

3.20 Storm Sewer

3.20.1 Affected Environment

Current Plan Area

The information in this section is based on the *City of Sumner Stormwater Comprehensive Plan* (Parametrix Inc. 2004), which is an update to the *Sumner Stormwater Comprehensive Plan* adopted in 1992. This section deals with the capacity issues associated with the physical stormwater collection and discharge system. Water quality and flooding are covered in section 3.4 and 3.3, respectively.

The City of Sumner (City) also adopted the *East Sumner Neighborhood Plan* in March 2001. The stormwater facilities plan (Berger-Abam Engineers, Inc. 1997) that was developed in support of the neighborhood plan recommended the construction of wet pond and wetland retention facilities as the neighborhood plan is implemented, with some of the facilities being incorporated into new park space. These proposed regional facilities are included in the Capital Improvement Plan (CIP) of the 2004 Stormwater Comprehensive Plan.

The 2004 Stormwater Comprehensive Plan proposes additional projects for the CIP includes stormwater control programs to meet Phase II National Pollutant Discharge Elimination System (NPDES) Permit requirements, and establishes a System Development Charge and monthly stormwater fee review. The review will verify that sufficient revenue is being generated to construct the projects proposed and to adequately maintain the existing and proposed infrastructure. The Washington State Department of Ecology (Ecology) issued an NPDES Phase II Stormwater Permit to the City in 2007; the current permit expires in 2012. As required by the conditions of the NPDES permit, the City published a Stormwater Management Plan in February 2010 that details the current state of Phase II program requirements, including public education and outreach, detection and elimination of illicit discharge, and control measures for runoff from new development, redevelopment, and construction sites.

The City also conducts outreach programs in conjunction with the Natural Resource Conservation District "Stream Team," and provides educational brochures for the public.

Background

The Sumner valley has historically been drained for agricultural purposes to lower the natural water table, control flooding, and create land that was more conducive for agriculture. As more intensive commercial/industrial and residential development has occurred, expansion of the stormwater system has been necessary to collect and convey stormwater to the rivers and to prevent flooding. The purpose of the Stormwater Plan has been to project the capacity infrastructure needs and address current problems with the stormwater system. Changes in state and federal water quality regulations, stormwater retention and detention standards, and other parameters have an effect on the overall system as well as accurately anticipating what type of growth will occur.

The southern portion of Sumner, bounded by Sumner-Tapps Highway to the east, the White (Stuck) River to the west, Salmon Creek to the north, and the Puyallup River to the south represents the "Old

Town” portion of Sumner, which, excluding some vacant parcels to the east and north, is essentially fully developed. Existing uses within this area consist mainly of business/commercial and single-family residential. Vacant parcels to the north and east of the “Old Town” are planned for single-family residential and Urban Village, respectively. The area within the city limits, north of White (Stuck) River and Salmon Creek, was largely farmed in the past, and at this time is a mixture of vacant, agricultural, recreational, and low-density residential uses. The City’s Comprehensive Plan Land Use Map calls for this area to convert to a mixture of light industrial, public/private utility, low-density residential, urban village, and neighborhood commercial uses.

Stormwater Modeling

The 1992 Stormwater Comprehensive Plan identified 44 drainage basins that generate and affect stormwater flows within the city limits. These basins were further divided into 115 subbasins. See Figure 3.20-1. The majority of these basins were modeled in 1992 for the 25-year, 24-hour event and the 100-year, 24-hour event using Type 1A precipitation distribution.

Hydrologic modeling data was subsequently used to complete hydraulic modeling of the Sumner stormwater infrastructure to determine system deficiencies and identify potential capital improvement projects. The results of the modeling are contained in the 1992 Stormwater Comprehensive Plan.

The 2004 Stormwater Comprehensive Plan update included remodeling up to four of the subbasins because of a significant change of land use designation (i.e., allowable development density) between 1992 and present. When remodeling based on the 2004 land use map and allowable land use densities it was determined there was no significant increase in allowable density for developable areas located within the city limits over what was modeled in 1992.

The modeling in 1992 assumed average densities for Low Density Residential (LDR) and Medium Density Residential (MDR) zones: one dwelling unit per acre (approximately 15% impervious surface area) and four dwelling units per acre (approximately 42% impervious), respectively. These density assumptions are too low for new development based on the minimum lot sizes currently allowed in LDR and MDR zones. Based on the current allowable lot sizes, density assumptions of 30% for LDR and 48% for MDR are more appropriate.

Low Impact Development

The 2004 Stormwater Comprehensive Plan also includes guidance for development and implementation of a low impact development (LID) policy for the City. The primary objective of LID methods is to mimic the predeveloped site hydrology by using site design techniques that store infiltrate, evaporate, and detain runoff. Since every aspect of site development affects hydrologic patterns the site, LID control techniques focus mainly on site hydrology. If LID techniques can be used, the net result will be to more closely mimic the watershed’s natural hydrologic functions. This can have a benefit to receiving waters by maintaining base flows, a more closely approximating the natural condition that are good for fish and wildlife using the streams and rivers.

In 2009, the City adopted a Comprehensive Plan text amendment, updating policies related to Low Impact Development. This amendment was intended to ensure that the City’s policies reflect the evolving state of science related to LID and are consistent with updated information included in Ecology’s 2005 Stormwater Manual. These updated goals and policies are contained in the latest

version of the City's Comprehensive Plan Environment Element, published in December 2009, and include the following new policies relevant to stormwater:

Policy 1.4.6 – The City of Sumner will continue to be a leader in developing and implementing state-of-the-art stormwater management techniques including low impact development (LID).

Policy 1.4.7 – Low impact development techniques will be encouraged for both private and public developments including retention of native vegetation, soil amendment, rainwater harvesting, pervious pavement and bio-retention.

Policy 1.4.8 – Incorporate low impact development principles and practices into the design, construction, and operation of all city facilities and city-funded projects only when economically feasible.

Policy 1.4.9 – Work with residential and commercial developers to incorporate low impact development that preserves a site's natural hydrologic functions and practices that protect native vegetation and soils, facilitate reuse of resources, such as reclaimed water, and reduce impervious surface.

In Chapter 13.48 of the Sumner Municipal Code (SMC), the City recently adopted Ecology's 2005 Stormwater Manual and requires documentation of LID practices in each project subject to the manual. The City states that stormwater site plans shall be prepared with a requirement for LID practices over standard retention/detention facilities.

Capital Improvement Projects

As mentioned above, one of the primary outcomes of the stormwater modeling is a list of existing and future deficiencies and corresponding projects to address them. Table 3.20-1 summarizes the City's current list of recommended stormwater capital improvement projects. This table is based on the list of recommended projects presented in the 2004 Stormwater Comprehensive Plan and has been updated to reflect new projects, as well as previously recommended projects that have been completed, combined, or deemed unfeasible since 2004.

Table 3.20-1. Proposed Capital Improvement Projects—Draft Stormwater Plan

Capital Improvement Project	Project Priority ¹	Total Cost Year 2008	Year of Completion
CIP No. 1—Alder Avenue High Flow Bypass	Low	\$5,533,000	2019–2029
CIP No. 2—Gary Street Improvements	Medium	\$291,000	2014
CIP No. 4—Railroad Street Improvements	Low	\$80,000	2019–2029
CIP No. 6—River Street Improvements	Low	\$178,000	2019–2029
CIP No. 7—151st Avenue E and 152nd Avenue E Improvements	Medium	\$407,000	2014
CIP No. 8—63rd Street Court E Improvements	Medium	\$484,000	2015
CIP No. 10—64th Street E Outfall Improvements	Medium	\$197,000	2011
CIP No. 11—South 160th Avenue E Improvements	High	\$106,000	2013

Capital Improvement Project	Project Priority¹	Total Cost Year 2008	Year of Completion
CIP No. 12—North 160th Avenue E Improvements	High	\$293,000	2013
CIP No. 13—Elm Street Interceptor	High	\$185,000	2011
CIP No. 14—North Parker Road Improvements	High	\$117,000	2011
CIP No. 15—Parker Road Improvements	High	\$129,000	2012
CIP No. 17—Main Street Improvements	Low	\$168,000	2019–2029
CIP No. 18—Willow Street Interceptor and Tributary Improvements	Medium	\$1,196,000	2015
CIP No. 19—Puyallup Street Outfall Improvements	Medium	\$419,000	2015
CIP No. 21—South SR 410 Diversion Interceptor	Low	\$1,266,000	2019–2029
CIP No. 22—Meade McCumber Street Improvements	Low	\$145,000	2019–2029
CIP No. 24—East Main Street/160th Avenue E Improvements	High	\$248,000	2013
CIP No. 25—Poole Road Outfall Improvements	High	\$357,000	2012
CIP No. 26—Wahl Road Interceptor	Low	\$1,426,000	2019–2029
CIP No. 27—South Parker Road Improvements	High	\$61,000	2011
CIP No. 28—136th Avenue E Improvements	High	\$701,000	2012
CIP No. 29—Puget Sound Power and Light Canal Drainage	Low	\$496,000	2019–2029
CIP No. 31—62nd Street East	High	\$244,000	2012
CIP No. 33—REI/Railroad Culvert Improvements	High	\$156,000	2009
CIP No. 34—Parker Road Culvert Improvements	High	\$66,000	2010
CIP No. 35—Puyallup Watershed Access Culvert Improvements	High	\$61,000	2011
CIP No. 36—47th Street Court E Culvert Improvements	High	\$59,000	2012
CIP No. 37—160th Avenue E Culvert Improvements	High	\$493,000	2013
CIP No. 38—162nd Avenue E Culvert Improvements	Medium	\$138,000	2014
CIP No. 39—East Main Street Culvert Improvements	Medium	\$31,000	2015
CIP No. 40—Salmon Creek Restoration	Medium	\$263,000	2016
CIP No. 41—64th Street E Culvert Improvements	High	\$355,000	2013

Capital Improvement Project	Project Priority¹	Total Cost Year 2008	Year of Completion
CIP No. 42—8th Street E Corridor Improvements	High	\$914,000	2010
CIP No. 43—East Valley Highway Improvements—Detention Pond with Bioswale	Medium	\$2,018,000	2017
CIP No. 44—East Valley Highway Improvements	Medium	\$936,000	2018
CIP No. 45—West Valley Highway Improvements-Detention Pond with Bioswale	Low	\$560,000	2019-2029
CIP No. 46—16th Street East Improvements	Low	\$478,000	2019–2029
CIP No. 47—White River Levee Improvements	High	\$3,049,000	2013
CIP No. 48—Milwaukee Ditch Regional Facility	Medium	\$2,512,000	2014
CIP No. 49—Golf Course Culvert Improvements	High	\$243,000	2013
CIP No. 50—Development Rights Relinquished by City	High	\$1,524,600	2010
CIP No. 51—Stuck River Setback Levee	Low	\$10,000,000	2019–2029
CIP No. 52—Number 9 Ditch and Forest Canyon Class III Habitat Improvements	Medium	\$611,000	2016
CIP No. 53—Rivergrove Flood Wall	High	\$3,100,000	2011
SITE A.1—42-inch Outfall Water Quality Facility	High	\$421,000	2009
SITE A.2—48-inch Outfall Water Quality Facility	High	\$294,000	2013
SITE D—Detention Pond with Water Quality Facility	High	\$1,518,000	2012
SITE J—Water Quality Treatment Vault	Medium	\$377,000	2016
Total Capital Asset Funds (2008 dollars)(City-funded only—exclude developer or LID-funded projects)		\$44,904,600	

Source: Windish pers. comm.

¹ High = Completed 0–5 years; Medium = Completed 5–10 years; low = Completed within 10–20 years

Level of Service

The Capital Facilities Element of the City’s Comprehensive Plan and the City’s Capital Facilities Plan contain the policies relating to level of service for the stormwater drainage system plan. The Capital Facilities Plan was adopted in March of 2003. Current policies “[e]stablish and maintain the Level of Service as the 25-year storm event, except in those areas where the 100-year storm design is appropriate to protect the natural environment.”

Orton Junction Expansion Area

The Orton Junction expansion area is part of the City's stormwater drainage planning area and lies within portions of drainage basins T11 and T12. The description of existing stormwater facilities and planned improvements for the current plan area also applies to this area. CIP Projects 21 and 26 are located in the Orton Junction expansion area and are currently scheduled for completion between 2019 and 2030.

East Hill Reduction Area

The East Hill reduction area is within the current plan area and comprises portions of drainage basins T5, T6, T7, S2, and S3. The description of existing stormwater facilities and planned improvements for the current plan area also applies to the East Hill reduction area.

3.20.2 Impacts

Impacts Common to All Alternatives

Additional growth and development will increase the amount of impervious surfaces and the level of stormwater runoff. This effect will be especially pronounced in areas where the current land use is predominantly agricultural, vacant, or natural (vegetated). The Salmon Creek drainage area (Basin T), which includes the southern portion of the East Hill reduction area and most of the Orton Junction expansion area, has a history of drainage problems, and several locations within this watershed were identified in the 1992 Stormwater Comprehensive Plan as existing problem areas.

Under all of the alternatives, new development of a primarily commercial nature would occur within the Salmon Creek drainage area. A 2005 review of development data by the Sumner Public Works Department found that commercial parcels in the city had a median impervious surface percentage of 75%. As a result, future commercial development is anticipated to consist of a high degree of impervious surface, which will generate additional stormwater runoff.¹

Impacts Specific to the UGA Expansion (Orton Junction) Alternative

In addition to increases in impervious surfaces and need for the stormwater regulations and capital facilities associated with the No Action Alternative, the UGA Expansion Alternative would alter the land use patterns of the Orton Junction expansion area, converting land that is currently agricultural and low-density residential to a mixture of commercial and low-density residential uses. Increased development in the area will result in increased stormwater flows and a corresponding need for additional infrastructure. The UGA Expansion Alternative would result in the addition of 124 acres of General and Interchange Commercial land to the Sumner UGA, as well as approximately 64 acres of land designated as Low Density Residential 1. By applying the median impervious surface percentages for commercial property described under "Impacts Common to All Alternatives," the UGA Expansion Alternative would result in the addition of approximately 93 acres of impervious surface from commercial development. Based on prior hydraulic modeling, low-density residential parcels are assumed to have a median impervious surface percentage of approximately 30%, and

¹It should be noted that this citywide commercial impervious surface assumption, as well as other standard impervious surface assumptions described previously, might be conservative based on the City's new requirement for LID practices through its stormwater regulations. In addition, uses in the northern valley may also have reduced impervious surfaces due to future floodplain regulation changes (described in Section 3.3, "Flooding").

approximately 19 acres of impervious surface would result from additional residential development. The UGA Expansion Alternative would result in a total additional impervious surface of approximately 112 acres.

Sumner's list of recommended stormwater capital improvements includes two projects within the Orton Junction expansion area: the installation of two diversion interceptors south of SR 410 and along Wahl Road to alleviate flooding and divert flows to the Puyallup River. These projects are currently considered a low priority and not scheduled for construction until after 2019. As these projects were designed for the current land uses in the area, increased commercial and residential development may adversely affect drainage conditions in the area by generating stormwater flows beyond the capacity of these facilities.

Impacts Specific to the UGA Modification Alternative

Beyond the No Action Alternative, the UGA Modification Alternative would alter the land use patterns in a portion of the Orton Junction expansion area, converting land that is currently agricultural and low-density residential to commercial uses. Increased development in the area will result in increased stormwater flows and a corresponding need for additional infrastructure, though to a lesser degree than the UGA Expansion Alternative, as total population and employment within the Orton Junction expansion area would be lower. Similar to the UGA Expansion Alternative, the UGA Modification Alternative would result in the addition of 124 acres of land designated General Commercial and Interchange Commercial. However, this alternative would not increase the amount of Low Density Residential land in the Orton Junction expansion area. This alternative would introduce approximately 93 acres of impervious surface of the UGA.

Under the UGA Modification Alternative, the UGA boundary would be reduced to exclude the East Hill reduction area, 250 acres of Low Density Residential land. This land would revert to Pierce County land use designations and zoning, and the City would no longer be responsible for the installation and maintenance of stormwater infrastructure in the area. This alternative would remove approximately 75 acres of potential future impervious surface from the City's stormwater service area; instead less future development would be added due to the present lot pattern and County rural lot size requirements.

As described under the UGA Expansion Alternative, increased commercial development in the Orton Junction expansion area may adversely affect drainage conditions in the Orton Junction expansion area by generating stormwater flows in excess of the capacity of planned infrastructure that was planned for current use patterns rather than a UGA expansion. Overall, however, the UGA Modification Alternative would result in a net increase of 18 acres of impervious surface, which would generate less stormwater drainage than the UGA Expansion Alternative.

Impacts Specific to the No Action Alternative

Under the No Action Alternative, the UGA boundary would not be amended, and no changes in land use would be approved. Overall stormwater flows would gradually increase over time as land within the City's drainage basins builds out and redevelops. The City would implement planned stormwater improvements based on adopted plans.

3.20.3 Mitigation Measures

Incorporated Plan Features

- All alternatives retain buffers along rivers, streams, and wetlands, and a Comprehensive Plan policy to retain 30% of the total land area of the City in an open space/recreational designation.
- LID is an innovative approach to stormwater quantity and quality control that mimics the predeveloped hydrology of a project site by using site design techniques that store, infiltrate, evaporate, and retain stormwater runoff. Sumner currently has an LID demonstration project and is developing LID guidance material as part of its Stormwater Comprehensive Plan Update. In 2009, the City adopted Comprehensive Plan amendments to require LID through incentives and evaluation of the Sumner Municipal Code for opportunities to facilitate LID (City Sumner 2009). All alternatives retain these goals and policies.

Applicable Regulations and Commitments

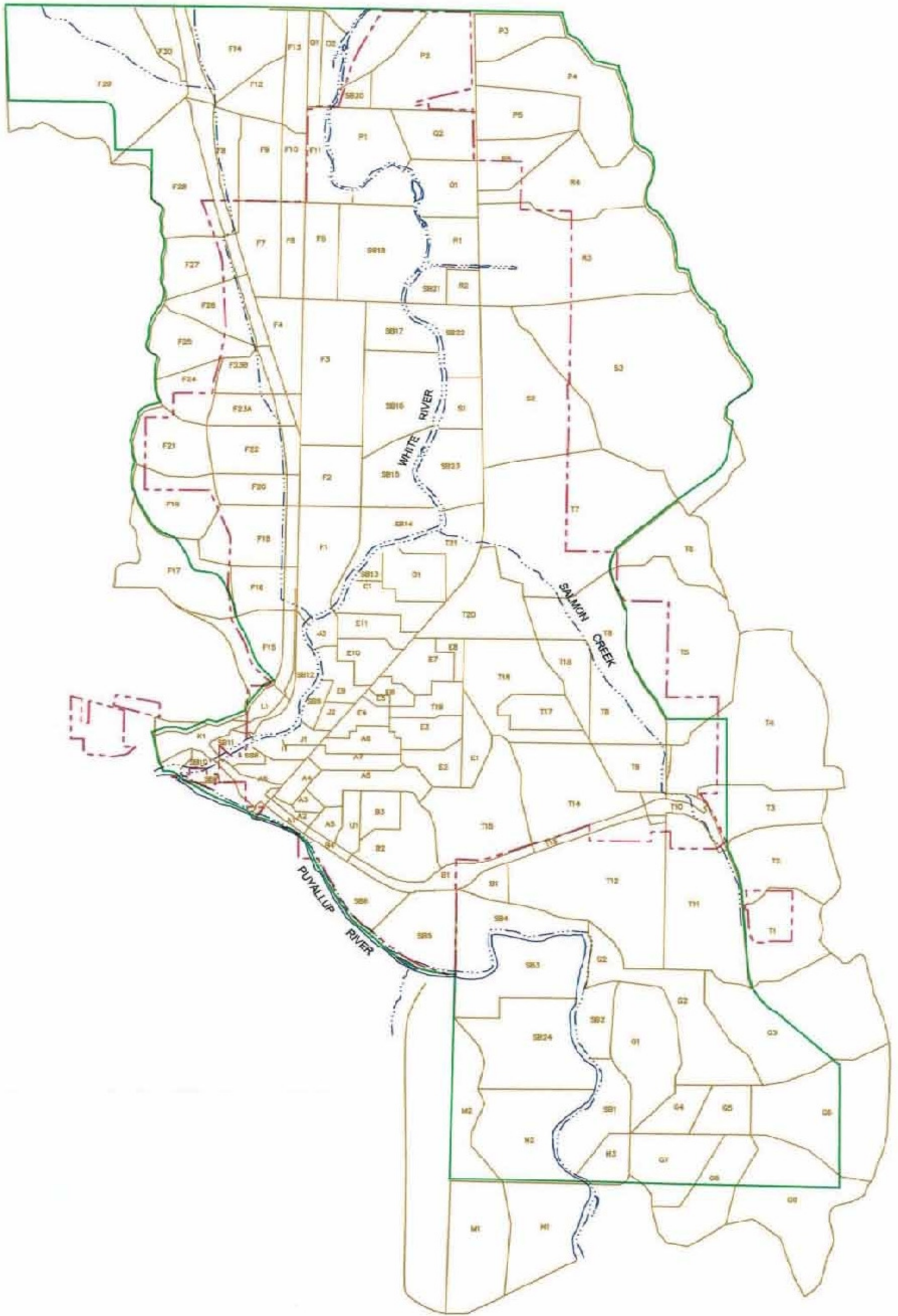
- Washington State Hydraulic Permit Approval requirements apply to City outfalls and secondary standards also apply to new development utilizing those outfalls.
- The City has adopted stormwater standards requiring, among other things, 25-year storage with the 2-year predevelopment release rate.
- Through Chapter 13.48 SMC, the City applies 2005 Ecology stormwater standards to new development of public and private improvements. The City states that stormwater site plans shall be prepared with a requirement for LID practices over standard retention/detention facilities. The City requires documentation of LID practices in each project subject to stormwater requirements.
- The City should implement the capital improvement projects described in the 2004 Stormwater Comprehensive Plan and as described in this chapter.

Other Potential Mitigation Measures

- Subsequent to amendment of its Comprehensive Plan, the City could either conduct an update of its Stormwater Comprehensive Plan to account for the additional impervious surfaces allowed under the action alternatives or, based on its adopted stormwater regulations, the City could ensure that development allowed under land use alternatives demonstrates compliance with the standards set forth in the Ecology's 2005 Stormwater Manual as adopted by the City.
- The City could fund more public education on water quality for residents and businesses.

3.20.4 Significant Unavoidable Adverse Impacts

Increased development under all alternatives would increase impervious surface and reduce vegetation. These changes would have impacts on the stormwater system in the study area and the natural recharge of groundwater. Aggressive implementation of LID measures and application of NPDES-compliant stormwater standards and improvements would reduce impacts and meet City level of service standards.



**Comprehensive Plan Update and Amendments
Environmental Impact Statement**



DISCLAIMER:
This Map is Intended for
Planning Purposes Only.

Source: City of Sumner
Community Development
Department

Legend

- Study Area
- Subbasin Boundary
- - - - - Sumner City Limits

Figure 3.20-1 Stormwater Subbasin Locations