INTRODUCTION

In July 1984, the Gig Harbor City Council adopted Ordinance No. 448 establishing the storm drainage utility and authorizing the City to create a storm drainage utility fee. Prior to Ordinance No. 448, storm and surface waters were managed solely through the operation and maintenance of roads. The storm drainage utility addresses the City's concerns regarding flooding, channel erosion, water quality, and stream and wetland preservation.

The purpose of the Stormwater Comprehensive Plan is to provide the City with a planning document that satisfies local, state, and federal stormwater regulatory requirements. The Plan will evaluate the existing stormwater system and program, provide recommendations to improve the storm system capacity and water quality, preserve stream and wetland habitat, and satisfy some/many of the National Pollutant Discharge Elimination System (NPDES) Phase II permit requirements.

In June 2008, PACE Engineering, Inc. was contracted to update the City's Stormwater Comprehensive Plan. Following are the chapters of this Plan:

- Stormwater Regulations
- Service Area
- Existing Stormwater Drainage System
- System Model
- Water Quality
- Capital Improvement Plan
- Finance
- Operations and Maintenance

STORMWATER REGULATIONS

Federal, state, and local stormwater regulations provide the minimum standards for the control and treatment of stormwater runoff. The purpose of these regulations is to reduce the damaging effects of increased runoff volumes and pollutants to the natural environment and properties as the land surface changes and development occurs.

Through the Clean Water Act and other legislation at the federal level, the states have been delegated the authority to implement rules and regulations that meet the goals of this legislation. In January 2007, the Department of Ecology (Ecology) issued the Western Washington Phase II Municipal Stormwater Permit (Permit). The Permit authorizes the

discharge of stormwater to surface waters and to ground waters of the State from Municipal Separate Storm Sewer System (MS4) owned or operated by the Permittee.

The City has been identified as a National Pollutant Discharge Elimination System (NPDES) Phase II agency. This requires the City to satisfy the NPDES Phase II permit requirements which includes developing a stormwater management program

As required by the Permit, the Permittee must develop and implement a Stormwater Management Program that includes the following components:

- Public Education and Outreach Program
- Public Involvement and Participation Program
- Illicit Discharge Detection and Elimination Program
- Controlling Runoff from New Development, Redevelopment and Construction Sites
- Pollution Prevention and Operation and Maintenance for Municipal Operations

The Permit has outlined minimum performance measures and schedule for each of the components. An annual Permit fee of $1,700.24 was assessed to the City by Ecology. This fee covers permit application reviews, site inspections, technical document reviews and technical assistance.

The City has been proactive in satisfying the requirements of this Permit. In 2006, the City contracted HDR, Inc. to complete the City's NPDES Plase II Permit Application and Implementation Project report. The report included a gap analysis comparing the existing City stormwater program to the Permit requirements. According to the report, public participation, City staff training and stormwater policies appear to be the areas that the City will need to focus their efforts. To satisfy the Permit requirements for the first five year period, the report estimated a budget range of $155,000 to $215,000 (2006 dollars) is needed.

In 2008, the City completed and submitted their first annual report to Ecology as required by the Permit. The City has begun to take action to satisfy the NPDES Phase II requirements. Low Impact Development techniques are to be allowed as part of the requirements of the NPDES.

SERVICE AREA

The service area is the current City limits which consist of 3,156 acres. The City was incorporated in 1946 and had a census population of 803 residents in 1950. The City has developed as a residential community through the years with some associated commercial and light industrial growth as well. The 2008 population was estimated at 6,910 and

approximately 7,464 were employed within the City limits according to the latest employment survey completed in 2006.

The Plan study area includes the City limits and UGA. Several annexations to the City limits that were approved prior to the publication of this Plan were also included in the study area. The City limits combined with these annexations make up a total of 3,792 acres. The UGA comprises approximately 6,594 acres.

When the City reaches its capacity under a build-out scenario, it is estimated there will be 7,600 single family units and 3,600 multifamily units within the City limits. For the purposes of stormwater planning, it was assumed that the City limits will have expanded to include the entire area within the existing (2008) UGA boundary by 2030. By 2030 the projected population is 22,528.

The Gig Harbor Municipal Code established a stormwater utility for the purposes of collecting revenue to perform studies, implement capital improvements and enforce stormwater regulations. Revenue is collected based on Equivalent Billing Units (EBUs). Each single family residence is defined to be one EBU, duplexes are 1.5 EBUs, and all other property calculates the number of EBUs based on the amount of impervious surface, with one EBU equivalent to 2,200 square feet of impervious surface. Based on these definitions, and the population growth, revenue was projected to the year 2030. In the year 2008, the revenue was $651,800 and by 2030 the projected revenue is $1.58 million.

DRAINAGE SYSTEM

Gig Harbor, Henderson Bay, Wollochet Bay, and the Puget Sound are the receiving water bodies of the City's storm system. The storm system consists of catch basins, pipe, drainage ditches, natural streams such as Donkey Creek and McCormick Creek, wetlands, ponds, and stormwater detention and water quality facilities. There is approximately 45 miles of pipe and drainage ditches. This chapter presents a physical description and inventory of the stormwater systems in the City and briefly discusses the land use and fishery resources for the drainage basins. Various types of fish and wildlife have been observed in the basins such as Chinook, coho, steelhead, bald eagles and herons.

As the City continues to grow through annexation and new developments, the service area will grow and maintenance responsibilities will increase. It will be important to regularly update the storm system inventory map and data. The mapping will also be helpful in satisfying some of the NPDES Phase II permit requirements such as tracking spills and illicit discharges, recording inspection observations and maintenance activities, mapping of the service area and outfalls.

SYSTEM MODEL

The storm system modeling was performed at a planning level to identify system needs under future full build-out land use conditions. Two models were used for the analysis. WWHM3 Pro Complete (WWHM3 Pro) developed by Clear Creek Solutions, Inc. was used for the basin hydrologic analysis. It imports land coverage data from GIS such as acreage, impervious/pervious areas, land use and soil types. WWHM3 Pro calculates basin flows based on this data and precipitation data records.

PCSWMM was developed by Computational Hydraulic International for hydraulic analysis, sizing of conveyance systems and stormwater facilities. PCSWMM imports the pipe and channel data such as size, invert elevations, lengths and material from GIS.

The City selected seven storm trunklines to be analyzed. These trunklines were selected based on known past conveyance and/or sedimentation problems and possible future system impacts due to development. Following is the location of the trunklines:

- Trunkline 1 – Peacock Hill Avenue NW between 101st Court NW and North Harborview Drive
- Trunkline 2 – Soundview Drive between Ryan Street and Hollycroft Street NW
- Trunkline 3 – Point Fosdick Drive NW between SR 16 and 39th Street NW
- Trunkline 4 – Soundview Drive between Harborview Drive and Ryan Street
- Trunkline 5 – East of 38th Avenue between 56th Street NW and Briarwood Lane NW
- Trunkline 6 – Stinson Avenue between Harborview Drive and Grandview Street
- Trunkline 7 – West of Point Fosdick Drive NW between 50th Street Court NW and Briarwood Lane NW

See Chapter 5 and Figure 5-1 for additional information regarding the location of the trunklines. The results of the hydrologic/hydraulic analysis and maps for each trunkline are included in Appendix A. Surcharged pipes are identified on the maps and the recommended pipe size to convey the calculated flow is also shown. Trunkline 4 located on Soundview Drive between Harborview Drive and Ryan Street is the only system modeled that did not show any surcharged pipes. The recommended pipe replacements were included in the Capital Improvement Plan.

WATER QUALITY

Gig Harbor is the City's centerpiece water body. There are homes, businesses, parks, recreational and educational activities that surround and revolve around the harbor. Commercial fishing and boat building has been associated with the City for over 100 years.

The harbor is habitat to various fish and wildlife. It is important to protect and improve the water quality of the various water bodies in the City.

Community involvement and education becomes much more important in the protection of the harbor and the City's waterways as growth and development occurs. The combination of development and road improvement projects has and will continue to increase the number of vehicles, visitors, businesses, employees and residents to the City. These activities including construction can impact the quality of the City's natural water bodies if surface water runoff is not properly managed. Proper management of stormwater is an integral part of the preservation of the water quality of the harbor, bays and the surrounding streams.

It is required by the City's Municipal Code that all new development collect the stormwater runoff and provide detention and treatment. Regular inspection and maintenance is very important for these facilities to function properly. If the facilities are not maintained properly, they will overflow and cease to provide any benefit towards the protection of the City's waters.

Water quality is a local and regional issue. The City should continue to develop their relationships with Pierce and Kitsap Counties and other regional groups such as the Puget Sound Action Team. By continuing to develop these relationships and following the requirements of the NPDES Phase II permit, the City is developing a stormwater program that will address water quality issues.

CAPITAL IMPROVEMENT PLAN

Recommended storm system improvements are identified in the Capital Improvement Plan (CIP) to meet the needs of the environment, future development and growth. The types of improvements identified and scheduled include capacity, facility and habitat projects. The City initiated a Stormwater Capital Fund for stormwater CIP projects and in 2009, $229,000 was transferred into the fund.

CIP projects described in this Chapter are prioritized within the six-year planning period (2009 to 2014) for which this Plan has been developed. Projects shown beyond 2014 are also presented to allow for longer range planning.

Storm system and habitat improvement projects identified in the CIP were based on the Staff's knowledge of the service area, past studies and the hydrologic/hydraulic system analysis. Projects that have not been completed from the 2001 Stormwater Comprehensive Plan and Pierce County's 2005 Gig Harbor Basin Plan were also included in the CIP. A total cost of $8.4 million in projects has been identified.

There are two major stormwater facility projects identified, the Burnham Interchange Improvement Project ($2 million) and the Spadoni Aquifer Recharge Project ($1.7 million). Approximately $2.8 million in capacity improvement projects have been identified. The largest capacity improvement project identified in the analysis is the replacement of 1,640 feet of 12-inch pipe with 18-inch along Peacock Hill Avenue (Trunkline 1). Total cost for habitat improvement projects is $1.2 million.

Capacity problems can also be resolved with flow control facilities similar to those constructed on Point Fosdick Drive NW. Onsite or regional facilities can reduce flows to minimize capacity impacts on the existing storm system. Regional facility locations should be considered as an alternative to pipe replacement.

FINANCE

The City formed a stormwater utility in 1984 by adoption of City Ordinance No. 448. In 1984, City Ordinance No. 449 established the rate structure policy for the storm drainage utility. At that time the monthly service charge was $2.10 per Equivalent Billing Unit (EBU). In 2008, the City adopted Ordinance No. 1135 increasing the monthly service charge to $11.12 per EBU in response to the increasing costs of providing services and maintaining the storm system. The latest increase was also to ensure that adequate funds would be available for the NPDES Phase II program.

The 2008 Storm Sewer Operating budget is $801,621. The main source of revenue for the budget is the City's Stormwater Enterprise Fund which include the storm drainage service charge and the recently adopted General Facilities Charges (GFC or connection fee). The Stormwater Enterprise Fund provides funding for staff, maintenance, inspections, capital improvements, property acquisition, engineering, planning, administration, equipment, repair or replacement of existing systems, NPDES Phase II program and other items related to the stormwater utility.

In February 2008, the City completed the General Facilities Charges and Rate Study that resulted in the adoption of the GFC and increase to the storm drainage service charge. Because the rate study was completed recently, a rate analysis was not included in this Stormwater Comprehensive Plan. Based on the Study, the City adopted Ordinance No. 1125 in March 2008, establishing a stormwater general facilities charge (GFC) and rate structure. The GFC would be a one-time fee to be paid by the property owner at the time new development is connected to the City storm system. The adopted stormwater GFC is $1,160 per equivalent residential unit as recommended by the Study.

OPERATIONS AND MAINTENANCE

The objective of a stormwater operation and maintenance program is to assure that all the elements of the stormwater system are functioning properly to avoid any impacts to the environment and properties. Regularly scheduled maintenance tasks and inspections are essential to the program. Major system problems can be avoided if defects are identified and addressed in a timely manner. Operation and maintenance of a storm system is not always the responsibility of the City, it could be the responsibility of a homeowners association or a property management company.

The Operations and Maintenance Department is responsible for 30 stormwater ponds, approximately 1,650 catch basins, over 12 miles of drainage ditches and over 33 miles of storm pipe. Annually these numbers will increase as development continues to occur, CIP projects are constructed and new areas are annexed by the City.

Operations and maintenance is a critical element in the compliance with the NPDES Phase II Permit. There are many permit activities that will involve operations and maintenance including, but not limited to the following:

- Tracking cost of the stormwater program
- Identification, investigation, reporting and cleanup of illicit discharges
- Verifying completion of maintenance plan and determining responsibilities
- Developing and implementing long term operation and maintenance program for stormwater facilities

These are only a few of the Permit activities related to operations and maintenance.