fife Ditch backwater effects at the 4th Street East crossing during wet weather, affecting drainage laterals upstream and causing flooding to an unused parcel of land to the south. The inverts of the existing culverts were described as being about six inches above the channel bottom, which further restricts discharge capacity.

Project Description: As specified in the previous stormwater plan, this project will remove the two existing culverts and return the ditch to an open channel at the crossing. The extent of 4th Street East will be modified so the street ends at the ditch crossing. Access to the unused parcel of land to the south and the WSDOT woodchip pile to the north will be achieved via State Route 509, which lies immediately to the west of the end of 4th Street East.

Project Justification: The flooding identified at this location is likely caused by public stormwater infrastructure and affects the public right-of-way. The City is responsible for addressing the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$150,000
Total Funding	\$150,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-10			
Project Name: 4th St E and 54th Ave E, Fife Ditch		Prev Plan CIP #: 1			
Project Type: Conveyance					
Description:		Project at this location in previous comprehensive plan assessed Port of Tacoma "Parcel 14" property. GeoEngineers bored some holes here. CIP 1 from previous plan - remove existing twin 72-in and 42-in diameter culverts and road crossing to create open channel.			
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 500	1	\$ 500	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 2,500	1	\$ 2,500	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	0	\$ -	
Temporary Erosion and Sediment Control	LS	\$ 5,000	1	\$ 5,000	
Special Conditions					
Utility Relocation	LS	\$ 2,500	1	\$ 2,500	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	835	\$ 16,696	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	0	\$ -	
Corrugated Polyethylene Storm Sewer Pipe 54 In. Diam.	LF	\$ 215	0	\$ -	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -	
Catch Basin Type 1	EA	\$ 1,200	0	\$ -	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	0	\$ -	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	0	\$ -	
In-stream flow diversion	LS	\$ 10,000	1	\$ 10,000	
Restoration					
Roadway Grading (for cul de sac)	LS	\$ 3,500	1	\$ 3,500	
Crushed Surfacing Base Course	TN	\$ 35	248	\$ 8,688	
Crushed Surfacing Top Course	TN	\$ 25	62	\$ 1,551	
HMA Class 1/2"	TN	\$ 120	93	\$ 11,170	
Light Loose Riprap	TN	\$ 60	90	\$ 5,400	
Crushed Surfacing Top Course	TN	\$ 25	0	\$ -	
Beam Guardrail Type 1	LF	\$ 40	25	\$ 1,000	
Topsoil Type A	CY	\$ 60	45	\$ 2,700	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	2614	\$ 1,307	
				Sub-Total	\$ 77,512
				Mobilization	10% \$ 7,751
				Sub-Total:	\$ 85,264
				WA State Sales Tax	9.4% \$ 8,015
				Sub-Total:	\$ 93,279
				Construction Contingencies	30% \$ 27,984
				Sub-Total:	\$ 121,262
				Design and Construction Management	30% \$ 27,984
				Project Cost	\$ 149,246
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					
8. Right of Way acquisition not included.					

Capital Improvement Project 11: 8th Street East and 54th Avenue East, Fife Ditch

Problem Identification: Previous comprehensive plan.

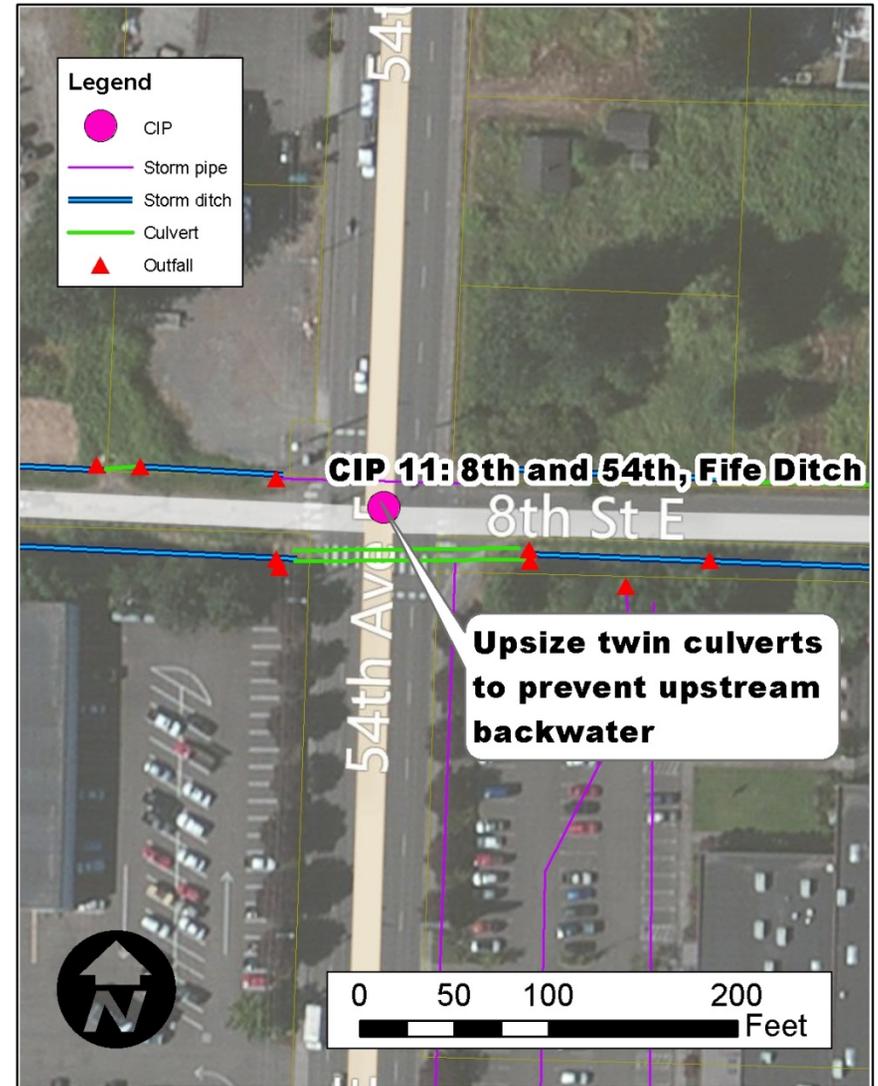
Problem Summary: According to the previous stormwater comprehensive plan, flooding occurs during large storms along the east branch of the Fife Ditch upstream of the 54th Avenue East crossing. The existing culverts were identified as undersized, which can cause flooding upstream due to effects of backwater.

Project Description: As specified in the previous stormwater plan, this project will upgrade the existing culverts at 54th Avenue East and 8th Street East. More specifically, the existing twin 68-inch by 44-inch culverts will be replaced with twin 10-foot by 4-foot box culverts.

Project Justification: The flooding identified at this location is within the public right-of-way and the cause is likely the public stormwater infrastructure. The City is responsible for addressing the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$770,000
Total Funding	\$770,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-11				
Project Name: 8th St E and 54th Ave E, Fife Ditch		Prev Plan CIP #: 3				
Project Type: Conveyance						
Description: Replacement of culvert beneath 54th Ave E to enhance conveyance. Project is detailed in previous comprehensive plan. (Project 3): replace existing twin 68-in x 44-in corrugated metal pipes with twin 10-ft x 4-ft concrete box culverts						
Construction Costs						
Item	Unit	Unit Cost	Quantity	Cost		
Demolition						
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000		
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000		
General						
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000		
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	160	\$ 7,200		
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500		
Special Conditions						
Utility Relocation	LS	\$ 2,500	1	\$ 2,500		
Storm Sewer						
Structure Excavation Class B Inc. Haul	CY	\$ 20	1100	\$ 22,000		
Structure Excavation Class B	CY	\$ 10	0	\$ -		
Gravel Borrow, incl. Haul	CY	\$ 30	725	\$ 21,750		
4-ft x 10-ft Box Culvert	LF	\$ 1,200	240	\$ 288,000		
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -		
Catch Basin Type 1	EA	\$ 1,200	0	\$ -		
Adjust Catch Basin	EA	\$ 350	0	\$ -		
Connection to Existing Structure	EA	\$ 450	0	\$ -		
Shoring or Extra Excavation	SF	\$ 4	0	\$ -		
Dewatering - Trench	LS	\$ 10,000	1	\$ 10,000		
In-stream flow diversion	LS	\$ 10,000	1	\$ 10,000		
Restoration						
Crushed Surfacing Base Course	TN	\$ 35	237	\$ 8,296		
Crushed Surfacing Top Course	TN	\$ 25	59	\$ 1,481		
HMA Class 1/2"	TN	\$ 120	89	\$ 10,667		
Topsoil Type A	CY	\$ 60	37	\$ 2,222		
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	2000.00	\$ 1,000		
				Sub-Total	\$ 398,617	
				Mobilization	10%	\$ 39,862
				Sub-Total:	\$ 438,478	
				WA State Sales Tax	9.4%	\$ 41,217
				Sub-Total:	\$ 479,695	
				Construction Contingencies	30%	\$ 143,909
				Sub-Total:	\$ 623,604	
				Design and Construction Management	30%	\$ 143,909
				Project Cost	\$ 767,512	
Estimate Notes and Assumptions						
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.						
2. Costs provided reflect 2013 dollars.						
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.						
4. Traffic control shall be verified by the City.						
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.						
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.						
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.						

Capital Improvement Project 12: 27th Street East

Problem Identification: City maintenance staff.

Problem Summary: Flooding occurs in the backyards of homes just south of the 27th Street East cul-de-sac. During these private property flooding events, stormwater can be seen at the rim of a recently installed catch basin in the cul-de-sac north of the homes. The cause of flooding in the backyards of the affected homes is unknown.

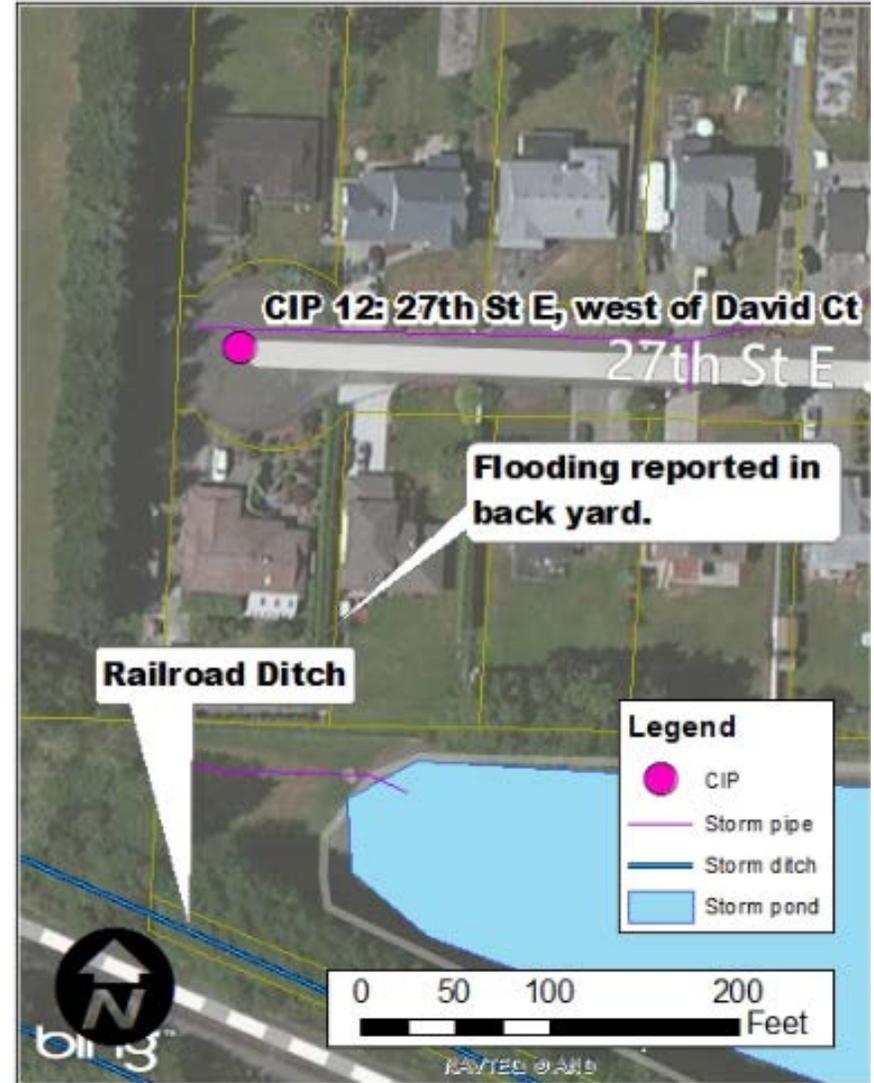
Project Description: This project will include a detailed survey, which will be used to develop a hydraulic model for assessing the capacity of the collection system in the area as well as the location and condition of drains and inlets in the area. The survey will also investigate the outlet of the downstream storm ditch as its discharge location is presently unknown. A hydrologic model will be developed to estimate stormwater inflow. The models will be used to evaluate alternatives for minimizing the risk of future flooding and developing potential capital improvement concepts.

Three railroad ditch, south of the problem area, has been identified as a contributor to flooding. Therefore, cleaning or modification of the railroad ditch should be part of the alternatives evaluated, and subsequent capital improvement concepts.

Project Justification: Although the flooding identified at this location is on private property, the cause of flooding is unknown and may be related to public stormwater infrastructure.

Cost Assumptions:

- Hydrologic and hydraulic modeling
- Survey



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$60,000
Total Funding	\$60,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE			Project ID: CIP-12	
Project Name: 27th Street East				
Project Type: Conveyance				
Description: Survey, modeling, and alternatives analysis				
Construction Costs				
Item	Unit	Unit Cost	Quantity	Cost
Assessment/Analysis				
Survey	LS	\$ 10,000	1	\$ 10,000
Hydrologic/Hydraulic Analysis	LS	\$ 20,000	1	\$ 20,000
Analysis of Alternatives	LS	\$ 15,000	1	\$ 15,000
Conceptual Design	LS	\$ 15,000	1	\$ 15,000
			Sub-Total	\$ 60,000
			Mobilization	0% \$ -
			Sub-Total:	\$ 60,000
			WA State Sales Tax	0.0% \$ -
			Sub-Total:	\$ 60,000
			Construction Contingencies	0% \$ -
			Sub-Total:	\$ 60,000
			Design and Construction Management	0% \$ -
			Project Cost	\$ 60,000
Estimate Notes and Assumptions				
1. Costs provided reflect 2013 dollars.				

Capital Improvement Project 13: Interstate 5 and Erdahl Ditch

Problem Identification: City maintenance staff.

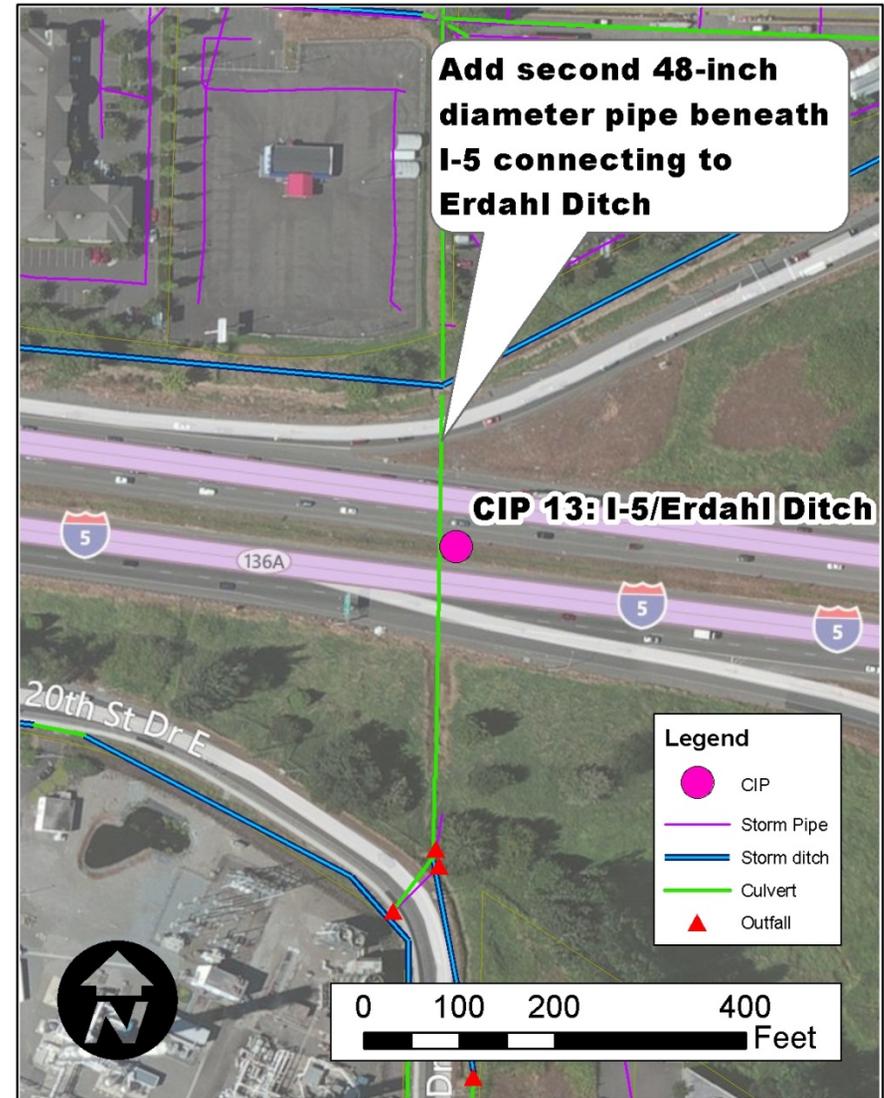
Problem Summary: A 48-inch-diameter pipe beneath Interstate 5 (I-5) connects drainage from along 20th Street East south of I-5 to the Erdahl Ditch north of I-5. The pipe does not presently experience backwater or cause flooding.

Project Description: This project will involve surveying the existing pipe, its connections, and the land surface around the pipe. The survey will guide the design and construction of a second 48-inch-diameter pipe beneath I-5 parallel to the existing pipe. Construction of the second parallel pipe (as part of this project) will increase conveyance capacity of stormwater to the Erdahl Ditch and ensure future capacity and increased reliability.

Project Justification: The I-5 crossing is part of the public stormwater conveyance system. The City is justified in using public funds to upsize the capacity of the crossing to minimize future conveyance risks and damages.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$1,210,000
Total Funding	\$1,210,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-13				
Project Name: Interstate 5 and Erdahl Ditch						
Project Type: Conveyance						
Description: Install parallel 48-inch diameter pipe beneath I-5. Horizontal directional drill for installation.						
Construction Costs						
Item	Unit	Unit Cost	Quantity	Cost		
Demolition						
Clearing and Grubbing	LS	\$ 2,500	1	\$ 2,500		
Removal of Structures and Obstructions	LS	\$ 10,000	0	\$ -		
General						
Project Temporary Traffic Control	LS	\$ 1,500	0	\$ -		
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	0	\$ -		
Temporary Erosion and Sediment Control	LS	\$ 5,000	1	\$ 5,000		
Special Conditions						
Utility Relocation	LS	\$ 5,000	0	\$ -		
Storm Sewer						
Structure Excavation Class B Inc. Haul	CY	\$ 20	0	\$ -		
Structure Excavation Class B	CY	\$ 10	0	\$ -		
Gravel Borrow, incl. Haul	CY	\$ 30	0	\$ -		
Horizontally directional drill, 48-inch diameter pipe	LF	\$ 1,500	400	\$ 600,000		
Corrugated Polyethylene Storm Sewer Pipe 48 In. Diam.	LF	\$ 180	100	\$ 18,000		
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -		
Catch Basin Type 1	EA	\$ 1,200	0	\$ -		
Adjust Catch Basin	EA	\$ 350	0	\$ -		
Connection to Existing Structure	EA	\$ 450	0	\$ -		
Shoring or Extra Excavation	SF	\$ 4	0	\$ -		
Dewatering - Trench	LS	\$ 10,000	0	\$ -		
Restoration						
Crushed Surfacing Base Course	TN	\$ 25	0	\$ -		
Crushed Surfacing Top Course	TN	\$ 30	0	\$ -		
HMA Class 1/2"	TN	\$ 120	0	\$ -		
Topsoil Type A	CY	\$ 60	12	\$ 740		
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	1500	\$ 750		
				Sub-Total	\$ 626,990	
				Mobilization	10%	\$ 62,699
				Sub-Total:	\$ 689,689	
				WA State Sales Tax	9.4%	\$ 64,831
				Sub-Total:	\$ 754,520	
				Construction Contingencies	30%	\$ 226,356
				Sub-Total:	\$ 980,876	
				Design and Construction Management	30%	\$ 226,356
				Project Cost	\$ 1,207,232	
Estimate Notes and Assumptions						
1. Unit cost information from King County Tabula software.						
2. Costs provided reflect 2013 dollars.						
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.						
4. Traffic control shall be verified by the City.						
5. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.						

Capital Improvement Project 14: 20th Street East, west of Port of Tacoma Road East

Problem Identification: Previous comprehensive plan.

Problem Summary: As described in the previous stormwater comprehensive plan, an existing drainage channel crosses 20th Street East via a 110-foot-long, 30-inch-diameter concrete culvert. The discharge capacity of the culvert restricts flow during large storm events, resulting in backwater conditions and flooding of 20th Street East.

Project Description: The proposed project, as described in the previous plan, is to replace the existing 30-inch-diameter culvert with a 48-inch-diameter concrete culvert to increase conveyance capacity.

Project Justification: The culvert crossing 20th Street East is part of the public stormwater infrastructure, and its reduced capacity causes flooding in the public right-of-way. Because of this, the City is justified in using public funds to remedy the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$190,000
Total Funding	\$190,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-14			
Project Name: 20th St E, west of Port of Tacoma Rd E		Prev Plan CIP #: 7			
Project Type: Conveyance					
Description:		Existing 30-inch diameter pipe crossing 20th St E has been identified as having a capacity shortfall. The reduced capacity of the pipe results in overflows and flooding of 20th St E during large storms. Replace pipe with a 48-inch diameter pipe.			
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	80	\$ 3,600	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500	
Special Conditions					
Utility Relocation	LS	\$ 2,500	1	\$ 2,500	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	560	\$ 11,200	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	380	\$ 11,400	
Corrugated Polyethylene Storm Sewer Pipe 48 In. Diam.	LF	\$ 180	120	\$ 21,600	
Corrugated Polyethylene Storm Sewer Pipe 12 In. Diam.	LF	\$ 40	50	\$ 2,000	
Catch Basin, Type 2, 60 In. Diam.	EA	\$ 4,000	1	\$ 4,000	
Trash Rack	EA	\$ 5,000	2	\$ 10,000	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	0	\$ -	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000	
In-stream flow diversion	LS	\$ 10,000	1	\$ 10,000	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	37	\$ 1,296	
Crushed Surfacing Top Course	TN	\$ 25	19	\$ 463	
HMA Class 1/2"	TN	\$ 120	14	\$ 1,667	
Topsoil Type A	CY	\$ 60	6	\$ 333	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	300.0	\$ 150	
				Sub-Total	\$ 98,709
				Mobilization 10%	\$ 9,871
				Sub-Total:	\$ 108,580
				WA State Sales Tax 9.4%	\$ 10,207
				Sub-Total:	\$ 118,787
				Construction Contingencies 30%	\$ 35,636
				Sub-Total:	\$ 154,423
				Design and Construction Management 30%	\$ 35,636
				Project Cost	\$ 190,059
<p>Estimate Notes and Assumptions</p> <ol style="list-style-type: none"> Unit cost information from recent City bid tabulations (2012) and recent BC project experience. Costs provided reflect 2013 dollars. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions. Traffic control shall be verified by the City. Bedding material and installation is assumed to be incidental to the cost of pipe installation. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available. 					

Capital Improvement Project 15: Firwood Ditch Freeman Road Pipe Replacement

Problem Identification: City maintenance staff.

Problem Summary: The pipe has been identified as needing replacement in the next ten years by Scott Nyberg, drainage foreman.

Project Description: The proposed project, as described by City staff, is to replace the existing 24-inch-diameter reinforced concrete pipe in kind.

Project Justification: The existing pipe is part of the public stormwater infrastructure and is in need of replacement. Failure of the pipe could result in reduced capacity and cause flooding in the public right-of-way. Because of this, the City is justified in using public funds to proactively remedy the problem.

Cost Assumptions:

- Survey
- Design and construction management



TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$90,000
Total Funding	\$90,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE		Project ID: CIP-15			
Project Name:	Firwood Ditch Freeman Rd Pipe Replacement		Prev Plan CIP #:		
Project Type:	Conveyance				
Description:	Replacement of pipe beneath Freeman Road to maintain conveyance. Replace existing 24-in concrete pipe with 24-in concrete pipe.				
Construction Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Demolition					
Clearing and Grubbing	LS	\$ 1,000	1	\$ 1,000	
Removal of Structures and Obstructions	LS	\$ 5,000	1	\$ 5,000	
General					
Project Temporary Traffic Control	LS	\$ 5,000	1	\$ 5,000	
Flaggers And Spotters, Min. Bid \$35.00, Per Hour	HR	\$ 45	160	\$ 7,200	
Temporary Erosion and Sediment Control	LS	\$ 2,500	1	\$ 2,500	
Special Conditions					
Utility Relocation	LS	\$ 1,000	1	\$ 1,000	
Storm Sewer					
Structure Excavation Class B Inc. Haul	CY	\$ 20	83	\$ 1,667	
Structure Excavation Class B	CY	\$ 10	0	\$ -	
Gravel Borrow, incl. Haul	CY	\$ 30	53	\$ 1,603	
Reinforced Concrete Pipe 24 In. Diam.	LF	\$ 150	50	\$ 7,500	
Catch Basin, Type 2, 48 In. Diam.	EA	\$ 2,500	0	\$ -	
Catch Basin Type I	EA	\$ 1,200	0	\$ -	
Adjust Catch Basin	EA	\$ 350	0	\$ -	
Connection to Existing Structure	EA	\$ 450	0	\$ -	
Shoring or Extra Excavation	SF	\$ 4	0	\$ -	
Dewatering - Trench	LS	\$ 5,000	1	\$ 5,000	
In-stream flow diversion	LS	\$ 5,000	1	\$ 5,000	
Restoration					
Crushed Surfacing Base Course	TN	\$ 35	17	\$ 605	
Crushed Surfacing Top Course	TN	\$ 25	4	\$ 108	
HMA Class 1/2"	TN	\$ 120	6	\$ 778	
Topsoil Type A	CY	\$ 60	10	\$ 600	
Seeding, Fertilizing & Mulching (Hydroseeding)	SF	\$ 0.50	500.00	\$ 250	
				Sub-Total	\$ 44,811
				Mobilization 10%	\$ 4,481
				Sub-Total:	\$ 49,292
				WA State Sales Tax 9.4%	\$ 4,633
				Sub-Total:	\$ 53,925
				Construction Contingencies 30%	\$ 16,178
				Sub-Total:	\$ 70,103
				Design and Construction Management 30%	\$ 16,178
				Project Cost	\$ 86,280
Estimate Notes and Assumptions					
1. Unit cost information from recent City bid tabulations (2012) and recent BC project experience.					
2. Costs provided reflect 2013 dollars.					
3. Estimate does not include: permitting, mitigation costs (i.e. slope and/or retaining wall stabilization), easements and property acquisitions.					
4. Traffic control shall be verified by the City.					
5. Bedding material and installation is assumed to be incidental to the cost of pipe installation.					
6. Native backfill of trenches is assumed. If native material is unsuitable for trench backfill, additional cost for borrow material may be required.					
7. Subsurface water conditions unknown at this time. An assumed dewatering cost is included as placeholder until detailed geotechnical information is available.					



Capital Improvement Project 16: Potential Property Acquisition

Problem Identification: City staff.

Problem Summary: Property acquisition would be utilized for potential future uses (restoration) and stormwater improvements rather than to address immediate drainage concerns.

Project Description: Future property acquisition (actual locations to be determined) funded by the stormwater utility.

Project Justification: Properties would be purchased by the City of Fife for use as public stormwater infrastructure, but may not be entirely funded through the drainage utility. The priority for this project is lower than more immediate drainage needs.

Cost Assumptions:

- Property Acquisition Costs
- Property appraisal, negotiation, title/escrow, and condemnation/incidental fees

TASK	1Q 2013	2Q 2013	3Q 2013	4Q 2013
Budget and Plan				
Select Consultant				
Complete Plan				
Construction				

Funding Source	Contribution
City of Fife – Drainage Utility	\$500,000
Total Funding	\$980,000

FIFE STORMWATER COMPREHENSIVE PLAN UPDATE				Project ID: CIP-16	
Project Name: Property Acquisition					
Project Type: Property Acquisition					
Description: Properties would be used for Wapato Creek restoration and stormwater management for improvements to Freeman Road north of Valley Avenue.					
Parcel Acquisition Costs					
Item	Unit	Unit Cost	Quantity	Cost	
Just Compensation Offer, Parcel 0420171046 (Property No. 1)	LS	\$ 600,000	1	\$ 600,000	
Just Compensation Offer, Parcels 0420073009 and 0420073022 (Property (No. 2))	LS	\$ 200,000	1	\$ 200,000	
Appraisal Fees	Each	\$ 3,500	2	\$ 7,000	
Appraisal Review Fees	Each	\$ 750	2	\$ 1,500	
Attorney/Negotiation Fees	Each	\$ 5,000	2	\$ 10,000	
Title/Escrow Costs - Property No. 1	LS	\$ 3,500	1	\$ 3,500	
Title/Escrow Costs - Property No. 2	LS	\$ 2,000	1	\$ 2,000	
Condemnation and Incidental Costs - Property No. 1	LS	\$ 100,000	1	\$ 100,000	
Condemnation and Incidental Costs - Property No. 2	LS	\$ 55,000	1	\$ 55,000	
				Sub-Total	\$ 979,000
					\$ -
					\$ -
				Project Cost	\$ 979,000
Estimate Notes and Assumptions					
1. Costs provided reflect 2013 dollars.					
2. Stormwater utility would fund \$500,000 of the total project cost					

Capital Improvement Project 17: Brookville Gardens Community Park

Problem Identification: City staff.

Project Description: Construction of stormwater quality improvements associated with Brookville Gardens Community Park.

Project Justification: Treating stormwater generated from the proposed parking lot and open space before discharge into Wapato Creek is a past council goal of delivering clean water to Puget Sound and requirement for compliance with our adopted stormwater manual.

The improvements include seven rain gardens and three green roofs. The construction of these improvements can be funded by the stormwater utility. These facilities will serve to demonstrate the feasibility of rain gardens and green roofs in Fife.



TASK	3Q 2013	4Q 2013	1Q 2014	2Q2014	3Q 2014
Design and Permitting	█				
Doc Prep & Bidding		█			
Bid Selection & Award			█		
Construction				█	

Funding Source	Contribution
City of Fife – Drainage Utility	\$315,000
Total Funding	\$315,000

Capital Improvement Project 18: Pacific Highway, 54th Avenue East to 65th Avenue East

Problem Identification: City staff.

Project Description: This project will install 15 new stormwater quality curbside “tree in a concrete box” water quality units on the north side of Pacific Highway East to match the existing 6 fronting the Emerald Queen Casino/Parking Garage/Tacoma Market on the south side of Pacific Highway East.

Project Justification: This 6-lane section of roadway carries high traffic volumes with an average of 20,500 vehicles per weekday and a high volume of truck traffic (17 percent). The traffic generates stormwater pollution. The current storm drainage system serving the north side of the roadway does not contain any runoff treatment facilities prior to discharge to the Fife Ditch.

The Project will address the City’s goal of improving water quality along this section of Pacific Highway E. The Fife Ditch, the primary downstream water body, has 303(d) listings for dissolved oxygen and ammonia-N. The expected environmental outcome of this project is an improvement of stormwater runoff quality from 2.8 acres of pollution generating impervious surface in this segment of Pacific Highway E. The proposed Enhanced Treatment BMP is expected to reduce Total Suspended Solids in Stormwater by 91%, total copper by 69%, and total zinc by 76% and will provide treatment for approximately 90-100% of westbound lanes of SR 99 between 54th Avenue E and 65th Avenue E.



TASK	2013	2014	2015
Budget and Plan	██████████		
Design and Bid		██████████	
Construction			██████████

Funding Source	Contribution
City of Fife – Drainage Utility	\$360,000
Total Funding	\$360,000

Appendix B: City of Fife Stormwater Program Utility Rate Study (FCS Group, 2014)



City of Fife,
Washington

Final Report for

STORMWATER SYSTEM
PLAN UPDATE –
FINANCIAL CHAPTER

January 2014

Consulting Services Provided by:



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www.fcsgroup.com

Utility Rate Study

The purpose of the financial plan is to provide reasonable assurance that the City of Fife (City) has and will have the financial ability to maintain and operate its stormwater utility on an ongoing basis, plus has the capacity to obtain sufficient funds to construct the stormwater system improvements identified in Section 4 of the overall City Stormwater Plan Update.

The financial plan can only provide this qualified assurance if it considers the “total system” costs of providing stormwater service – both operating and capital. To meet these objectives, the financial plan includes the following elements:

- Past Financial Performance
- Capital Funding Sources
- Capital Financing Plan
- Projected Financial Performance (Revenue Requirement Forecast, 2013-2022)
- Rate Structure and Projected Rates

PAST FINANCIAL PERFORMANCE

This section includes a historical summary of financial performance. Noteworthy findings and trends are highlighted below to demonstrate the historical performance and condition of the utility.

Table 1 summarizes the stormwater utility’s revenues, O&M expenditures in the last five years (2008 – 2012).

Table 1: Historical Financial Performance (2008 – 2012)

	2008 [a]	2009 [a]	2010	2011	2012
REVENUES					
Storm Drain Serv. to Customers [b] [c]	\$ 790,633	\$ 666,112	\$ 666,472	\$ 672,308	\$ 664,608
Intergovernmental Services & Charges (DD#21)	93,905	137,185	-	-	-
WA St Dept of Ecology Grant	-	-	-	50,000	9,560
Miscellaneous Revenue [c]	36,488	38,050	42,503	31,534	31,197
Prior Year Adjustment Credit	-	198,385	-	-	-
TOTAL REVENUES	\$ 921,026	\$ 1,039,733	\$ 708,976	\$ 753,842	\$ 705,365
EXPENDITURES					
Salaries & Wages	\$ 147,036	\$ 92,172	\$ 92,075	\$ 92,465	\$ 85,601
Personnel Benefits	58,487	30,936	34,410	37,806	37,962
Supplies	6,765	5,962	3,521	5,042	8,838
Small Tools, Equipmt	573	2,067	6,930	7,400	4,908
Professional Services	66,890	11,244	1,707	21,836	20,814
Other Services	22,027	15,446	15,821	13,535	17,143
Repairs and Maintenance	11,043	1,468	1,815	19,091	25,377
Miscellaneous	1,326	5,778	4,592	8,635	3,772
Intergovernmental Services	3,484	344	8,636	18,370	(11,178)
Excise Tax	13,772	12,524	11,663	12,631	12,516
Interfund Professional Service	181,674	211,339	196,754	211,000	226,184
Interfund Lease & Vehicle Repair	-	5,184	4,953	11,903	5,100
Transfer Out-St Construction	42,975	-	-	-	-
TOTAL EXPENDITURES	\$ 556,052	\$ 394,464	\$ 382,877	\$ 459,715	\$ 437,036
OPERATING SURPLUS / (DEFICIT)	\$ 364,974	\$ 645,268	\$ 326,098	\$ 294,127	\$ 268,329
CAPITAL EXPENDITURES					
Utility Fund 404 - Construction & Improvement Div.	\$ 647,394	\$ 85,887	\$ 22,750	\$ 100,792	\$ -
Construction Fund 410 - Stormwater Construction	634,386	75,000	-	46,982	-
Total Capital Expenditures	\$ 1,281,780	\$ 160,887	\$ 22,750	\$ 147,773	\$ -
TOTAL SURPLUS / (DEFICIT)	\$ (916,806)	\$ 484,381	\$ 303,348	\$ 146,354	\$ 268,329

[a] Expenditures include Drainage District #21.

[b] Includes “Storm drainage service 2013 conv.”

[c] Includes cost recovery, penalties, and investment interest.

As can be seen from the Table 1, the utility's rate revenues have been steady in the last four years with no change in rates, after dropping approximately 15% from its 2008 level. As a result of dissolving Drainage District #21 within City limits, total revenues declined to the \$700,000 level in 2010. Since 2010, total revenues have been stable.

Expenditures followed a somewhat similar pattern. Personnel costs dropped from approximately \$206,000 in 2008 to approximately \$120,000 annually. Over the last 4 years, the utility's personnel costs have been fluctuating between 28% and 33% of total operating expenditures. Interfund professional services fluctuated between 46% and 54% of total operating costs during the same period.

Throughout the 5-year analysis period, the utility has generated positive cash flow from operations. These operating surpluses have been used to fund capital improvements. The utility spent almost \$1.3 million in cash reserves in 2008. Since then, no substantial capital projects have been undertaken. At the beginning of 2013 the utility had \$1.4 million in unrestricted cash reserves. Based on this general evaluation of the stormwater utility's revenues and expenditures, it can be concluded that the utility is in a healthy financial position.

It should be noted that the stormwater utility does not have any outstanding debt.

CAPITAL FUNDING SOURCES

The City may fund the proposed stormwater capital improvement program from a variety of sources. In general, these sources can be summarized as: 1) governmental grant and loan programs; 2) publicly issued debt (tax-exempt or taxable); and 3) cash resources and revenues. These sources are described below.

GOVERNMENT PROGRAMS

Historically, federal and state grant programs were available to local utilities for capital funding assistance. However due to budgetary constraints since 2008, these assistance programs have been mostly eliminated, substantially reduced in scope and amount, or replaced by loan programs. Remaining miscellaneous grant programs are generally lightly funded and heavily subscribed. Nonetheless, the benefit of even the very low-interest loans makes the effort of applying worthwhile. The major funding sources are as follows:

Department of Ecology Grants and Loans

The Washington Department of Ecology (Ecology) administers an integrated funding program for three state and federal financial assistance programs to improve and protect water quality. Each funding cycle begins in the fall when Ecology accepts project applications. Ecology rates and ranks applications based on the highest-priority needs: Projects include stormwater control and treatment, nonpoint pollution abatement and stream restoration activities, and water quality education and outreach. The amount of available grant and loan funding varies from year to year based on the state's biennial budget appropriation process and the annual congressional federal budget. The three sources of funding for water quality projects are

- Centennial Clean Water Grant Program,
- Federal Clean Water Act Section 319 Nonpoint-Source Grant Program, and
- Washington State Water Pollution Control Revolving Fund Loan Program.

The City of Fife has successfully obtained funding through Ecology in recent years, using the funding on a number of stormwater projects. The grant amounts obtained since 2009, and the associated projects on which they were utilized, are summarized below.

Year	Grantor	Amount	Project Description
2009	Ecology	\$50,000	Vactor waste shed construction
2010	Ecology	96,000	Freeman Rd. future storm pond property purchase
2011	Ecology	50,000	Public Works car wash
2012	Ecology	798,000	70 th Ave E Phase II storm pond construction
2013	Ecology	120,000	SR99 stormwater improvements

Public Works Trust Fund (PWTF) Loans

Cities, towns, counties and special purpose districts are eligible to receive loans. Water, sewer, storm, roads, bridges and solid waste/recycling are eligible and funds may be used for repair, replacement, rehabilitation, reconstruction and improvements including reasonable growth (generally the 20-year growth projection in the comprehensive plan).

In 2012, the PWTF Board made some significant changes in its loan programs. Based on the current loan cycle (i.e. 2014 funding) applying jurisdictions are not required to contribute a local match towards project costs. Total available funding for the 2014 loan cycle is approximately \$400 million, and the maximum loan amount is \$15 million per jurisdiction, with the possibility of additional funds being awarded on a per project basis at the Public Works Board’s discretion. The standard loan offer is 1% interest repaid over a 20-year term. Applicants may request alternative loan terms. Shorter repayments terms qualify for a lower interest rate (0.5% for 10-year term, and 0.75% for 15-year term), while longer repayment terms require a higher interest rate (1.5% for 25-year term, and 2% for 30-year term). Applicants may qualify for additional interest rate reductions based on financial distress. All loan terms are subject to negotiation and Public Works Board approval.

PUBLIC DEBT

General Obligation Bonds

General obligation (G.O.) bonds are bonds secured by the full faith and credit of the issuing agency, committing all available tax and revenue resources to debt repayment. With this high level of commitment, G.O. bonds have relatively low interest rates and few financial restrictions. However, the authority to issue councilmanic G.O. bonds is restricted in terms of the amount and use of the funds, as defined by the Washington State constitution and statute. Specifically, the amount of debt that can be issued without a public vote is linked to assessed valuation.

RCW 39.36.020 states:

“(ii) Counties, cities, and towns are limited to an indebtedness amount not exceeding one and one-half percent of the value of the taxable property in such counties, cities, or towns without the assent of three-fifths of the voters therein voting at an election held for that purpose.

(b) In cases requiring such assent counties, cities, towns, and public hospital districts are limited to a total indebtedness of two and one-half percent of the value of the taxable property therein.”

While bonding capacity can limit the availability of councilmanic G.O. bonds for utility purposes, these can sometimes play a valuable role in project financing. Savings relative to revenue bonds may be realized through two avenues: a lower interest rate and related bond costs; and the extension of the repayment obligation to all tax-paying properties (not just developed properties) through the authorization of an ad valorem property tax levy.

Revenue Bonds

Revenue bonds are commonly used to fund utility capital improvements. The debt is secured by the rate revenues of the issuing utility and the debt obligation does not extend to the City's other revenue sources. With this limited commitment, revenue bonds sometimes bear higher interest rates than G.O. bonds and also require security conditions related to the maintenance of dedicated reserves (a bond reserve) and financial performance (added bond debt service coverage). The City agrees to satisfy these requirements by ordinance as a condition of bond sale.

Revenue bonds can be issued in Washington without a public vote. There is no bonding limit, except perhaps the practical limit of the utility's ability to generate sufficient revenue to repay the debt and provide coverage. In some cases, poor credit might make issuing bonds problematic.

CASH RESOURCES

Capital Facilities Charges

A capital facilities charge (CFC) as provided for by RCW 35.92.025, refers to a one-time charge imposed on new customers as a condition of connection to the utility system. The purpose of the CFC is two-fold: (1) to promote equity between new and existing customers; and (2) to provide a source of revenue to fund capital projects. Equity is served by providing a vehicle for new customers to share in the capital costs incurred to support their addition to the system. CFC revenues provide a source of cash flow used to support utility capital needs; revenue can only be used to fund utility capital projects or to pay debt service incurred to finance those projects.

In the absence of a CFC, growth-related capital costs must be borne in large part by existing customers. In addition, the net investment in the utility already collected from existing customers, whether through rates, charges and/or assessments, would be diluted by the addition of new customers, effectively subsidizing new customers with prior customers' payments. To establish equity, a CFC should recover a proportionate share of the existing and future infrastructure costs from a new customer. From a financial perspective, a new customer should become financially equivalent to an existing customer by paying the CFC.

The City does not currently impose a stormwater CFC on new development.

Utility Funds and Cash Reserves

User charges (rates) paid by the utility's customers are the main funding source for all stormwater utility activities. The rates cover total annual costs associated with operation and maintenance of the stormwater system, and other ongoing costs of providing stormwater services. Rates can pay for capital improvement projects in two ways: either paying for debt service or directly paying for capital projects. Although funding the capital costs directly through rates does not result in the additional interest expense associated with issuing debt, this approach can cause large and/or volatile rate increases.

SUMMARY

An ideal funding strategy would include the use of grants and low-cost loans when debt issuance is required. However, these resources are very limited and competitive in nature and do not provide a reliable source of funding for planning purposes. It is recommended that the City pursue these funding avenues but assume for planning purposes that bond financing will be utilized to meet needs above the utility's available cash resources. G.O. bonds may be useful for special circumstances, but due to the bonding capacity limits, this vehicle is most often reserved for other City (non-utility) purposes. Revenue bonds are a more secure financing mechanism for utility needs. The Capital Financing Strategy developed to fund the CIP assumes the following funding priorities:

1. Available grant funds,

-
2. Accumulated capital cash reserves,
 3. Annual use of cash (above minimum balance targets) from operating reserves,
 4. Capital reserves and other miscellaneous capital resources, including government program loans to the extent that they are accessible,
 5. Revenue bond financing, and
 6. Direct rate funding.

FINANCIAL ANALYSIS AND RATE FORECAST

The City of Five's stormwater utility operates as an enterprise fund and as such it is responsible for funding all of its related costs. It is not dependent on general tax revenues or general fund resources. The primary source of funding for the utility is stormwater service charges. The City controls the level of service charges by ordinance, and subject to statutory authority, can adjust user charges as needed to meet financial objectives.

The financial plan can only provide a qualified assurance of financial feasibility if it considers the total system costs of providing stormwater service – both operating and capital. To meet these objectives, the following elements are completed:

- **Capital Funding Plan** – This plan identifies total CIP obligations, and then, defines a strategy for funding the CIP, including an analysis of available resources from rate revenues, existing reserves, capital facilities charges, debt financing and any special resources that may be readily available (e.g. grants, developer contributions, etc). The capital funding plan impacts the financial plan through the use of debt financing (resulting in annual debt service) and the assumed rate revenue resources available for capital funding.
- **Financial Plan** – This forecast identifies annual non-capital costs associated with the operation, maintenance, and administration of the stormwater system. Included in the financial plan is a reserve analysis that forecasts cash flow and fund balance activity along with testing for satisfaction of actual or recommended minimum fund balance policies. The financial plan ultimately evaluates the sufficiency of utility revenues in meeting all obligations, including cash uses such as operating expenses, debt service, and reserve contributions, as well as any coverage requirements associated with long-term debt.

FINANCIAL POLICIES

A brief summary of the key financial policy assumptions used in the financial analysis, as well as those recommended in the financial program are discussed below:

Reserve Policies

Utility reserves serve multiple functions. They can be used to address variability and timing of expenditures and receipts, occasional disruptions in activities, costs or revenues, utility debt obligations; and many other functions. The collective use of individual reserves helps to limit the City's exposure to revenue shortfalls and meet long-term capital obligations. Common reserves among municipal utilities are operating reserves, capital contingency reserves, and bond reserves.

- **Operating Reserve** – An operating reserve, or working capital reserve, provides a minimum unrestricted fund balance needed to accommodate the short-term cycles of revenues and expenses. These reserves are intended to address both anticipated and unanticipated changes in revenues and expenses. Anticipated changes may include billing and receipt cycles, payroll cycles, and other payables. Operating reserves can be used to meet short-term cash deficiencies due to the timing of actual revenues and expenditures.

Generally, utilities target a certain number of days of working capital as a beginning cash balance to provide the liquidity needed to allow regular management of payables and payment cycles. Consistent with industry practice, a working capital reserve of between 30 to 45 days of operating and maintenance (O&M) expenses are targeted in this analysis. Based upon the City's 2013 budget, the target range is equivalent to between \$48,000 and \$71,000.

- **Capital Contingency Reserve** – A capital contingency reserve is an amount of cash set aside in case of an emergency should a piece of equipment or a portion of the utility's infrastructure fail unexpectedly. Additionally, the reserve could be used for other unanticipated capital needs including capital project cost overruns. There are various approaches to identifying an appropriate level for this reserve, such as (1) identifying a percentage of utility system fixed asset costs and, (2) determining the cost of replacing highly critical assets or facilities.

For purposes of this analysis, the target contingency fund balance is set at \$250,000.

- **Bond Reserve** – Bond covenants often establish reserve requirements as a means of protecting an agency against the risk of nonpayment. This bond reserve can be funded with cash on hand, but is more often funded at the time of borrowing as part of the bond principal. This reserve requirement can also be met by using a surety bond. Since the utility does not have any outstanding bonds, the City currently does not maintain a restricted bond reserve. Our projections, however, assume that any new bond issue will require a restricted bond reserve requirement equal to its annual debt service payment, and reserve funding need is rolled into borrowed amount.

System Reinvestment Policies

The purpose of system reinvestment funding is to provide for the replacement of aging system facilities to ensure sustainability of the system for ongoing operation. Each year, the utility's assets lose value, and as they lose value they are moving toward eventual replacement. That accumulating loss in value and future liability is typically measured for reporting purposes through annual depreciation expense, which is based on the original cost of the asset over its anticipated useful life. While this expense reflects the consumption of the existing asset and its original investment, the replacement of that asset will likely cost much more, factoring in inflation and construction conditions. Therefore, the added annual replacement liability is even greater than the annual depreciation expense.

On the spectrum of policy options related to system reinvestment funding, basing a system reinvestment policy on the projected replacement cost of assets would result in the largest immediate rate impact and the lowest future debt obligation. A policy based on annual depreciation expense has the next greatest immediate rate impact. This policy does not target a replacement reserve level sufficient to cash fund 100% of future replacement costs and therefore assumes some replacement costs will be debt-financed.

One approach aimed at mitigating the accumulating asset replacement liability, as well as current rate impacts, is to fund an amount from rates equal to annual depreciation expense, net of annual debt principal repayment. Annual debt principal payments are one source of annual equity contribution to the system. Using annual depreciation expense as the measure of annual equity loss, and basis for a system reinvestment policy, it is appropriate then, to reduce the annual depreciation expense by the annual equity contribution, as measured by debt principal repayment. This approach tends to balance reducing near-term rate impacts with mitigating accumulating asset replacement liability.

The City does not have a formal system reinvestment policy for its stormwater utility. Since the City has been historically cash financing its capital investments on a pay-as-you-go basis, lack of such policy had no practical and/or financial implications. All utility capital investments have been paid by the utility's cash resources and/or met by capital contributions.

For the purposes of our financial projections, per City staff's direction, we did not assume any system replacement funding policy contributions from rates.

Debt Policies

Bond covenants often establish a minimum debt coverage ratio as a means of protecting an agency against the risk of nonpayment. Typically, the revenue bond coverage requirement is expressed as a multiple of the annual debt service payment, and ranges between 1.25 and 2.00 (the higher the perceived creditworthiness of borrower, lower the bond coverage requirement). A 1.25 coverage requirement means that annual rate revenue must be set sufficient to support annual operating expenses, annual revenue bond debt repayment, and a cushion of 25% of the annual revenue bond debt repayment. For the purposes of this analysis, it is assumed that the stormwater utility will meet a 1.50 revenue bond coverage ratio independently, without relying on the City's water and sewer utilities' financial performance.

CAPITAL FUNDING PLAN

The 10-year CIP developed for this plan totals \$4.33 million (in 2013 dollars; \$5.18 million inflated). Project costs stated in 2013 dollars are escalated to the year of planned spending for financing projections at 3% a year in 2013 and 2014, 4% in 2015, and 5% thereafter. The capital improvements project list does not provide for any particular prioritization or schedule. The only exception is the "Erdahl Ditch and Interstate 5" project, which will need to be coordinated with the Washington State Department of Transportation's (WSDOT) improvements on I-5 Interstate Highway. The City has already signed an interlocal agreement with WSDOT. The estimated timeframe for this project is between 2015 and 2017. The estimated cost of this project is \$1.21 million (in 2013 dollars; \$1.30 million inflated). This project constitutes approximately 28% of the total 10-year CIP cost. The rest of the CIP (\$3.12 million in 2013 dollars; \$3.88 million inflated) will be prioritized by the City Council and implemented potentially based on the availability of funding.

For the purposes of this analysis we assumed that the "Erdahl Ditch and Interstate 5" project will be constructed in 2015, and the remainder of the CIP costs will be spread equally over a 10-year planning period beginning in 2016. The resulting average cost of annual capital spending is \$350,000 (in 2013 dollars).

Table 2 summarizes assumed annual CIP expenditures.

Table 2: Capital Improvement Program by Year

Years	2013 Costs	Inflated Costs
2013	\$ 674,000	\$ 674,000
2014	-	-
2015	1,210,000	1,296,152
2016	350,000	393,666
2017	350,000	413,349
2018	350,000	434,017
2019	350,000	455,718
2020	350,000	478,503
2021	350,000	502,429
2022	350,000	527,550
TOTAL	\$ 4,334,000	\$ 5,175,384

A capital funding plan evaluates planned capital costs and available resources to determine whether additional funding will be required from rates, either to pay for new debt service or to directly fund the capital projects.

Table 3 summarizes the proposed capital funding strategy for the 10-year analysis period. This strategy incorporates the recommended rate increases shown in the revenue requirement forecast in **Table 4**, and the assumed use of revenue bond proceeds in the amount of \$1.0 million to finance the “Erdahl Ditch and Interstate 5” project. The use of revenue bond proceeds shown in the **Table 3** represents a 20 year \$1.099 million bond issued with a 5% interest rate, projected to fund the project, pay issuance costs, and fund required debt reserves. The balance of the capital financing need is expected to be funded with the utility’s cash sources (i.e. current and projected capital reserves, and rates).

Table 3: 10-Year Capital Financing Plan

Capital Funding	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Capital Projects (Current \$)	\$ 674,000	\$ -	\$ 1,210,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
Total Capital Projects (inflated \$)	\$ 674,000	\$ -	\$ 1,296,152	\$ 393,666	\$ 413,349	\$ 434,017	\$ 455,718	\$ 478,503	\$ 502,429	\$ 527,550
Funding Sources										
Revenue Bond Proceeds	\$ -	\$ -	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Use of Capital Fund Balance	674,000	-	296,152	393,666	413,349	434,017	338,501	265,016	249,762	301,485
Direct Rate Funding	-	-	-	-	-	-	117,217	213,487	252,667	226,065
Total Funding Sources	\$ 674,000	\$ -	\$ 1,296,152	\$ 393,666	\$ 413,349	\$ 434,017	\$ 455,718	\$ 478,503	\$ 502,429	\$ 527,550

FINANCIAL FORECAST

The Financial Forecast, or revenue requirement analysis, projects the amount of annual rate revenue needed to meet the utility’s financial obligations. The analysis incorporates operating revenues, operating and maintenance (O&M) expenses, debt service payments, rate funded capital needs, and any other identified revenues or expenses related to utility operations, and determines the sufficiency of the current level of rates. Revenue needs are also impacted by debt covenants

(typically applicable to revenue bonds) and specific fiscal policies and financial goals of the utility (as described above).

For this analysis, two revenue sufficiency criteria have been developed to reflect the financial goals and constraints of the utility: (1) cash needs must be met and (2) debt coverage requirements must be realized. In order to operate successfully with respect to these goals, both tests of revenue sufficiency must be met.

Cash Test

The cash flow test identifies all known cash requirements for the utility in each year of the planning period. Capital needs are identified and a capital funding strategy is established. This may include the use of debt, cash reserves, outside assistance, and rate funding. Cash requirements to be funded from rates are determined. Typically, these include O&M expenses, debt service payments, system reinvestment funding or directly funded capital outlays, and any additions to specified reserve balances. The total annual cash needs of the utility are then compared to total operating revenues (under current rates) to forecast annual revenue surpluses or shortfalls.

Coverage Test

The coverage test is based on a commitment made by the City when issuing revenue bonds. For purposes of this analysis, revenue bond debt is assumed for any needed debt issuance. As a security condition of issuance, the City is required per covenant to agree that the revenue bond debt would have a higher priority for payment (a senior lien) than most other utility expenditures; the only outlays with a higher lien are O&M expenses. Debt service coverage is expressed as a multiplier of the annual revenue bond debt service payment. For example, a 1.0 coverage factor would imply no additional cushion is required. A 1.25 coverage factor means revenues must be sufficient to pay O&M expenses, annual revenue bond debt service payments, plus an additional 25% of annual revenue bond debt service payments. The excess cash flow derived from the added coverage, if any, can be used for any utility purpose, including funding capital projects. The existing coverage requirement on the City's outstanding revenue bonds is 1.50 times bond debt.

In determining the annual revenue requirement, both cash and coverage sufficiency tests must be met – the test with the greatest deficiency drives the level of needed rate increase in any given year. The analysis uses this rate revenue requirement to indicate annual rate adjustments.

PROJECTED FINANCIAL PERFORMANCE

The revenue requirement analysis is based on the following data, assumptions, and adjustments:

- The 2013 budget is used as the basis of the analysis.
- Rate revenues under existing rates are calculated to increase with customer growth. Customer growth assumptions are based on the population growth rate rates in recent years as provided by the Washington State Office of Financial Management (OFM) with concurrence of City staff.
- Labor costs (i.e. salaries and wages) are escalated annually at 5%.
- Other operating and maintenance expenses are escalated annually at 3%.
- Annual fund interest earnings rates are assumed to be 0.5% in 2013, 0.75% in 2014, 1.0% in 2015, 1.5% in 2016, and 2.0% thereafter.
- Per City staff's and the consulting engineer's direction, the following additional O&M expenses are included in the 2013 baseline budget:
 - One-time labor cost for staff IDDE training in the amount of \$10,000 in 2013,

- Ongoing program costs to detect and identify IDDE in the amount of \$15,000 starting in 2017,
 - One-time labor cost for Fife Municipal Code (FMC) changes in the amount of \$10,000 in 2016,
 - One-time labor cost for development of O&M manual in the amount of \$10,000 in 2017, and
 - Ongoing costs for participating in Ecology Collective Fund for Status and Trends Monitoring in the amount of \$5,700 starting in 2013.
- Inflated capital expenses reflect annual construction cost inflation rates of 3% starting in 2014, 4% in 2015, and 5% thereafter.
 - In addition to maintenance and operating costs, revenue requirements include capital costs for new debt service incurred to fund the CIP.
 - The 2013 beginning balance of the stormwater utility fund was \$1,413,028. Of this amount, \$100,000 is assumed to be used as working capital based on the set operating fund target balances, and the remainder is assumed to be transferred to capital fund.
 - The forecast assumes a revenue bond interest rate of 5%, a repayment term of 20 years, issuance cost of 1%, and required coverage of 1.50 times debt service.

Table 4 summarizes the projected financial performance and rate revenue requirements of the stormwater utility for 2013 through 2022 based upon the above assumptions.

Table 4: Summary of Revenue Requirements (2013 – 2022)

Revenue Requirements	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Revenues										
Rate Revenues Under Existing Rates	\$ 667,931	\$ 671,271	\$ 674,627	\$ 678,000	\$ 681,390	\$ 684,797	\$ 688,221	\$ 691,662	\$ 695,121	\$ 698,596
Non-Rate Revenues	38,765	38,800	38,988	40,708	41,597	41,696	41,720	41,777	41,831	41,897
Total Revenues	\$ 706,696	\$ 710,071	\$ 713,615	\$ 718,709	\$ 722,987	\$ 726,493	\$ 729,942	\$ 733,439	\$ 736,952	\$ 740,493
Expenses										
Cash Operating Expenses	\$ 578,628	\$ 586,273	\$ 605,679	\$ 637,393	\$ 675,751	\$ 685,791	\$ 708,825	\$ 732,731	\$ 757,545	\$ 783,304
Add'l Taxes Due to Rate Increase	-	4,713	9,911	15,642	21,958	28,917	36,582	45,021	54,312	64,537
New Debt Service	-	-	88,202	88,202	88,202	88,202	88,202	88,202	88,202	88,202
Direct Rate Funded CIP	-	-	-	-	-	-	117,217	213,487	252,667	226,065
Total Expenses	\$ 578,628	\$ 590,986	\$ 703,793	\$ 741,237	\$ 785,912	\$ 802,910	\$ 950,825	\$ 1,079,441	\$ 1,152,726	\$ 1,162,109
Annual Surplus / (Deficiency)	\$ 128,068	\$ 119,085	\$ 9,823	\$ (22,528)	\$ (62,925)	\$ (76,418)	\$ (220,884)	\$ (346,002)	\$ (415,774)	\$ (421,615)
Annual Rate Adjustment	0.00%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%	9.25%
Cumulative Rate Adjustment	0.00%	9.25%	19.36%	30.40%	42.46%	55.63%	70.03%	85.76%	102.94%	121.71%
Rate Revenues After Rate Increase	\$ 667,931	\$ 733,363	\$ 805,205	\$ 884,085	\$ 970,693	\$ 1,065,784	\$ 1,170,191	\$ 1,284,826	\$ 1,410,691	\$ 1,548,885
Net Cash Flow After Rate Increase	128,068	181,178	140,401	183,557	226,378	304,569	261,086	247,162	299,796	428,674
Coverage After Rate Increases	n/a	n/a	3.40	3.98	4.55	5.47	6.37	7.39	8.53	9.82

As shown in the table, revenues under existing rates are not sufficient to fund projected utility needs, both operating and capital. The projected revenue deficiency is primarily due to funding of capital projects and new debt repayment.

It is projected that the utility will need to increase its stormwater rates by at least 9.25% annually. The analysis assumes that the rate adjustments would be implemented at the beginning of each year, and the new rates will be in effect for the entire year.

Table 5 below demonstrates the projected cash balances (operating, capital, and debt reserve funds) for the stormwater utility, assuming the rate increases proposed in **Table 4** above are implemented.

Table 5: Projected Cash Balances (2013 – 2022)

Fund Balances	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Operating Fund	\$ 71,338	\$ 72,280	\$ 74,673	\$ 78,368	\$ 83,312	\$ 84,550	\$ 87,389	\$ 90,090	\$ 93,396	\$ 96,572
Capital Fund	802,324	988,577	840,319	639,120	459,986	338,501	265,016	249,762	301,485	431,527
Debt Reserve Fund	-	-	88,202	88,202	88,202	88,202	88,202	88,202	88,202	88,202
Total	\$ 873,662	\$ 1,060,857	\$ 1,003,194	\$ 805,690	\$ 631,500	\$ 511,253	\$ 440,608	\$ 428,054	\$ 483,083	\$ 616,301
Combined Minimum Target Balance	\$ 297,558	\$ 298,187	\$ 387,984	\$ 390,448	\$ 393,743	\$ 394,569	\$ 396,462	\$ 398,262	\$ 400,466	\$ 402,583

It is important that the City track its costs as they become available and compare them to assumptions used in the study. If significant changes occur, the City should revisit the analysis and make appropriate changes. Circumstances might change over time, causing actual rate adjustments to be higher or lower once actual costs are known.

CURRENT AND PROJECTED RATES

The City currently charges its customers a monthly base rate per parcel. In addition to the monthly base rate, there is a service charge based on the percentage amount of impervious surface area on each parcel. The City's current (2013) stormwater rate categories and associated rates are as follows:

Table 6: Existing and Projected Stormwater Rates (2013 – 2022)

Development Category	Description	Existing Rates	2014	2015	2016	2017	2018	2019	2020	2021	2022
Base rate per parcel		\$ 2.00	\$ 2.19	\$ 2.39	\$ 2.61	\$ 2.85	\$ 3.11	\$ 3.40	\$ 3.72	\$ 4.06	\$ 4.43
Service Charge per 500 sq. ft. of ISA [a]											
Undeveloped	ISA < 20%										
One acre or less plus: for area over one acre		\$ 0.065 0.050	\$ 0.071 0.055	\$ 0.078 0.060	\$ 0.085 0.065	\$ 0.093 0.071	\$ 0.101 0.078	\$ 0.111 0.085	\$ 0.121 0.093	\$ 0.132 0.101	\$ 0.144 0.111
Lightly Developed	ISA > 20% & < 40%	0.100	0.109	0.119	0.130	0.142	0.156	0.170	0.186	0.203	0.222
Moderately Developed	ISA > 40% & < 60%	0.300	0.328	0.358	0.391	0.427	0.467	0.510	0.557	0.609	0.665
Heavily Developed	ISA > 60% & < 80%	0.400	0.437	0.477	0.522	0.570	0.623	0.680	0.743	0.812	0.887
Very Heavily Developed	ISA > 80%	0.500	0.546	0.597	0.652	0.712	0.778	0.850	0.929	1.015	1.109

[a] ISA = Impervious surface area

The City offers a rate reduction for the service charge component of the rates if a property served by privately owned and maintained stormwater management systems. Properties with stormwater detention and properties with stormwater quality control qualify for 20% rate discount. If a property has onsite water detention and water quality control system or provides stormwater retention and ground water recharge, the discount amount is 40%. Treatment of stormwater runoff to a six-month design storm via low impact development techniques also qualifies for a 40% discount.

ALTERNATIVE SCENARIO

In addition to the analysis and results summarized above, City staff requested a scenario in which needed rate increases are front-loaded. The front-loaded alternative involves higher initial rate increases followed by smaller, inflationary based increases in future years. The goal of this alternative scenario is to bring in more capital funding resources in the short-term to address pressing capital project needs. It is important to note that implementing this accelerated rate approach eliminates the need for revenue bond financing. Summaries of the front-loaded rate increase results are provided below in tables 7-10.

Table 7: Front-Loaded Scenario, 10-Year Capital Financing Plan

Capital Funding	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Capital Projects (Current \$)	\$ 674,000	\$ -	\$ 1,210,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000
Total Capital Projects (inflated \$)	\$ 674,000	\$ -	\$ 1,296,152	\$ 393,666	\$ 413,349	\$ 434,017	\$ 455,718	\$ 478,503	\$ 502,429	\$ 527,550
Funding Sources										
Revenue Bond Proceeds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Use of Capital Fund Balance	674,000	-	1,296,152	149,511	290,507	414,539	455,718	478,503	502,429	527,550
Direct Rate Funding	-	-	240,891	244,155	122,843	19,478	-	-	-	-
Total Funding Sources	\$ 674,000	\$ -	\$ 1,537,043	\$ 393,666	\$ 413,350	\$ 434,017	\$ 455,718	\$ 478,503	\$ 502,429	\$ 527,550

Table 8: Front-Loaded Scenario, Summary of Revenue Requirements (2013 – 2022)

Revenue Requirements	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Revenues										
Rate Revenues Under Existing Rates	\$ 667,931	\$ 671,271	\$ 674,627	\$ 678,000	\$ 681,390	\$ 684,797	\$ 688,221	\$ 691,662	\$ 695,121	\$ 698,596
Non-Rate Revenues	38,765	38,800	38,988	39,385	39,833	39,932	39,956	40,013	40,067	40,133
Total Revenues	\$ 706,696	\$ 710,071	\$ 713,615	\$ 717,386	\$ 721,223	\$ 724,729	\$ 728,178	\$ 731,675	\$ 735,188	\$ 738,729
Expenses										
Cash Operating Expenses	\$ 578,628	\$ 586,273	\$ 605,679	\$ 637,393	\$ 675,751	\$ 685,791	\$ 708,825	\$ 732,731	\$ 757,545	\$ 783,304
Add'l Taxes Due to Rate Increase	-	10,190	22,530	37,463	40,331	43,308	46,398	49,603	52,930	56,381
New Debt Service	-	-	-	-	-	-	-	-	-	-
Direct Rate Funded CIP	-	-	240,891	244,155	122,843	19,478	-	-	-	-
Total Expenses	\$ 578,628	\$ 596,463	\$ 869,100	\$ 919,011	\$ 838,926	\$ 748,578	\$ 755,222	\$ 782,334	\$ 810,475	\$ 839,686
Annual Surplus / (Deficiency)	\$ 128,068	\$ 113,608	\$ (155,485)	\$ (201,625)	\$ (117,703)	\$ (23,849)	\$ (27,045)	\$ (50,659)	\$ (75,287)	\$ (100,956)
Annual Rate Adjustment	0.00%	20.00%	20.00%	20.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Rate Adjustment	0.00%	20.00%	44.00%	72.80%	77.98%	83.32%	88.82%	94.49%	100.32%	106.33%
Rate Revenues After Rate Increase	\$ 667,931	\$ 805,525	\$ 971,463	\$ 1,171,585	\$ 1,212,766	\$ 1,255,394	\$ 1,299,522	\$ 1,345,200	\$ 1,392,483	\$ 1,441,429
Net Cash Flow After Rate Increase	128,068	247,862	141,351	291,959	413,672	546,748	584,255	602,879	622,076	641,877
Coverage After Rate Increases	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 9: Front-Loaded Scenario, Projected Cash Balances (2013 – 2022)

Fund Balances	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Operating Fund	\$ 71,338	\$ 72,280	\$ 74,673	\$ 78,368	\$ 83,312	\$ 84,550	\$ 87,389	\$ 90,090	\$ 93,396	\$ 96,572
Capital Fund	802,324	1,055,261	149,511	290,507	414,539	553,802	690,576	826,062	958,924	1,089,254
Debt Reserve Fund	-	-	-	-	-	-	-	-	-	-
Total	\$ 873,662	\$ 1,127,542	\$ 224,184	\$ 368,875	\$ 497,851	\$ 638,351	\$ 777,965	\$ 916,152	\$ 1,052,320	\$ 1,185,825
Combined Minimum Target Balance	\$ 297,558	\$ 298,187	\$ 299,782	\$ 302,245	\$ 305,541	\$ 306,366	\$ 308,260	\$ 310,060	\$ 312,264	\$ 314,381

Table 10: Front-Loaded Scenario, Existing and Projected Stormwater Rates (2013 – 2022)

Development Category	Description	Existing Rates	2014	2015	2016	2017	2018	2019	2020	2021	2022
Base rate per parcel		\$ 2.00	\$ 2.40	\$ 2.88	\$ 3.46	\$ 3.56	\$ 3.67	\$ 3.78	\$ 3.89	\$ 4.01	\$ 4.13
Service Charge per 500 sq. ft. of ISA [a]											
Undeveloped	ISA < 20%										
One acre or less plus: for area over one acre		\$ 0.065 0.050	\$ 0.078 0.060	\$ 0.094 0.072	\$ 0.112 0.086	\$ 0.116 0.089	\$ 0.119 0.092	\$ 0.123 0.094	\$ 0.126 0.097	\$ 0.130 0.100	\$ 0.134 0.103
Lightly Developed	ISA > 20% & < 40%	0.100	0.120	0.144	0.173	0.178	0.183	0.189	0.194	0.200	0.206
Moderately Developed	ISA > 40% & < 60%	0.300	0.360	0.432	0.518	0.534	0.550	0.566	0.583	0.601	0.619
Heavily Developed	ISA > 60% & < 80%	0.400	0.480	0.576	0.691	0.712	0.733	0.755	0.778	0.801	0.825
Very Heavily Developed	ISA > 80%	0.500	0.600	0.720	0.864	0.890	0.917	0.944	0.972	1.002	1.032

[a] ISA = Impervious surface area

CONCLUSION

The City's current rates are projected to be insufficient to fully fund the proposed CIP within a 10-year horizon and meet the forecasted obligations of the utility. New financial obligations for which the utility will require additional rate revenues are driven by the capital financing impacts (i.e. cash financing of capital projects and/or debt service payments for new bond issues). To generate adequate cash capital to fund utility obligations and meet annual cash flow, a series of rate increases will be needed in years 2014 through 2022.

