CITY OF PORT ORCHARD

General Sewer Plan Update

BHC CONSULTANTS

June 2016

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

July 05, 2016

Mr. Mark Dorsey
Public Works Director
City of Port Orchard
216 Prospect Street
Port Orchard, WA 98366

Re: City of Port Orchard General Sewer Plan (June 2016)

Dear Mr. Dorsey:

Pursuant to RCW 90.48.110 and WAC 173-240-050, the above-referenced general sewer plan has been reviewed and, with the exception of references to privately-owned and maintained grinder pumps, is hereby approved. WAC 173-240-104 states that domestic sewage facilities (e.g. grinder pumps) are not approved unless ownership and responsibility of operation and maintenance is by a public entity. The City of Port Orchard has not clearly presented a case that privately-owned grinder pumps is of public interest. Therefore, Ecology has not approved private ownership of grinder pumps.

Sewage collection facilities within the planning area boundary shall be constructed according to the approved general sewer plan or amendments thereto. Prior to construction, the City is required to submit a written description of the project and written assurance that the extension is in conformance with the general sewer plan. Engineering reports and plans and specifications for planned collection facilities including sewer line extensions and pump stations, need not be submitted for approval, unless:

a) The proposed sewers or pump stations involve installation of overflows or bypasses; or

b) The proposed sewers or pump stations discharge to an overloaded treatment, collection, or disposal facility.

If you have any questions concerning this approval, please contact Lazaro Eleuterio at lazaro.eleuterio@ecy.wa.gov or 425-649-7027.

Sincerely,

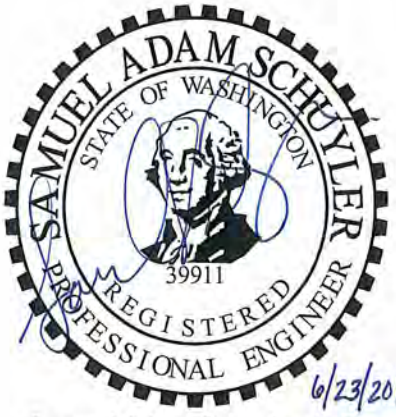
Kevin C. Fitzpatrick
Section Manager
NWRO Water Quality Section

KF:le:

cc: Randy Screws, Senior Operator at West Sound Utility District
Adam Schuyler, PE; BHC Consultants, LLC
Lazaro Eleuterio, Department of Ecology, Permit Manager
Department of Ecology Central Records, City of Port Orchard, WQ 4.5

ACKNOWLEDGEMENTS

The technical material and data contained in this Plan was prepared by Peter Cunningham, P.E. and Adam Schuyler, PE of BHC Consultants, LLC.



Samuel Adam Schuyler, P.E.
Project Manager

Peter Benedict Cunningham, P.E.
Project Engineer

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List of Abbreviations

AAF	Annual Average Flow
APWA	American Public Works Association
ArcMap	ArcGIS
BOD	Biological oxygen demand
CCTV	Closed-Circuit Television
CIP	Capital Improvement Plan
City	City of Port Orchard
d/D	Flow Depth/Pipe Diameter
DOE	Department of Ecology
DWF	Dry Weather Flow
ESU	Evolutionary Significant Unit
fps	Feet per second
FTE	Full Time Employees
GIS	Graphic Information Systems
GMA	Growth Management Act
gpcd	Gallons per Capita Per Day
gpd	Gallons per Day
gped	Gallons per Employee per Day
gpm	Gallons per Minute
HGL	Hydraulic Grade Line
HP	Horsepower
I/I	Infiltration and Inflow
KRCC	Kitsap Regional Coordinating Council
LF	Linear Feet
LIDAR	E-4 – not defined, does it need to be?
MPS	Marina Pump Station
mgd	Million Gallons per Day
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PDF	Peak Day Factor, Peak Day Flow
PHF	Peak Hour Factor, Peak Hour Flow
Plan	General Sewer Plan Update
PODG	City of Port Orchard 2014 Development Guidelines
PSRC	Puget Sound Regional Council
RCW	Revised Code of Washington
SCADA	Supervisory Control and Data Acquisition
SEPA	State Environmental Policy Act
SKIA	South Kitsap Industrial Area
SKWRF	South Kitsap Water Reclamation Facility
STEP	Septic Tank Effluent Pump

TDH	Total Dynamic Head
TSS	Total Suspended Solids
UGA	Urban Growth Area
ULCA	Updated Land Capacity Analysis
ULID	Utility Local Improvement District
VFD	Variable Frequency Drives
WAC	Washington Administrative Code
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WSUD	West Sound Utility District
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

E.1 INTRODUCTION (CHAPTER 1)

The City of Port Orchard's (City) General Sewer Plan Update (Plan) provides a summary of the City's current sewage capacities, an analysis of the impact of projected growth on the City's sewage collection and conveyance system, and proposes a Capital Improvement Program to alleviate system deficiencies. It also documents the utility's policies, operation and maintenance practices, and financial condition.

The City is located in Kitsap County and is bounded to the north by Sinclair Inlet. The location is shown on Figure 1-1. The surrounding area is a combination of rural and suburban lands in unincorporated Kitsap County.

The City was incorporated in 1890 as the Town of Sidney, and was renamed in 1903 as the City of Port Orchard. The City is primarily residential with some commercial areas and industrial activity. The current population within the existing City limits was estimated by the Washington State Office of Financial Management to be 13,150 in 2014. As of 2015, approximately 11,550 are within the City's sewer service area. Residents outside of the City's service area are served by the West Sound Utility District (WSUD) or by individual septic tanks.

The City owns, operates, and maintains existing wastewater collection and conveyance facilities that provide sewer service to the City's current service area of approximately 2,100 acres. The collection system consists of gravity sewers, pump stations, force mains, Septic Tank Effluent Pump (STEP) systems in McCormick Woods, and grinder pump systems that convey wastewater to the South Kitsap Water Reclamation Facility (SKWRF). The SKWRF is owned jointly by the City and WSUD, and operated and maintained by WSUD.

Over the next twenty years the population within the Urban Growth Area (UGA) in the City's sewer service area is expected to grow to over 24,000 people. The City's sewer service area is expected to grow to approximately 5,700 acres. This Plan evaluates future facilities required to accommodate both existing and future wastewater collection needs.

This Plan complies with the Washington State Department of Ecology (DOE) regulations for general sewer plan (Washington Administrative Code [WAC] 173-240-050) as shown in Table E-1.

Table E-1 Comprehensive Sewer Plan Requirements per WAC 173-240-050		
WAC 173-240-050 Reference Paragraph	Description of Requirement	Location in Plan
3a	Purpose and need for proposed plan	Section 1.2
3b	Who owns, operates, and maintains system	Section 1.3
3c	Existing and proposed service boundaries	Chapter 5
3d	Layout map showing boundaries; existing sewer facilities; proposed sewers; topography and elevations; streams, lakes; and other water bodies; water systems	Figures 3-3, 3-5, 5-1, and 8-4
3e	Population trends	Chapter 4
3f	Existing domestic and/or industrial wastewater facilities within 20 miles	Figure 1-1
3g	Infiltration and inflow problems	Section 6.4
3h	Treatment systems and adequacy of such treatment	Section 5.7
3i	Identify industrial wastewater sources	Section 6.7
3j	Discussion of water systems	Section 3.9
3k	Discussion of collection alternatives	Chapter 7
3l	Define construction cost and O&M costs	Chapter 8
3m	Compliance with water quality management plan	Section 3.7
3n	SEPA compliance	Appendix A

E.2 POLICIES AND STANDARDS (CHAPTER 2)

The City manages and operates their sewer system in accordance with state, local and federal regulations. The policies and standards described in the Plan provide a framework for the planning, design, operation, and management of the system to maintain the desired level of service to sewer utility customers. These policies are limited to the sewer system and its design and operation. The City's policies and criteria summarized in Chapter 2 include the following:

- Design standards
- Construction standards
- Pretreatment
- Developer sewer system extensions and upgrades
- Septic to sewer conversion

E.3 SERVICE AREA CHARACTERISTICS (CHAPTER 3)

The City is located along the south shore of Sinclair Inlet, which is an arm of Puget Sound.

A number of streams flow north into Sinclair Inlet. The more prominent creeks within the City sewer service area are Blackjack Creek, Ross Creek, and Anderson Creek.

The soils in the City consist primarily of glacial outwash, glacial till, glacial drift, volcanic ash, and glaciomarine soil.

There are critical areas throughout the City which will limit development. Most of these areas are wetlands, floodplains, geologically sensitive areas, and aquifer protection areas. Several species of fish are also present, of which the Puget Sound Evolutionary Significant Unit Chinook is a State Candidate for endangered species and considered threatened by the Federal Government. In addition, other species that are State Candidates for endangered species and considered threatened by the Federal Government include bald eagle, marbled murrelet, Steller sea lion, and bull trout.

A majority of the City's water supply comes from 8 active wells. There is also an intertie with the City of Bremerton.

E.4 POPULATION (CHAPTER 4)

The projected population for the City over the planning horizon of this Plan is presented in Table E-2. Kitsap County provided 2015 residential population estimates and the Puget Sound Regional Council (PSRC) provided 2013 Covered Employment estimates. The build out scenario is for modeling purposes only and does not reflect population growth goals or constraints. The City's service area is shown on Figure 5-1.

Table E-2
Service Area Population and Employment Estimates

Year	Sewered Population	Employment
2016	11,837	4,779
2022	13,558	5,114
2026	14,706	5,338
2036	17,575	5,898
Build Out	24,074	8,343

E.5 EXISTING SEWER FACILITIES (CHAPTER 5)

The City of Port Orchard owns, operates, and maintains approximately 70 miles of sewer pipes ranging from 2-inch to 24-inch diameter. This includes approximately 49 miles of gravity sewers, 8 miles of force mains, and 14 miles of STEP mains. There are 16 pump stations within the City's sewer system. 17 mini-basins were defined within the City's sewer service area, shown on Figure 5-1.

E.6 WASTEWATER FLOWS (CHAPTER 6)

The unit and projected flows used to model the City's collection system are presented in Table E-3.

Table E-3
Unit and Projected Flows

Year	Residential Flow (gpcd[1])	Employment Flow (gped[2])	Average Annual Flow (mgd)	I/I (gpd/acre)	Peak Day Flow (mgd)	Peak Hour Flow (mgd)
2016	78	32	1.08	1,046	3.53	6.52
2022	78	32	1.22	1,046	3.92	7.26
2026	78	32	1.32	1,046	4.16	7.68
2036	78	32	1.56	1,046	4.75	8.74
Build Out	78	32	2.14	1,046	6.13	11.18

Notes:
(1) Gallons per capita per day
(2) Gallons per employee per day

E.7 SEWER SYSTEM ANALYSIS (CHAPTER 7)

The existing wastewater conveyance system was analyzed using the InfoSWMM modeling platform. The projected populations and their distributions are the basis for establishing future system requirements.

Model files were developed from AutoCAD files of the sewer system from 2002 provided by the City which had manhole depths, and were supplemented with LIDAR obtained from PACE to determine manhole rim elevations and as-builts. Some elevations were still missing after this process, including some of the smaller pump stations. Estimates for depths, pipe slopes, wet well sizes, and pump operation elevations were made to develop a functional model that reasonably represents the sewer system.

A truncated model was used consisting of all pump stations and the major sewer mains within the City's collection system. The model can be expanded in the future as needed and when budget allows.

The design capacity of the gravity mains is considered to be 100 percent depth (1.0 d/D ratio, where d is the flow depth and D is the pipe diameter). The maximum design capacity of STEP mains and force mains are exceeded when flow velocities are greater than 8 feet per second. The firm capacity of a lift station is defined as the capacity of the lift station with the largest pump out of service. When model simulation results exceed these design capacities in piping or in lift stations, they are identified as deficient and system improvements are identified to resolve them.

Where pipe sections were identified as requiring an upgrade, the proposed upgrade was sized to provide capacity equal to or greater than the estimated build-out flows according to the design criteria above.

At lift stations where the estimated peak hour flows were shown to exceed the current firm capacity, the build out flow capacity was estimated and incorporated into the model for the improved system model runs. This enabled the impact of the increased flow on the downstream sewer network to be investigated. It is unlikely that the mechanical and electrical improvements to the lift stations will be sized for the build-out conditions.

E.8 CAPITAL IMPROVEMENTS PLAN (CHAPTER 8)

The 6 year capital improvement projects as determined by model results and the City desired improvements are presented in Table E-4. Actual costs can and will differ from the opinions of probable costs. Volatility in the bidding climate, the number of contractors bidding on a project, and their approach to bidding and completing the work will all impact actual project costs.

Table E-4
Opinion of Probable Project Costs, 6-Year CIP (2016-2021)

CIP No.	Project	Opinion of Probable Construction Cost[(1)(2)]	Opinion of Probable Project Cost[(1)(3)]
6-1	Marina Pump Station Improvements	$2,670,000	$3,800,000
6-2	Bay Street Pump Station Improvements	$730,000	$1,100,000
6-3	McCormick Pump Station 2 - Design	N/A	$190,000
6-4	McCormick Pump Station 2 - Construction	$1,100,000	$1,100,000
6-5	McCormick Pump Station 1 - Design	N/A	$180,000
6-6	McCormick Pump Station 1 - Construction	$1,100,000	$1,100,000
		Estimated City Total	$7,470,000

Notes:
1) All costs are in 2014 dollars.
2) The opinion of probable construction cost includes the costs to build the various components, sales tax, and contingency.
3) Opinions of probable project costs include planning, surveying, engineering services, permitting, bid advertisement, contract award, construction, and services during construction, in addition to the probable construction cost.

E.9 FINANCIAL (CHAPTER 9)

The financial analysis for the sewer system was performed by Katy Isaksen & Associates as part of the "City of Port Orchard Utility Gap Analysis" and is included as Appendix H.

E.10 OPERATIONS AND MAINTENANCE (CHAPTER 10)

Chapter 10 summarizes general operations and maintenance activities and staffing needs. The City has approximately 0.95 maintenance staff per 100,000 lf of pipe and 0.22 maintenance staff per pump station, which is similar to other sewer utilities in this region of similar size.

E.11 RECLAIMED WATER (CHAPTER 11)

Only one reclaimed water customer was being served by the WSUD. The costs to provide reclaimed water to this customer were higher than what the customer is charged, resulting in the City and WSUD subsidizing the reclaimed water customer. Reclaimed water was provided to this customer until the end of 2015, at which point reclaimed water distribution was ceased. Reclaimed water is blended with effluent from the secondary clarifiers prior to discharge.

If water system demands increase to the point that reclaimed water is necessary to adequately address water demands in the area, the reclaimed water distribution system will be placed back into service.

SECTION 1
INTRODUCTION

1.1 INTRODUCTION

The City of Port Orchard (City) is located in Kitsap County and is bounded to the north by Sinclair Inlet. The location is shown on Figure 1-1. The surrounding area is a combination of rural and suburban lands in unincorporated Kitsap County.

The City was incorporated in 1890 as the Town of Sidney, and was renamed in 1903 as the City of Port Orchard. The City is primarily residential with some commercial areas and industrial activity. The current population was estimated by the Washington State Office of Financial Management to be 13,150 in 2014. Approximately 11,550 are within the City's sewer service area. The remaining 1,600 residents are served by the West Sound Utility District (WSUD) or by individual septic tanks.

The City owns, operates, and maintains existing wastewater collection and conveyance facilities that provide sewer service to the City's current service area of approximately 2,100 acres. The collection system consists of gravity sewers, pump stations, force mains, septic tank effluent pump (STEP) systems in McCormick Woods, and grinder pump systems that convey wastewater to the South Kitsap Water Reclamation Facility (SKWRF). The SKWRF is owned jointly by the City and WSUD, and operated and maintained by WSUD.

Over the next twenty years the population within the UGA in the City's sewer service area is expected to grow to over 24,000 people. The City's sewer service area is expected to grow to approximately 5,700 acres. This Plan evaluates future facilities required to accommodate both existing and future wastewater collection needs.

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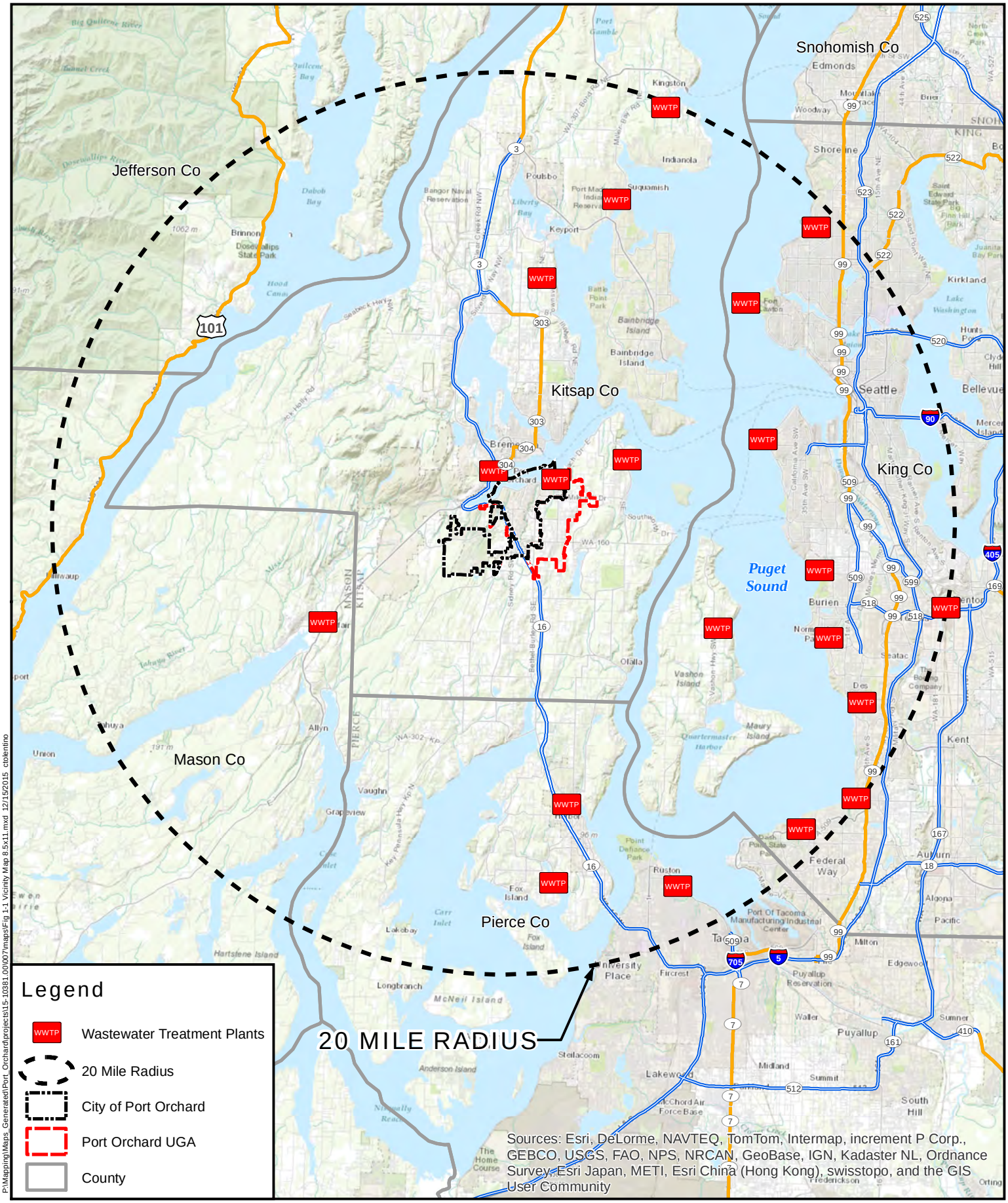

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\007\maps\Fig 1-1 Vicinity Map 8.5x11.mxd 12/15/2015 ctolentino

This map is a geographic representation based on available information . No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

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City of Port Orchard

Vicinity Map

General Sewer Plan Update
City of Port Orchard, Washington

Figure 1-1

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1.2 PURPOSE AND SCOPE

This General Sewer Plan Update (Plan) is prepared for the City to fulfill the requirements of Chapter 173-240-050 of the Washington Administrative Code (WAC), Chapter 90.48 of the Revised Code of Washington (RCW), and RCW 36.70A (Growth Management Act). The Plan provides the City with a guide for managing and operating the sewer system and coordinating expansions and upgrades to the infrastructure through build-out. The Plan serves as a guide for policy development and decision making processes for the City. The WAC requirements are outlined in Table 1-1. This Plan is being updated concurrently with the General Water Plan and General Transportation Plan in preparation for an update to the City's Comprehensive Plan. The Plan provides the public and regulatory agencies with information on the City's plans for sewer system extensions to areas designated as urban.

Table 1-1
Comprehensive Sewer Plan Requirements per WAC 173-240-050

WAC 173-240-050 Reference Paragraph	Description of Requirement	Location in Plan
3a	Purpose and need for proposed plan	Section 1.2
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3l	Define construction cost and O&M costs	Section 8
3m	Compliance with water quality management plan	Section 3.7
3n	SEPA compliance	Appendix A

The Plan is based on projections for a six year period to 2022, a ten year period to 2026, a twenty year period to 2036, and a full build-out capacity scenario.

The existing and future capacities of the sewer system were evaluated based on current and anticipated future wastewater flow rates. Future wastewater flow rates are estimated from existing flow data and population and employment growth projected within the sewer service area by Kitsap County and the Puget Sound Regional Council (PSRC).

A capital improvement plan is provided that prioritizes improvements, and provides opinions of probable project costs. A Water and Sewer Financial Gap Analysis is being completed by Katy Isaksen & Associates and is not included as part of this Plan.

1.3 OWNERSHIP AND MANAGEMENT

The wastewater utility is owned by the City of Port Orchard and is funded through wastewater rates and general facility charges. These revenues must provide for future capital improvements, and pay for current operating expenses, maintenance of the system, replacement, and/or emergency repairs. Sewer collection in the eastern part of the City is provided by WSUD and is not included in this Plan.

Management and administration of the wastewater utility is provided by the Public Works Department. This support includes operation, repair, and maintenance of the collection system, major improvements and development, engineering design and construction, administrative support, accounting and financial services, billing and collection.

The City has an interlocal agreement with WSUD to treat the City's sewage. WSUD operates and maintains the SKWRF, which is owned jointly by the City and WSUD, and provides treatment of all sewage in the City's sewer service area, except for on-site septic systems. A copy of the interlocal agreement between the City and WSUD is included in Appendix B.

1.4 SEWER HISTORY

Construction of the wastewater collection system began in the early 1960's. This system included a network of gravity pipes along Bay Street and a sewage treatment plant located by the marina. The treatment plant was decommissioned in the early 1980's and replaced with the Marina Pump Station, which pumps the sewage generated in the City's sewer service area to the SKWRF.

More detailed information about the existing sewer system can be found in Section 3. The reclaimed water system is discussed in Section 10.

SECTION 2
POLICIES AND STANDARDS

2.1 INTRODUCTION

The City owns, operates, and maintains their sewer system in accordance with state, local and federal regulations. The policies and standards described in the Plan provide a framework for the planning, design, operation, and management of the system to maintain the desired level of service to sewer utility customers. These policies are limited to the sewer system and its design and operation.

While the City has discretion in setting performance and design criteria and standards for its sewer system, the criteria set must meet or exceed the minimum standards for public sewers as set forth by the Washington State Department of Ecology (DOE) through Chapters 90.48, 90.52, and 90.54 of the Revised Code of Washington (RCW). The criteria focus on planning, design parameters, and other details that have been developed to establish consistency and to ensure that adequate levels of service are provided throughout the system. The criteria also provide the planning process with measuring tools to identify any areas of the existing system that need to be improved to achieve the desired level of customer service.

The City establishes the following goals for sewer service:

- Goal 1: Provide safe, reliable and timely sewer service to its consumers at a fair and reasonable price.
- Goal 2: Provide reliable levels of service and ensuring adequate capacity within the sewer system by upgrading the system to protect the natural environment, as deemed necessary.
- Goal 3: Ensure that sewer system infrastructure expansion provides an adequate level of public service to support new development consistent with the City's policies, criteria, and standards. In addition, sewer system expansion should also be consistent with current land use plans and development regulations of the State of Washington, Kitsap County, and appropriate local planning agencies.

2.2 DESIGN STANDARDS

All sewer system improvements are designed in accordance with Department of Ecology Criteria for Sewage Works Design, Port Orchard Municipal Code Chapter 13.04, and Chapter 12 of the City of Port Orchard 2014 Development Guidelines (PODG) and meet or exceed the design standards referenced in WAC 173-240.

2.3 CONSTRUCTION STANDARDS

All sewer system improvements are constructed in accordance with Department of Ecology Criteria for Sewage Works Design, Port Orchard Municipal Code Chapters 13.04, Section 7-08 through 7-15 of the WSDOT/APWA Standard Specifications, and Chapter 12 of the PODG (provided as Appendix C) and meet or exceed the construction standards referenced in WAC 173-240.

2.4 PRETREATMENT

Pretreatment systems may be required to reduce, eliminate or alter the nature of a pollutant's properties prior to discharging to the public sewer collection system. Pretreatment systems include grease traps, interceptors, oil/water separators and other units to treat metals, solvents, fats, oils, grease, excessive BOD or TSS, and other constituents. Pretreatment systems are to be installed in compliance with Chapter 12 of PODG.

2.5 DEVELOPER SEWER SYSTEM EXTENSIONS AND UPGRADES

Sewer system extensions are allowed to provide sewer service within the City's sewer service area and UGA if the development is consistent with adopted development polices and all sewer utility policies and criteria, including those described in 13.04.040 of the City's Municipal Code.

Developers are required to pay the City to analyze the impacts of the development on the existing sewer system. If the City makes a determination that the development's impact to the existing sewer system requires upgrades, the upgrades may be made at the cost of the developer in exchange for a credit to the capital facilities charge per 13.04.040 of the City Municipal Code. The developer may also recoup costs using latecomers agreements.

The City may require the developer to oversize new sewer infrastructure to accommodate future growth. The developer may recoup the additional cost for the oversized infrastructure using latecomers agreements or other mechanisms, including contributions from the City, or discounts to their general facility charges.

2.6 SEPTIC TO SEWER CONVERSION

All homes and businesses within 200 feet of a sewer main that have failing on-site systems and are within the UGA shall connect to that main in compliance with WAC 246-272A-0025.

SECTION 3
SERVICE AREA CHARACTERISTICS

3.1 LAND USE AND ZONING

The City of Port Orchard (City) is located in Kitsap County on Sinclair Inlet south of Bremerton. The City is bounded to the north by Sinclair Inlet. The surrounding area is a combination of rural and suburban lands in unincorporated Kitsap County.

The City Limits and Urban Growth Area (UGA) designated by Kitsap County are shown on Figure 3-1. City zoning within the City Limits and County zoning within the UGA are shown on Figure 3-2.

3.2 TOPOGRAPHY

The City is located adjacent to Sinclair Inlet. Much of the area between Bay Street and Sinclair Inlet is built on fill. The City is cut irregularly by streams and ravines that are generally unbuildable. The City generally slopes towards Sinclair Inlet from south to north, with a maximum elevation of approximately 500 feet above sea level in the southwestern portion of the City. The City's topography is shown as Figure 3-3.

3.3 GEOLOGY

The soils in the City consist primarily of glacial outwash, glacial till, glacial drift, volcanic ash, and glaciomarine soil.

3.4 STREAMS AND WATER BODIES

The City is located along the south shore of Sinclair Inlet, which is an arm of Puget Sound.

A number of streams flow north into Sinclair Inlet. The more prominent creeks within the City sewer service area are Blackjack Creek, Ross Creek, and Anderson Creek.

Many of the streams flowing through the City are believed capable of supporting fish runs, though stream flows are often small. The City has agreed to augment the flow in two streams at the locations described below:

- Ross Creek at the future extension of St. Andrews Drive SW
- Blackjack Creek at SW Sedgwick Road west of SR 16

Augmentation is seasonal using potable water at the rate of 5 GPM. Other streams may be augmented in the future.

Several small ponds, marshes, and wetlands exist within the City sewer service area.

3.5 CRITICAL AREAS

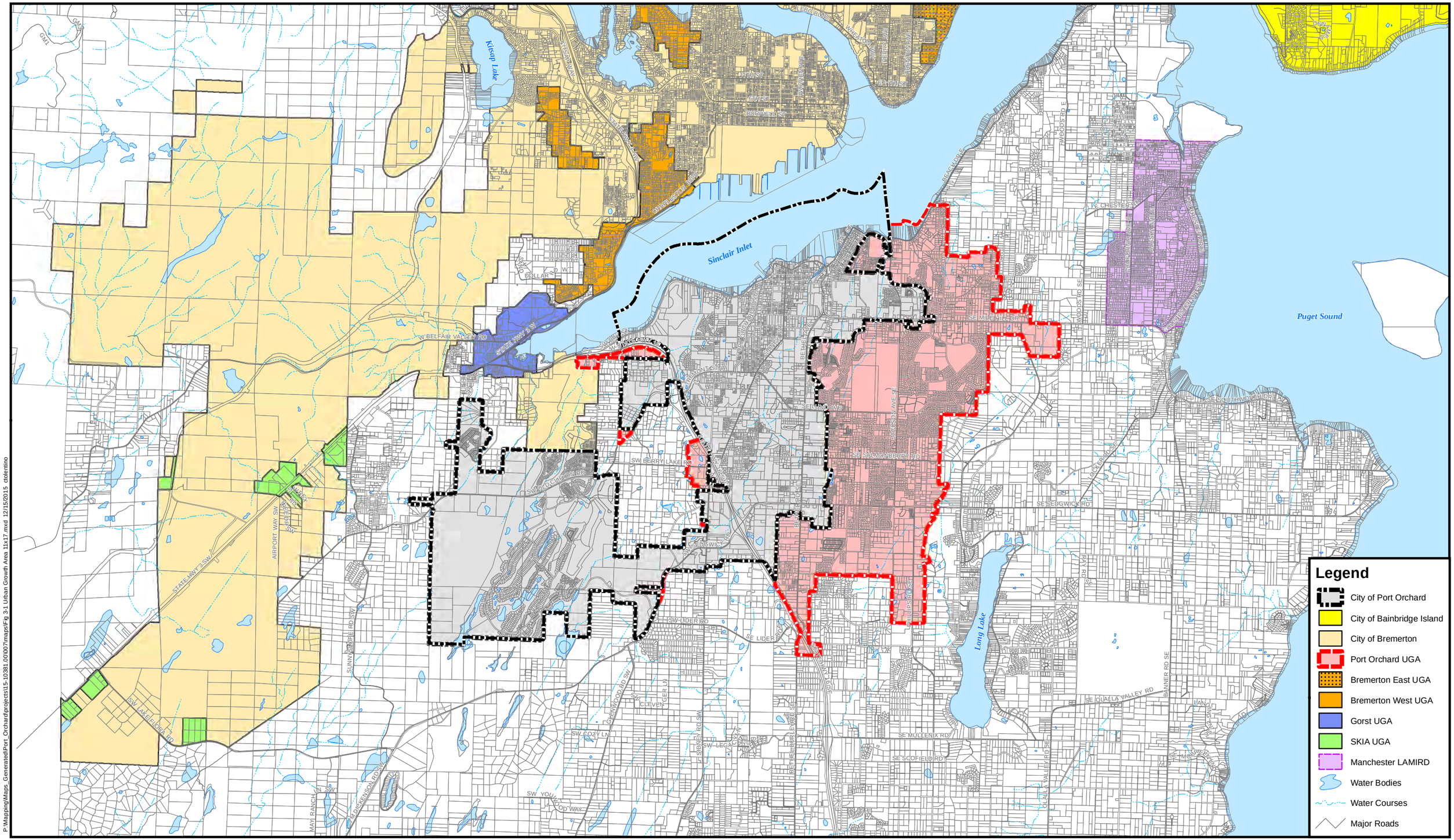
The majority of the City area lies outside of the 100-year floodplain. Areas within the 100-year floodplain include the area immediately adjacent to Blackjack Creek, along Arnold Avenue E, and Ruby Creek near Highway 16. Several small ponds and wetlands exist within the City's UGA; development would need to be limited or carefully planned at these locations. Figure 3-4 shows floodplains and wetlands located within the UGA.

3.6 ENDAGERED SPECIES HABITAT

Critical Habitat in the City include the Puget Sound Evolutionary Significant Unit (ESU) Chinook salmon, which are known to inhabit the marine areas of Sinclair Inlet adjacent to the City. The Puget Sound ESU Chinook is a State Candidate for endangered species and considered threatened by the Federal Government. In addition, other species that are State Candidates for endangered species and considered threatened by the Federal Government include bald eagle, marbled murrelet, Steller sea lion, and bull trout. Coho salmon occur in the majority of streams located in City and are considered threatened by the Federal Government.

3.7 PUGET SOUND WATER QUALITY MANAGEMENT PLAN

The Federal Water Pollution Control Act established the requirement for a Water Quality Management Plan. In response to this requirement, RCW 90.71 established the need of a Puget Sound Water Quality Management Plan. The stated objectives of these regulations are to recover the health of the Puget Sound waters by the year 2020. This General Sewer Plan Update is consistent with the intended goals of the Water Quality Management Plan.



P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\007\maps\Fig 3-1 Urban Growth Area 11x17.mxd 12/15/2015 ctolentino

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Kitsap County base data 2015
Data sources supplied may not reflect current or actual conditions. This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.
BHC Consultants LLC., assumes no responsibility for the validity of any information presented herein, nor any responsibility for the use or misuse of the data.

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City of Port Orchard

Urban Growth Area

General Sewer Plan Update
City of Port Orchard, Washington

Figure 3-1

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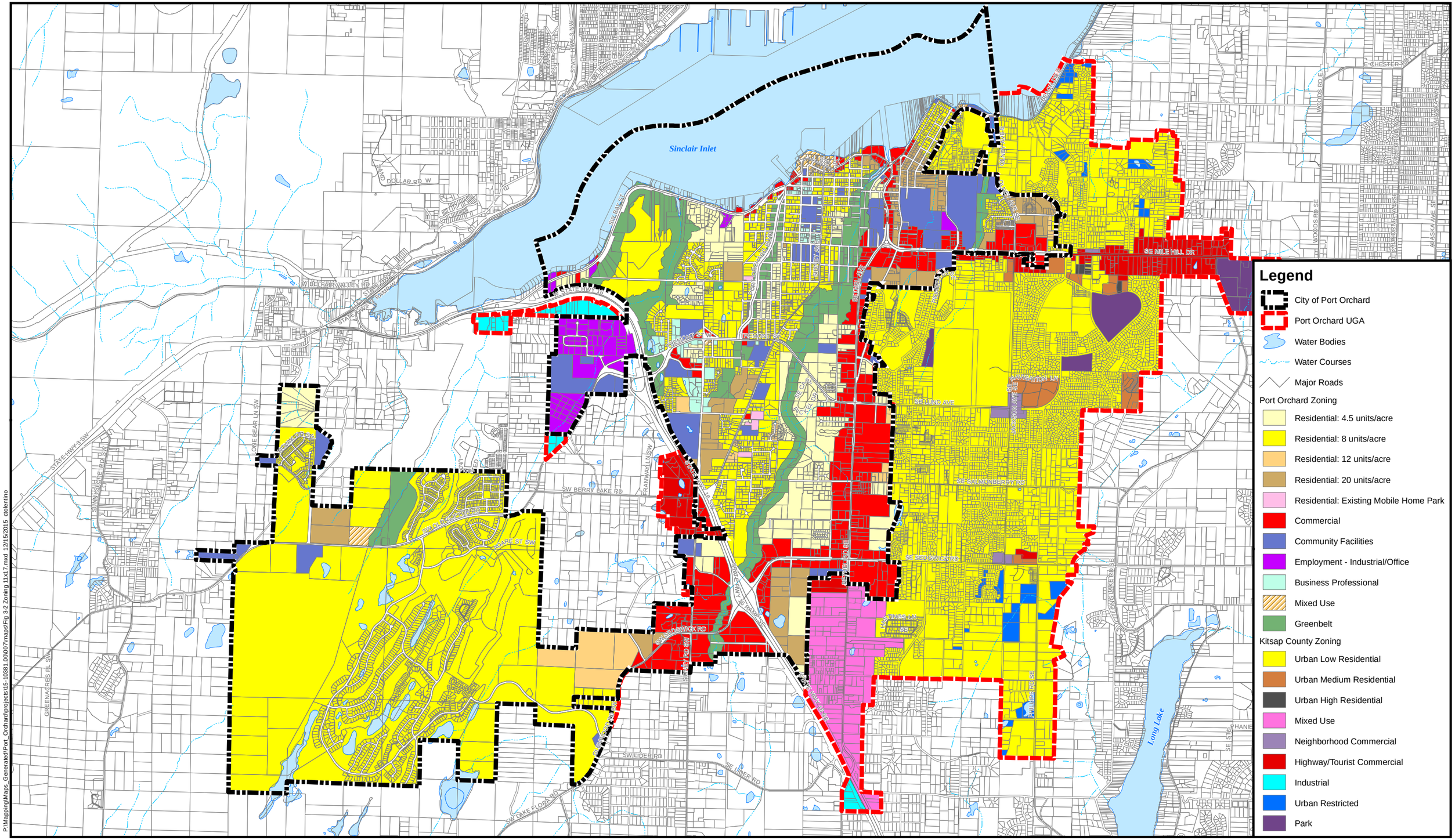

Legend

- City of Port Orchard
- Port Orchard UGA
- Water Bodies
- Water Courses
- Major Roads

Port Orchard Zoning

- Residential: 4.5 units/acre
- Residential: 8 units/acre
- Residential: 12 units/acre
- Residential: 20 units/acre
- Residential: Existing Mobile Home Park
- Commercial
- Community Facilities
- Employment - Industrial/Office
- Business Professional
- Mixed Use
- Greenbelt

Kitsap County Zoning

- Urban Low Residential
- Urban Medium Residential
- Urban High Residential
- Mixed Use
- Neighborhood Commercial
- Highway/Tourist Commercial
- Industrial
- Urban Restricted
- Park

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\00?\maps\Fig 3-2 Zoning 11x17.mxd 12/15/2015 ctolentino

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Zoning: City of Port Orchard 2012; Kitsap County 2015
Kitsap County base data 2015
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City of Port Orchard

Zoning Map

General Sewer Plan Update
City of Port Orchard, Washington

Figure 3-2

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Sinclair Inlet

STATE HWY-3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY-3 W
W BELFAIR VALLEY RD
W STATE HWY 16
SW BAY ST
BAY ST
PORT ORCHARD BLVD
SIDNEY AVE
TREMONT ST W
BETHEL AVE
OLNEY AVE
SE OLNEY AVE
BEACH DR E
E CHESTER RD
WOODS RD E
CALIFORNIA AVE E
ALASKA AVE E
SE MILE HILL DR
WOODS RD SE
CALIFORNIA AVE SE
ALASKA AVE SE
LONG LAKE RD SE
SE LUND AVE
JACKSON AVE SE
SE SALMONBERRY RD
SE SEDGWICK RD
LOCKER RD SE
SW BERRY LAKE RD
FRANWAY LN SW
STATE HWY-3 SW
BONE BEAR LN SW
SW OLD CLIFTON RD
SUNNY SLOPE RD SW
SW SEDGWICK RD
SIDNEY RD SW
GLENWOOD RD SW
SW LIDER RD
SW LAKE FLORA RD
STATE HWY 16 RAMP SE
BETHEL RD S SE
PHILLIPS RD SE
SE LIDER RD
SAY RD SE

Annapolis Creek
Salmonberry Creek
Curley Creek tributary
Curley Creek
Ross Creek
Olney Creek
Burley Creek
Gorst Creek
Parish Creek
Blackjack Creek
Blackjack Creek tributary
Square Creek tributary
Square Creek
Coulter Creek
Cook Creek
Long Lake

Legend

- City of Port Orchard
- Port Orchard UGA
- Parcels
- 20 Foot Contour
- Water Bodies
- Water Courses

GIS Data: Kitsap County 2015
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N

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Topography Map

General Sewer Plan Update
City of Port Orchard, Washington

Figure 3-3

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FEMA Floodplain & Wetlands

General Sewer Plan Update
City of Port Orchard, Washington

Figure 3-4

Legend

Base Layers

- City of Port Orchard
- Port Orchard UGA
- Parcels
- Wetlands
- Floodway
- Floodplain
- Water Bodies
- Water Courses

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Wetlands: Kitsap County 2006
Floodplain & Floodway: FEMA 2007
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3.8 GROWTH MANAGEMENT ACT

The State of Washington adopted the Growth Management Act with the intent of concentrating most new development and population gains within the urban areas of the more populous and rapidly growing counties and cities. State and local governments are required to define an urban growth area boundary within which urban services like sewers are provided, and any new parcels created outside that boundary must be at a very low density with sufficient acreage to support on-site sewage disposal systems conforming to State Department of Health regulations.

Only two exceptions to the prohibitions of sewers outside the urban growth boundary are recognized under state law:

- Public schools outside the urban growth boundary can be served by sewers, but are not required to be served.
- Areas of existing development outside the urban growth boundary where sufficient on-site sewage disposal systems have failed as to create a “severe public health hazard” can be served by sewers.

Sewers provided in either of these cases can be satellite system limited to serving just the qualified and defined parcels, or a sewer extension can be ‘tight-lined’ to convey wastewater from the qualified and defined parcels into the urban growth area for connection to an existing sewer system.

3.9 WATER SYSTEMS

Four water purveyors provide water service within the City and the sewer service area as described below:

3.9.1 City of Port Orchard

City of Port Orchard serves within the City limits and selected adjacent areas as shown on Figure 3-5. The system is supplied by six active wells into a Low Zone with a hydraulic grade line (HGL) of 260 feet, an Intermediate Zone at HGL 336, and a High Zone at HGL 391. Five reservoirs provide 4,200,000 gallons in storage. There is an intertie to the City of Bremerton HGL 256 Zone and a second to the West Sound Utility District. Two booster pump stations can move water from the Low Zone through the Intermediate Zone to the High Zone. The pipe system totals over 300,000 feet of pipe ranging from 4 to 18-inch diameter. The principal facilities comprising the City’s water system are summarized in Table 3-1.

Table 3-1
City of Port Orchard Water Facilities

Description	Dimensions	Capacity
Wells		
PO 6 – Maple Street	806 feet x 10-inches	250 GPM
PO 7 – Port Orchard Blvd	804 feet x 10-inches	725 GPM
PO 8 – Sidney Avenue	577 feet x 12-inches	450 GPM
PO 9 – Sidney Avenue	624 feet x 12-inches	450 GPM
PO 10 – (pending)	1,074 feet x 10-inches	1,600 – 2,000 GPM
McCormick Woods 1	281 feet x 12-inches	175 GPM
McCormick Woods 2	210 feet x 12-inches	350 GPM
McCormick Woods 3	183 feet x 12-inches	350 GPM
McCormick Woods 11 (pending)		
Interties		
Bremerton	260 zone	8-inch meter
Bremerton	580 zone	8-inch meter
West Sound - Sedgwick	390 zone	6-inch meter
Reservoirs		
Van Zee	130 feet diameter	2,000,000 gallons – 260 zone
Morton Street	14.59 diameter x 100 feet high	100,000 gallons – 260 zone
Maple Street		50,000 gallons – 260 zone
Old Clifton	100 diameter x 30 feet high	1,000,000 gallons – 390 zone
Sedgwick	68 diameter x 40 feet high	1,000,000 gallons – 390 zone
McCormick Woods 580	42 feet high	450,000 gallons – 580 zone
McCormick Woods Tank 1	25 diameter x 15 feet high	60,000 gallons – 431 to 580 zone
McCormick Woods Tank 2	25 diameter x 15 feet high	60,000 gallons – 431 to 580 zone
Booster Pump Stations		
City Hall	260 zone	690 and 620 GPM
Melcher Street	390 zone	1000 and 750 GPM
McCormick 580	580 zone	350 and 350 GPM
Well 6 Booster	260 zone	400 GPM

3.9.2 McCormick Woods Water Company

McCormick Woods Water Company is owned and operated by the City and serves McCormick Woods. The existing facilities include a 450,000 gallon reservoir with a booster pump station serving the existing 580 zone from two tanks totaling 120,000 gallons supplied by three wells. Pipe sizes range from 6 to 10-inch diameter.

3.9.3 Berry Lake Manors

Berry Lake Manors buys water from the City and serves a 30-unit mobile home park.

3.9.4 West Sound Utility District

West Sound Utility District serves properties east of Blackjack Creek and generally outside the City sewer service area.

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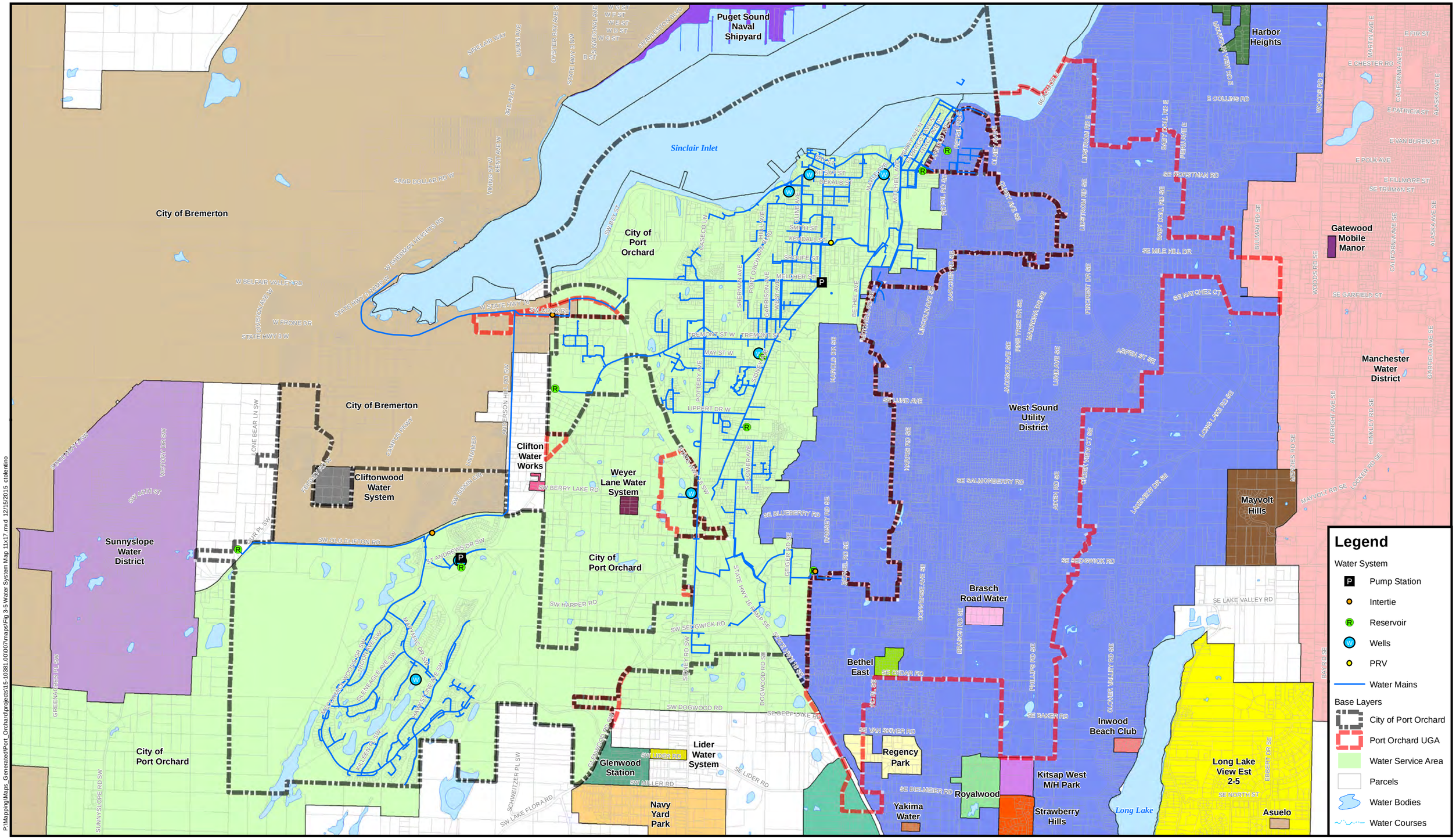

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\007\maps\Fig 3-5 Water System Map 11x17.mxd 12/15/2015 ctolentino

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Water System: City of Port Orchard 2015
Kitsap County base data 2014
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Water System Map

General Sewer Plan Update
City of Port Orchard, Washington

Figure 3-5

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SECTION 4
POPULATION

4.1 GENERAL

Population estimates for the City's service area have been established for each mini-basin for 2016, 2022, 2026, 2036, and build out. Sewage quantities are projected and analyzed for two categories: population; and, employment. The methodology used various available resources to establish accurate population estimates and projections for the purpose of sewer modeling and CIP identification. Years 2022 and 2036 are used for 6- and 20- year CIP planning purposes.

The service area consists of 17 sewer mini-basins. Since these mini-basins do not include the portion of the City served by WSUD, the service area population and employment totals do not reflect City-wide population and employment totals.

4.2 EXISTING POPULATION AND EMPLOYMENT

The baseline population and employment are representative of the most recent year for which data was available. Year 2016 existing population and employment estimates were interpolated between the baseline and projected growth. The results are summarized in Table 4-1.

4.2.1 Population

Year 2015 served as the baseline year for residential population analysis. Kitsap County provided 2015 residential population estimates for each mini-basin based on County Tax Assessor data. The population was estimated for each parcel as a function of total housing units and average household size. The City provided parcel-level review in instances where housing unit counts were unknown. The assumed average household size was 2.4 for single family residences and 1.8 for multi-family residences based on data provided by the City. Parcel-level results were aggregated by mini-basin.

4.2.2 Employment

Year 2013 served as the baseline year for employment analysis. The Puget Sound Regional Council (PSRC) provided 2013 Covered Employment custom estimates per mini-basin. Covered employment refers to positions covered by the Washington Unemployment Insurance Act, and accounts for approximately 85-90% of all employment.

Table 4-1 Service Area Population and Employment Estimates		
Year	**Population**	**Employment**
2016	11,837	4,779
2022	13,558	5,114
2026	14,706	5,338
2036	17,575	5,898
Build Out	24,074	8,343

4.3 FUTURE POPULATION AND EMPLOYMENT

The target years for population and employment analyses are 2022 (used for 6-year CIP), 2026, 2036 (used for 20 year CIP), and build out. Assuming a constant growth rate, population and employment estimates for target years were interpolated between the baseline and 2036 projected growth.

Kitsap County provided population capacity estimates per mini-basin for year 2036, which is the 20-year planning horizon for the County land capacity analysis. The population capacity estimates represent a build out scenario. The build out scenario is for modeling purposes only and does not reflect population growth goals or constraints. The results are summarized in Table 4-1.

4.3.1 Population

Residential population estimates were interpolated for 2016, 2022 and 2026 between the baseline and 2036 for each mini-basin. In accordance with the Growth Management Act (GMA), the Kitsap Regional Coordinating Council (KRCC) has established 2036 population targets for each jurisdiction in the Countywide Planning Policies. Additionally, the 2015 City-wide population estimate was obtained from the state Office of Financial Management. The calculated growth rate was applied to the 2015 baseline residential population to establish the projected total growth for 2036. The total growth was distributed throughout the service area based on the future population capacity captured by each mini-basin.

Kitsap County provided the additional residential capacity for each mini-basin for the year 2036. This figure was added to the 2015 baseline estimate to establish the total 2036 population capacity for each mini-basin to approximate a build out scenario for modeling purposes. The population per mini-basin is included as Appendix D.

4.3.1 Employment

Employment estimates were interpolated for 2016, 2022 and 2026 between the baseline and 2036 for each mini-basin. In accordance with the GMA, the KRCC has established 2036 job growth targets for each jurisdiction in the Countywide Planning Policies. Additionally, the 2013 City-wide covered employment estimate was obtained from the PSRC. The calculated growth rate was applied to the 2013 baseline employment population to establish the projected total growth for 2036 for each mini-basin. The total growth was distributed throughout the service area based on the future employment capacity captured by each mini-basin.

Kitsap County provided the additional employment capacity for each mini-basin for the year 2036. To approximate a build out scenario for modeling purposes, this figure was added to the 2013 baseline estimate to establish the total 2036 employment capacity for each mini-basin. The population per mini-basin is included as Appendix D.

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SECTION 5
EXISTING SEWER FACILITIES

5.1 INTRODUCTION

Construction of the wastewater collection system began in the early 1960's and included a network of gravity pipes along Bay Street and a sewage treatment plant located by the marina. The treatment plant was decommissioned in the early 1980's and replaced with the Marina Pump Station that pumps the sewage in the City's sewer service area to the SKWRF. The City has continued to expand the sewer collection system with gravity sewers, pump stations, and with septic tank effluent pump (STEP) systems.

The existing City sewer system is shown in Figure 5-1, which is assembled from the graphic information system (GIS) files maintained by Kitsap County and as-builts from the City.

5.2 EXISTING AND PLANNED MINI-BASINS

A mini-basin is defined as an area from which the collection system drains to a specified discharge point. Delineations of mini-basins are based on existing sewer service and topography. Mini-basins were delineated with approval from the City and are shown in Figure 5-1. The mini-basins and lift stations are shown schematically in Figure 5-2.

5.3 EXISTING SEWER PIPING

The City of Port Orchard owns, operates, and maintains approximately 70 miles of sewer pipes ranging from 2-inch to 24-inch diameter. This includes approximately 49 miles of gravity sewers, 8 miles of force mains, and 14 miles of STEP mains. The gravity sewers and force mains are summarized in Tables 5-1 and 5-2. For additional modeling information, see Section 7.

Table 5-1
Gravity Sewers

Pipe Diameter (inches)	Modeled Length (feet)	Total Length (feet)
8	12,400	207,800
10	11,200	11,200
12	11,600	11,600
15	20,500	20,500
16	3,300	3,300
18	2,800	2,800
24	1,200	1,200
30	200	200
Total Gravity Sewers	63,200 (~12 miles)	63,200 (~49 miles)

Notes:
1) Only trunk sewers and portions of 8-inch diameter are included in the model.
2) It is assumed the remaining 37 miles of gravity sewers are 8-inch diameter.

Table 5-2
Force Mains

Pipe Diameter (inches)	Length[(1)] (feet)
4	11,400
6	17,700
8	1,800
10	800
12	3,000
18	6,700
Total Force Mains	41,400 (~8 miles)

Notes:
1) All for mains are included in the model.

5.4 EXISTING PUMP STATIONS

The City's pump stations are in Table 5-3 with the general information derived from City records. Pump curves are included in Appendix E. The firm capacity of the Marina Pump Station is defined as the total pump capacity with the largest pumps out of service. The smaller pumps cannot pump with a single large pump in service. Therefore, the firm capacity is equal to the 3,800 gpm capacity of a single large pump.

No overflows have been recorded within the sewer pipe systems or at the pump stations.

South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina
Bay St
16
Annapolis Creek
Sullivan Creek
13
Eagle Crest
14
15
17
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
10
12
11
Harrison Hospital
Pottery
Cedar Heights
9
Flower Meadows
4
McCormick Meadows
The Ridge 3
The Ridge
1
2
3
5
6
7
8
Sedgwick
Lowes
Albertson
McCormick Woods #2
Olney Creek
Curley Creek tributary
Curley Creek
Salmonberry Creek
Long Lake
Cool Creek
Blackjack Creek
Blackjack Creek tributary
Square Creek tributary
Square Creek
Coulter Creek
Gorst Creek
Parish Creek
Anderson Creek
UNNAMED

STATE HWY 3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY 3 W
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
W STATE HWY 16
SW BAY ST
SW MILE HILL DR
SE MILE HILL DR
SE 32ND AVE
SE 36TH AVE
SE 37TH AVE
OLNEY AVE SE
JACKSON AVE SE
BETHEL AVE
LONG AVE
TREMONT ST
SW TREMONT ST
SW MILE HILL DR
SW CANYON CT
SW HARRISON HOSPITAL DR
SW BERRY LAKE RD
SE SALMONBERRY RD
SE SEDGWICK RD
SW SEDGWICK RD
SIDNEY RD SW
BETHEL RD SE
PHILLIPS RD SE
LONG LAKE RD SE
SW LIDER RD
SE LIDER RD
SW LAKE FLORA RD
STATE HWY 3 SW
LONE BEAR LN SW
GREENACRES PL SW
SUNNYSLOPE RD SW
E CHESTER RD
WOODS RD SE
CALIFORNIA AVE SE
ALASKA AVE SE

Legend

Existing Sewer System
- Pump Station
- Treatment Plant
- Manhole
- Force Mains
- Sewer Pipes
- Sewer Gravity Trunks

Base Layers
- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

Sewer System & Basins Map

General Sewer Plan Update
City of Port Orchard, Washington

Figure 5-1

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FILE NAME (UPDATED BY)	PLOT DATE & TIME
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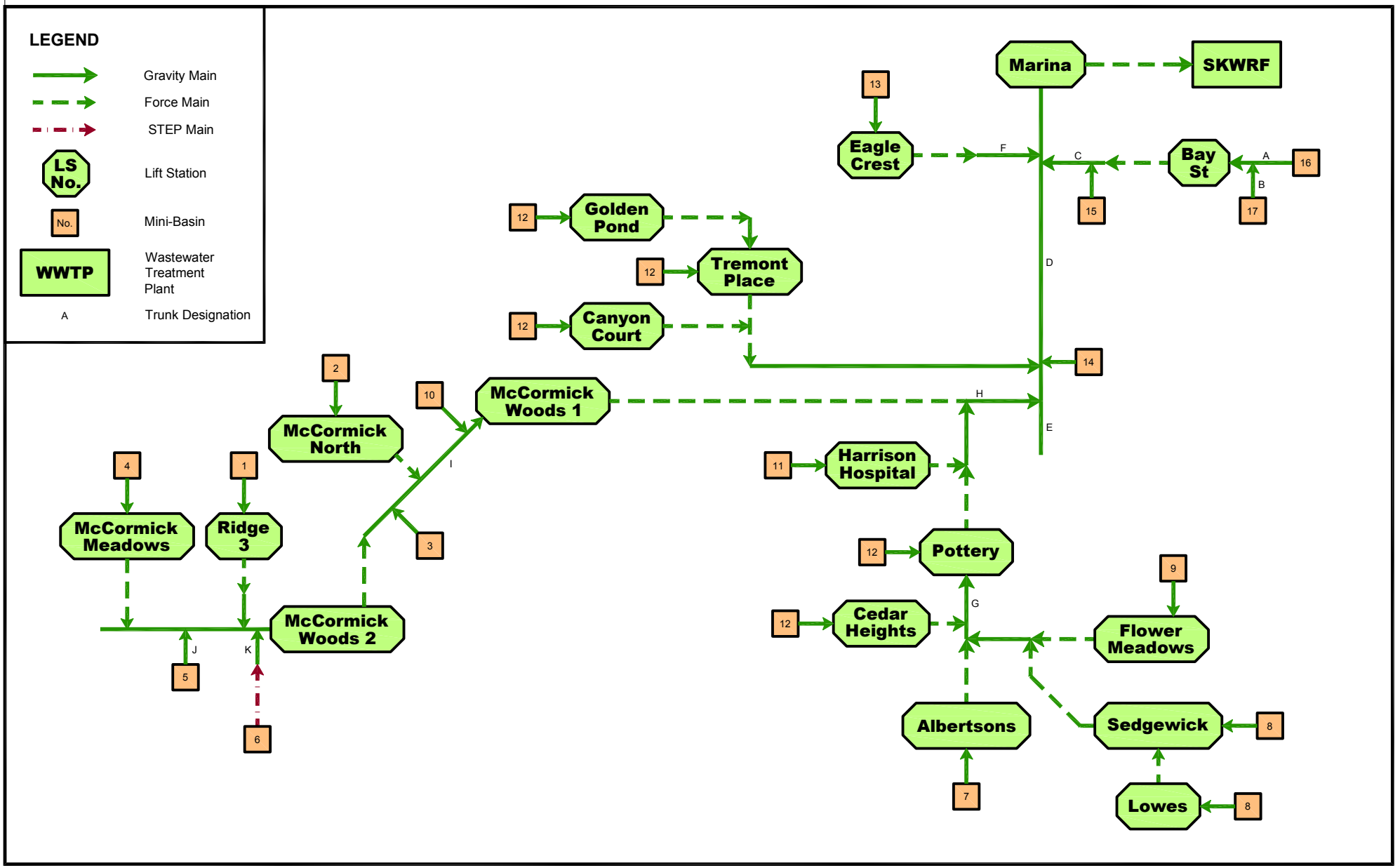
XREFS: NONE



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Existing Sewer Schematic

City of Port Orchard
General Sewer Plan Update

Figure

5-2

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Table 5-3
Existing Pump Stations

Station		Location	Single Pump Capacity (gpm)	Pump Head (TDH)	Pump Motor Power (hp)	Firm Capacity (gpm)	Number of Pumps	Force Main (in)
Albertsons		350 S.W. Sedgwick Road	176	100	30	176	2	6
Bay Street[1]		1207 Bay Street	730	22	7.5	730	2	10
Canyon Court		512 Cedar Canyon Court	50	150	7.5	75[2]	3	4[4]
Cedar Heights		2220 Pottery Avenue	50	150	7.5	50	2	4
Eagle Crest		1091 Eagle Crest Place	100	35	5	100	2	4[4]
Flower Meadows		345 Flower Meadows Street	104	91	7.5	104	2	6
Golden Pond		385 Golden Pond Road	137	78	7.5	137	2	4[4]
Harrison Hospital		444 South Kitsap Boulevard	280	110	40	280	2	6/8
Marina	Typical Flow Pumps[3]	700 Sidney Parkway	1,150	37	20	3,800	2	18
Marina	High Flow Pumps[3]		3,800	95	150		2	
McCormick Woods #1		1190 Old Clifton Road	1,000	122	75	1,000	2	16
McCormick Woods #2		2200 Old Clifton Road	1,000	60	30	1,000	2	16
Pottery		2014 Pottery Avenue	1,800	75	60	1,800	2	12
Sedgwick		505 Sedgwick Road	180	165	25	180	2	6
Tremont Place		281 Tremont Place	60	23	3	60	2	4
Ridge 1&2		2476 SW Siskin Circle	200	90	15	200	2	6
Ridge 3		4383 Riflebird Place	690	95	30	690	2	4

Notes:
1) Bay Street PS has an overflow into Sinclair Inlet.
2) Firm capacity at Canyon Court is estimated based on two pumps operating in parallel.
3) Marina PS has two pumps for typical flows, two pumps for high flows, and an overflow into Sinclair Inlet.
4) Record drawings were unavailable so a 4-inch force main size was assumed.

5.5 MCCORMICK WOODS STEP SYSTEM

Sewer service to McCormick Woods is provided with a STEP system. These operate like an on-site septic system by collecting sewage into a septic tank, and settling out solids. However, instead of discharging the effluent to a drain field, it is instead pumped into a force main which ultimately discharges to gravity conveyance piping. The septic tanks need periodical cleaning to remove grease and accumulated solids.

McCormick Woods was originally developed with individual on-site septic systems. These were converted to STEP units discharging to a community drain field south of Old Clifton Road near the west of the City.

Under Utility Local Improvement District (ULID) #6, the City of Port Orchard agreed to provide sewer service and to assume responsibility for the STEP units. McCormick Woods Pump Station #1, McCormick Woods Pump Station #2, and associated piping were built to convey sewage to the City's sewer collection system.

5.6 SOUTH KITSAP INDUSTRIAL AREA

The City of Bremerton annexed the SKIA in 2009. Port Orchard will not provide sewer service to this area as was indicated in the 2009 City of Port Orchard Comprehensive Sanitary Sewer Plan Update.

5.7 WEST SOUND UTILITY DISTRICT FACILITIES

The City sewer system formerly included a wastewater treatment facility adjacent to the Port Orchard Marina and the trunk sewers conveyed all flow to that location. In 1983, the City's treatment facility was replaced with the Marina Pump Station, which conveys flow east through an 18-inch force main to the SKWRF.

WSUD operates the SKWRF which is jointly owned by the City and WSUD under NPDES Permit WA-002034-6 from the State Department of Ecology. The City and WSUD have had an operating agreement which initiated in 1982 and was extended in 2014. The facility consists of three interrelated and complementary systems:

- Activated sludge secondary treatment system
- Membrane bioreactor secondary treatment system production reclaimed water
- Ballasted clarifier for advanced primary treatment system for peak storm flows

The facility has a current rated capacity of 4.2 mgd during the average day of the maximum month with a peak day capacity of 16 mgd. Flows exceeding 16 mgd may be treated through the ballasted clarifier to achieve a blended effluent meeting the effluent requirements defined in the NPDES permit. The City and WSUD have agreed that this capacity is to be shared equally.

The highest average daily flows recorded during November and December 2006 were 3.94 mgd and 4.6 mgd during days of measured rainfall of 2.1 and 2.41 inches. Neither flow was sufficient to require operation of the ballasted clarifier. However, the 3 December 2007 storm produced about 8.8 mgd and the ballasted clarifier performed as designed.

Annual average day flow for 2007 was about 1.7 mgd. WSUD projects wastewater flow will increase to about 2.3 mgd by 2025.

WSUD also operates an extensive sewerage collection system. Some of WSUD sewers in the immediate vicinity of City sewers are shown on Figure 5-1. Figure 5-1 also shows that some parcels within the city limits are served by WSUD.

The sewer service area boundary has not been defined by formal agreement, but has evolved as various properties have developed and needed sewer service based on topography and guidance from the Sewer Advisory Committee. The intent is for service to be provided by the agency at the least infrastructure cost to the developer. WSUD serves east of Blackjack Creek except for the SR 16 intersection. Eventually, the City expects to annex the entire UGA.

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SECTION 6
WASTEWATER FLOWS

6.1 INTRODUCTION

Wastewater flow data recorded at the Marina Pump Station (MPS) and the South Kitsap Water Reclamation Facility (SKWRF) for the years of 2012 through 2014 were analyzed to determine current wastewater flow characteristics.

6.2 EXISTING WASTEWATER FLOWS

All wastewater from the City sewer collection system is pumped through the MPS to the SKWRF. Flow at the MPS is recorded on a daily basis using a low flow meter and a high flow meter. There is a third flow meter at the SKWRF that records data on a 1-minute basis.

The low flow meter at MPS regularly recorded lower flows than the SKWRF meter, while the high flow meter closely matched the SKWRF flows. Therefore, SKWRF flows were used for average annual and minimum day flows for the purpose of unit sewer flow calculations.

Selected flow records are summarized in Table 6-1. SKWRF data for years prior to 2013 are unavailable due a change in WSUD flow monitoring software.

Table 6-1
Wastewater Flow Summary

Parameter	2012 (MPS)	2013 (SKWRF)	2014 (SKWRF)
Average Annual Flow (mgd)	---(1)	0.947	1.006
Minimum Day Flow (mgd)	---(1)	0.757	0.797
Peak Day Flow (mgd)	3.433(2)	1.646	2.564
Peak Day Flow Date	11/19/2012	1/10/2013	3/6/2014
Peak Day Rainfall(3) (inches)	2.26	1.10	1.56

Notes:
1) Average annual and minimum day flows measured at the MPS were consistently lower than those measured at the SKWRF. Therefore, SKWRF data was used for average annual and minimum day flows.
2) A higher flow of 4.36 mgd was recorded on 1/1/2012 at the Marina Pump Station but was disregarded because it greatly exceeded the 1.65 mgd recorded at the SKWRF, and only 0.05-inches of rain was recorded on that day.
3) Rainfall is for the day previous to the Peak Day Flow Date.

Average monthly flows for the City's portion of the sewer system are summarized in Table 6-2.

Table 6-2
Average Monthly Flows (mgd)

Month	2012[(1)] (MPS)	2013 (SKWRF)	2014 (SKWRF)
January	0.891	0.937	0.900
February	0.768	0.888	1.145
March	0.899	0.912	1.191
April	0.760	0.931	0.921
May	0.746	0.964	0.940
June	0.771	1.006	0.981
July	0.702	1.030	0.958
August	0.681	1.026	0.931
September	0.686	1.124	0.953
October	0.785	0.965	1.053
November	1.079	0.894	1.061
December	1.155	0.845	1.047
Annual Average	**0.830**	**0.947**	**1.006**

Notes:
1) 2012 flows were measured at the MPS; 2012 SKWRF data are not available. Average annual and minimum day flows measured at the MPS were consistently lower than those measured at the SKWRF.

6.3 WASTEWATER UNIT FLOWS

Total residential sewer flow was estimated by taking annual average sewer flows measured at the SKWRF and subtracting wet weather non-residential water demands. Wet weather water usage does not include irrigation and is used to approximate average annual sewer flows.

Total residential sewer flow was then divided by total estimated residential population to determine unit per capita flow rates as summarized in Table 6-3.

Table 6-3
Residential Unit Flow

Parameter	2013	2014
Average Annual Flow (mgd)	0.947	1.007
Wet Weather Non-Residential Water Demand (mgd)	0.146	0.131
Estimated Residential Sewer Flow (mgd)	0.801	0.856
Population	11,002	11,242
Gallons per Capita per Day (gpcd)	73	78

A residential sewer rate of 78 gpcd is used for planning purposes. This is similar to other communities in the Puget Sound area.

Wet weather water demand more accurately reflects actual water demand, and hence sewer flows, without summer irrigation. The estimated per employee wastewater rates based on wet weather water demand are summarized in Table 6-4. A per employee sewer rate of 32 gallons per employee per day (gped) will be used for planning purposes.

Table 6-4
Employee Unit Flow

Parameter	2013	2014
Employment	4,611	4,667
Average Commercial and Government Water Demand (mgd)	0.146	0.131
Employee gped	32	28

6.4 INFILTRATION AND INFLOW

Infiltration and inflow (I/I) is the wastewater component consisting of stormwater surface runoff entering the sewer system and infiltration from storm-saturated ground conditions. Inflow is runoff entering the sewer directly, typically from storm sewer connections, basement sump pumps, roof drains and submerged manholes. Infiltration occurs as groundwater leaks into the sewer system through cracked or broken pipes and manholes, or through loose joints and connections.

I/I is important in determining the peak day and peak hour flows through the system. They can vary significantly due to changes in groundwater tables, intensity of rainfall, duration of rainfall, and when the peak of the rain event occurs during the day.

Calculated I/I rates are presented in Table 6-5. Based on these uncertainties, an I/I rate of 1,046 gpd/acre is used for planning purposes.

Table 6-5
Infiltration and Inflow

Parameter	2012 (MPS)	2013 (SKWRF)	2014 (SKWRF)
Peak Day Flow (mgd)	3.433	1.646	2.564
Average Annual Flow (mgd)	---(1)	0.947	1.007
Peak Day Infiltration and Inflow(2) (mgd)	2.456(1)	0.752	1.643
Sewered Area(3) (acres)	2,349	2,349	2,349
Infiltration and Inflow (gpd/acre)	1,046	298	663

Notes:
1) Average annual and minimum day flows measured at the MPS were consistently lower than those measured at the SKWRF. Therefore, the average of 2013 and 2014 measured at the SKWRF was used instead of the 2012 average annual flow measured at the MPS for a more accurate flow rate to calculate I/I rates.
2) Peak day infiltration and inflow was calculated by subtracting the average annual flow from the peak day flow.
3) Sewered area is the area of all parcels and right-of-way adjacent to a sewer line in 2015. The sewered area for individual years was not available but assumed to be similar.

The EPA publication 'Infiltration/Inflow – I/I Analysis and Project Certification' dated May 1985 was reissued by the Department of Ecology as Ecology Publication No. 97-03. This publication established the following thresholds for possibly excessive infiltration and inflow:

- If average dry weather flow is less than 120 gpcd, infiltration is non-excessive.
- If average wet weather flow is less than 275 gpcd, inflow is non-excessive.

The average dry weather and wet weather flows are summarized in Table 6-6. The average dry weather flows indicate that infiltration is non-excessive. The average wet weather flows indicate that inflow is non-excessive.

Table 6-6
EPA/DOE Excessive I/I Criteria

Parameter	2012 (MPS)	2013 (SKWRF)	2014 (SKWRF)
Population	10,762	11,002	11,242
Average Dry Weather Flow (mgd)	0.745(1)	0.905	0.911
Average Dry Weather Flow (gpcd)	69(1)	82	81
Average Dry Weather Dates(2)	2/3-2/7	1/12-1/23	4/8-4/15
Average Wet Weather Flow (mgd)	2.770	1.408	2.145
Average Wet Weather Flow (gpcd)	257	128	191

Notes:
1) Average annual and minimum day flows measured at the MPS were consistently lower than those measured at the SKWRF.
2) Dry weather flows are the average flow on days where no rainfall has occurred during a season of high groundwater.
3) Wet weather flows are the average of the seven highest flow events per year.

6.5 PEAKING FACTORS

Comparison of the maximum day events recorded in recent years defines the peak day factors experienced by the City sewer system summarized in Table 6-7.

Table 6-7
Peak Day Factor

Peaking Elements	2012(1)	2013	2014
Peak Day Flow (PDF) (mgd)	3.433	1.646	2.564
Average Annual Flow (AAF) (mgd)	0.977(1)	0.947	1.006
Peak Day Factor (PDF/AAF)	3.514(1)	1.738	2.549

Notes:
1) Flows for 2012 were measured at the Marina Pump Station. Average annual and minimum day flows measured at the MPS were consistently lower than those measured at the SKWRF. Therefore, the average of 2013 and 2014 measured at the SKWRF was used in place of the 2012 average annual flow for a more accurate peak day factor.

Peak hour flows based on flow meter data at the SKWRF are summarized in Table 6-8. Hourly data was not available for 2012 or 2013. Therefore, only the 2014 peak hour factor was calculated.

Table 6-8
Peak Hour Factor

Peaking Elements	2014
Peak Hour Flow (PHF) (mgd)	3.466
Average Annual Flow (mgd)	1.006
Peak Hour Factor (PHF/AAF)	3.445

6.6 DIURNAL CURVES

Typically, sewer flows are lowest at night and highest during the morning and evening. This distribution of flow throughout the day is described by a diurnal curve. These curves are used by the computer model to simulate flow variations throughout the time period being modeled.

Two curves are used to vary flow throughout the day: one for the sanitary sewer component, and one for the I/I component. The sanitary sewer diurnal curve was calculated by normalizing hourly flow on a day with a similar flow to the average annual flow. The I/I curve was calculated by taking peak day flow on an hourly basis, subtracting the average annual flow, and normalizing the results. The sanitary and I/I diurnal curves are presented as Figure 6-1.

For future model runs, the I/I curve was shifted to align peak sanitary and peak I/I flows to simulate peak flows to the system. The shift increases the peak hour factor to approximately 6.037. This is a conservative approach since a major storm flow may occur at any time of the day. Existing model runs were used for calibration purposes and do not utilize the shifted I/I curve.

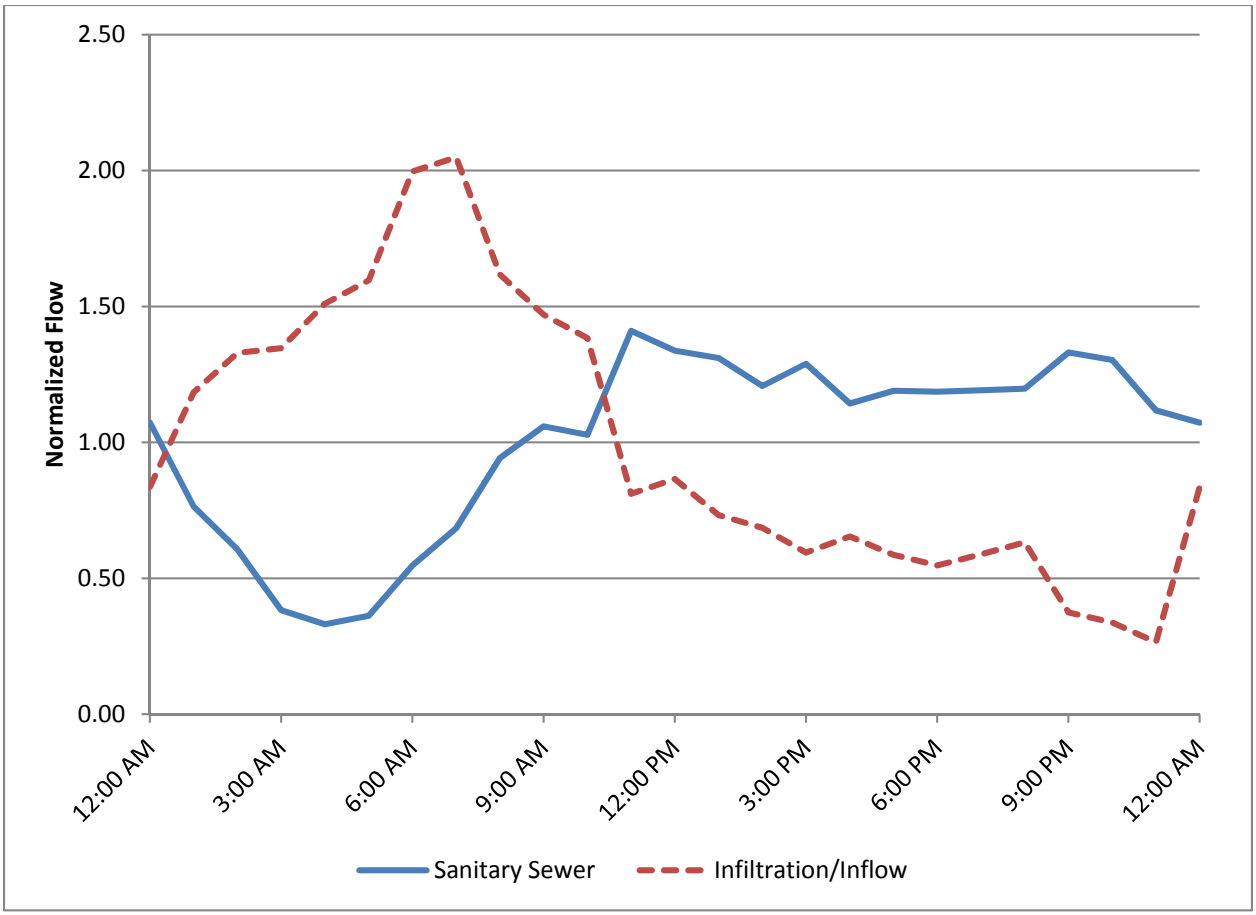

Figure 6-1 Diurnal Curves

6.7 INDUSTRIAL CONNECTIONS

The former Kitsap County Landfill, located within the South Kitsap Industrial Area (SKIA), has been closed and capped. Leachate from the facility is trucked to the City sewer system and discharged into a manhole in Bay Street and SW Wilkins Drive. The State Waste Discharge Permit No. ST0007271 is included as Appendix F.

6.8 PROJECTED WASTEWATER FLOWS

Wastewater flows are projected to future conditions based on the land uses established by current zoning for the future service area. Unit flows developed above are assumed to remain constant throughout the planning horizon. A summary of unit flows and projected flows for the planning horizon are shown as Table 6-9. A breakdown per basin is included as Appendix D.

Table 6-9
Projected Wastewater Flows

Year	Residential Population	Residential Flow (gpcd)	Employment Population	Employment Flow (gpcd)	Average Annual Flow (mgd)	I/I (gpd/ acre)	Sewered Area (acres)	Peak Day Flow (mgd)	Peak Hour Flow[(1)] (mgd)
2016	11,837	78	4,779	32	1.08	1,046	2,349	3.53	6.52
2022	13,558	78	5,114	32	1.22	1,046	2,583	3.92	7.26
2026	14,706	78	5,338	32	1.32	1,046	2,716	4.16	7.68
2036	17,575	78	5,898	32	1.56	1,046	3,051	4.75	8.74
Build Out	24,074	78	8,343	32	2.14	1,046	3,808	6.13	11.18

Notes:
1) Peak hour flows were calculated by shifting the I/I curve to maximize peak hour flows as described in Section 6-5. This results in a more conservative peak hour factor than calculated in Table 6-7.

SECTION 7
CONVEYANCE SYSTEM ANALYSIS

7.1 INTRODUCTION

Analysis of the City's wastewater conveyance system is a critical component in determining the ability of the existing infrastructure to accommodate future growth. This section describes the analysis necessary for strategic, long-term infrastructure planning and development of the Capital Improvement Plan (CIP). The City's conveyance system was analyzed using a truncated model, simulating only trunk and interceptor gravity mains and all pump stations. This allows for an accurate representation of the most critical components of the City's conveyance system, and the simultaneous analysis of both gravity and pressure systems. The system was analyzed for existing conditions (2016), a 6-year planning horizon (2022), a 10-year planning horizon (2026), a 20-year planning horizon (2036), and the theoretical build-out conditions.

7.2 MODEL SOFTWARE

InfoSWMM 12.0 by Innovyze was the hydraulic modeling software used to model the City sewer system. InfoSWMM 12.0 is a dynamic hydraulic model that uses the EPA SWMM 5.0 computer program for the hydraulic analysis calculations. The model is designed specifically for modeling urban sanitary and combined sewer systems. The current version operates within an ArcGIS (ArcMap) platform.

7.3 MODEL DEVELOPMENT

Model files were developed from AutoCAD files of the sewer system from 2002 provided by the City which had manhole depths, and were supplemented with LIDAR obtained from PACE to determine manhole rim elevations and as-builts. Some elevations were still missing after this process, including some of the smaller pump stations. Estimates for depths, pipe slopes, wet well sizes, and pump operation elevations were made to develop a functional model that reasonably represents the sewer system.

A truncated model was used consisting of all pump stations and the major sewer mains within the City's collection system. The model can be expanded in the future as needed and when budget allows.

The following information was used in developing the hydraulic model of the existing sewer collection system. Additional detail on the existing sewer system is included in Section 6.

7.3.1 Gravity Sewers

Elevations were obtained using LIDAR for rim elevations and depth to invert provided by the City in an AutoCAD file to calculate invert elevations. Record drawings were used to evaluate pipe invert elevations in areas where abnormal or adverse grades were present. Where no elevation data was available, reasonable estimates based on pipe slopes and depths were used.

7.3.2 Lift Stations

Lift stations were imported to the model from the AutoCAD file provided by the City. Pump curves were added to simulate pump operation. Wet wells are modeled based on lift station data sheets maintained by O&M staff. Depth to volume relationships and pump on/off set points were also added. Modeled pumping rates were compared against factory pump curve data when available to ensure model accuracy and that the model outputs were within a range of reasonably expected values.

Data for some of the smaller lift stations were unavailable. Reasonable estimates were used for depth, wet well size, and pump curves. Because these smaller lift stations represent a fraction of the flows, this will not significantly impact the results of the model. These lift stations can be updated in the future.

7.4 MODEL LOADING

Meaningful modeling results can only be obtained if the quantity of flows and the location where they enter the system in the model reflect actual conditions. Wastewater flow consists of two separate elements: sanitary sewer flow and infiltration and inflow (I/I). Sanitary sewer flow is typically referred to as Dry Weather Flow (DWF) in the model (DWF in the collection system usually includes a minor amount of base I/I that is accounted for in the model I/I loading). I/I is loaded into the model as an external source of flow. All flow is loaded to model “nodes”, which are manholes in gravity systems.

7.4.1 Sanitary Sewer Flows

Existing and projected sanitary sewer flow rates were developed for each basin on a gpd/acre basis using the following information:

- Population and employment data and projections (described in Section 4)
- Existing measured flow rates (described in Section 5)
- Unit sewer flows (described in Section 5)
- Diurnal curves (described in Section 5)
- Mini-basin areas (described in Section 6)

Model loading is assigned on a flow per unit area basis for nodes identified in each basin. The model assigns flow to the nodes, based on the amount of contributing area calculated for each node using the Thiessen polygon method.

7.4.2 Infiltration and Inflow (I/I)

Existing and projected I/I rates were developed on a gallons/acre basis using the following information:

- I/I (described in Section 5)
- Diurnal curves (described in Section 5)
- Mini-basin areas (described in Section 6)
- Sewered areas (described below)

Total I/I for each basin was calculated using the unit I/I rates described in Section 5 and approximate area contributing to the sewer system. The existing sewered area was derived from the area of parcels and right-of-ways adjacent to existing sewers, and was adjusted based on engineering judgment and knowledge of the sewer system. Build-out sewered area was calculated by taking the existing sewered area and adding the net developable area from the Kitsap County Updated Land Capacity Analysis (ULCA) plus 54 percent for right-of-way and public and quasi-public facilities based on assumptions in the ULCA. Sewered areas for 2022, 2026, and 2036 were interpolated between existing and build-out sewered areas by calcuting the change in sewered area divided by the change in population between existing conditions and build-out conditions, which is approximately 3,300 sf per person and includes parcels, right-of-way, and other public facilities.

Model I/I loading was assigned to nodes based on the ratio of contributing area calculated for each node using the Thiessen polygon method to total basin area.

Determining how I/I is projected into the future as the collection system expands and ages is a key issue. Based on the King County Regional Infiltration/Inflow Control Program, a widely accepted assumption in Western Washington is to increase the I/I component of sewer flow by 7 percent per decade, up to a maximum of 28 percent. Much of the City's existing sewer collection system was built 40 years ago or more, and has reached the maximum I/I rate. Newer infrastructure typically has lower rates of I/I. As the sewer system expands with new construction, it is likely that the I/I rate will remain the same or drop due to improved materials and construction. Therefore, a constant I/I rate was assumed for future I/I projections.

For future model runs, the I/I curve is shifted to maximize flows to the system, effectively increasing the peak hour factor. This is a conservative approach since a major storm flow may occur at any time of the day. Existing model runs were used for calibration purposes and do not utilize the shifted I/I curve.

7.5 MODEL CALIBRATION

The model was calibrated using the flow meters at the SKWRF for average flows and MPS for peak day flows.

7.5.1 Calibration to Recorded Flow Data

Average Annual Flow Calibration

The first step in calibrating the model was to compare predicted sanitary flows calculated in Section 5 to measured average annual flow data. After the modeled sanitary sewer volumes were verified, diurnal flow patterns were loaded and adjusted until the variations in simulated flow throughout the day reasonably matched the measured average annual flow conditions.

Peak Day Flow Calibration

Peak day I/I was loaded into the model and simulation results were compared with the peak day flow at the MPS. The modeled flow volume was compared with the measured flow volume during peak days to ensure model loading reasonably matched the field data.

Peak Hour Flow Calibration

There was not sufficient data available to calibrate peak hour flow. The peak day flow occurred in 2012, for which only total daily flow volumes were available. Therefore, an I/I curve was developed using the peak day flow from 2014, which was the second largest peak day flow, and applied to the peak day flow of 2012. Based on the calibration of the average annual flow, peak day flow, and sanitary sewer diurnal curve, this gives a reasonable result. As more data is made available, the peak hour flow calibration may be revisited.

For future model runs, the I/I curve was shifted to align peak sanitary and peak I/I flows to simulate peak flows to the system. This is a conservative approach since a major storm flow may occur at any time of the day. Existing model runs were used for calibration purposes and do not utilize the shifted I/I curve.

7.5.2 Calibration Results

The model was calibrated to SKWRF flow meter data for average annual flow and MPS flow monitoring data for peak day flow. Average annual flows were calibrated to within 3 percent and peak day flows to within 2 percent. This is within the accuracy limits of the flow meters used and is acceptable.

7.6 FUTURE SEWER SYSTEM EXPANSION

Future sewer system expansion was modeled by adding flow from all future population growth into the existing system model. Sewer extensions were not sized, but as the need arises, the model can be updated to ensure that the new sewer systems are constructed with adequate capacity for future growth.

It is anticipated that most of the future infrastructure into unsewered areas will be constructed by developers. Due to the topography, some new developments may require pump stations.

7.7 MODELING SCENARIOS

Five scenarios were developed to analyze the City's wastewater conveyance system utilizing the population and unit flow projections described in Sections 4 and 5 and are summarized in Table 7-1.

Table 7-1
Projected Wastewater Flows (mgd)

Flow	2016	2022	2026	2036	Build-Out
Average Annual	1.08	1.22	1.32	1.56	2.14
Peak Day	3.53	3.92	4.16	4.75	6.13
Peak Hour	6.52	7.26	7.68	8.74	11.18

7.8 HYDRAULIC MODELING ANALYSIS

7.8.1 Design Capacity

The design capacity of the gravity mains is considered to be 100 percent depth (1.0 d/D ratio, where d is the flow depth and D is the pipe diameter). The maximum design capacity of STEP mains and force mains are exceeded when flow velocities are greater than 8 feet per second. The firm capacity of a lift station is defined as the capacity of the lift station with the largest pump out of service. When model simulation results exceed these design capacities in piping or in lift stations, they are identified as deficient and system improvements are identified to resolve them. Modeling results for all scenarios are included in Appendix G.

7.8.2 Existing System – Results

The existing system model results for peak day flow are shown on Figure 7-1. The gravity sewer and pump station capacity deficiencies are summarized in Tables 7-2 and 7-3. The modeled surcharging in the McCormick Woods Drive SW gravity sewer has not been confirmed by the City. The City will monitor the sewer to verify if there is a capacity issues in that pipeline.

Table 7-2
2016 Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	1,130	506-2-2-0060	506-2-2-0030	0	2.2

Table 7-3
2016 Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	22	104	230	0

7.8.3 2022 Scenario – Results

The 2022 model results for peak day flow are shown on Figure 7-2. The gravity sewer and pump station capacity deficiencies are summarized in Tables 7-4 and 7-5. The City will monitor the McCormick Woods Drive SW gravity sewer to verify if it surcharges. Orchard Avenue and Bay Street surcharge due to insufficient capacity in the MPS.

Table 7-4
2022 Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	2,420	506-2-2-0100	506-2-2-0030	0	4.5
2	Orchard Avenue	30	110	115-2-2-0020	Marina PS	0	1.3
3	Bay Street	24	1,170	115-2-2-0190	115-2-2-0020	0	1.5
4	Bay Street	18	1,620	313-2-2-0060	115-2-2-0190	0	2.2

Table 7-5
2022 Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	103	104	285	0
B	Albertsons	243	176	193	0
C	Marina	245	3,800	4,800	0
D	McCormick Woods 1	150	1,000	1,750	0

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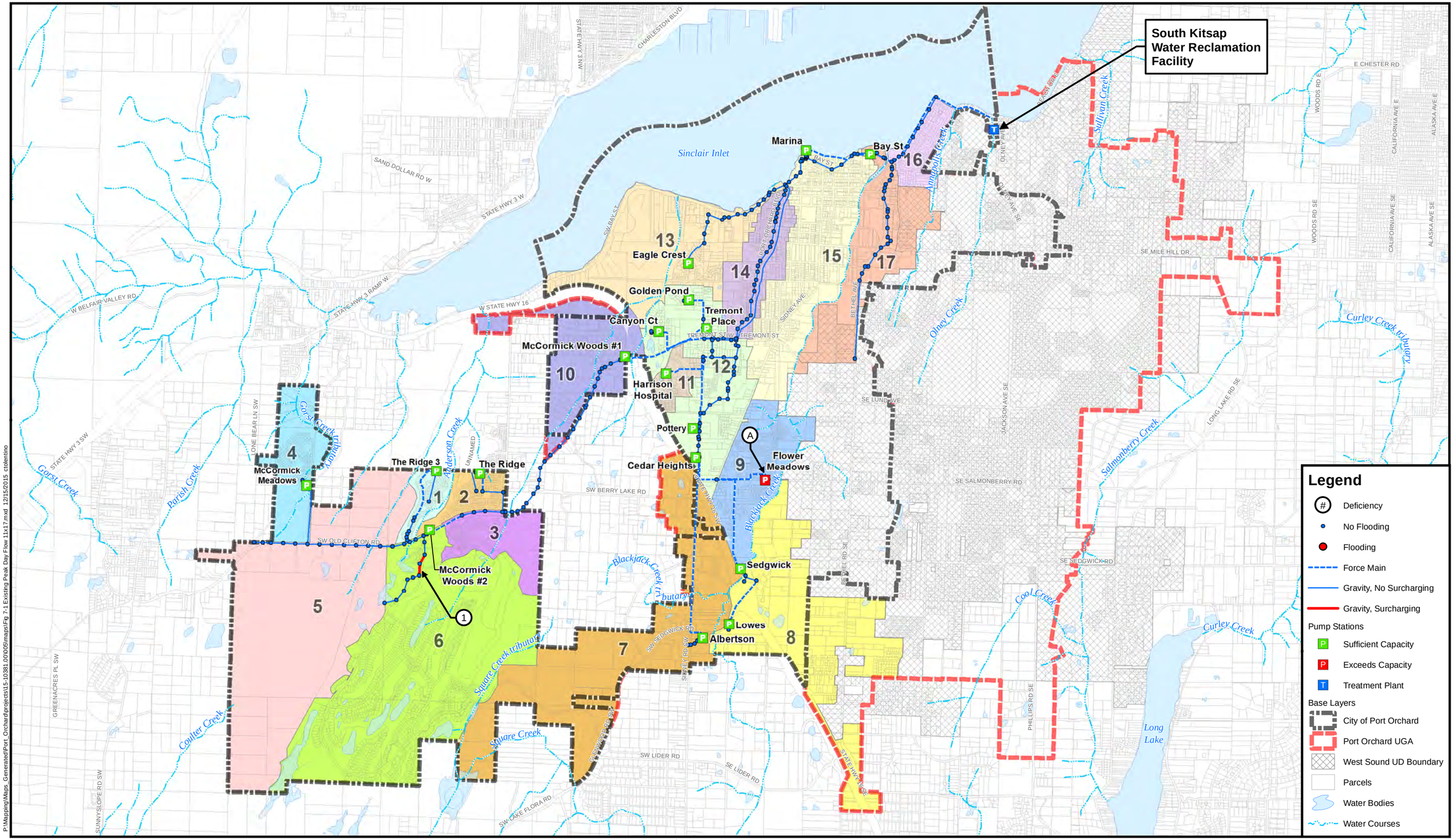

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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BHC Consultants LLC., assumes no responsibility for the validity of any information presented herein, nor any responsibility for the use or misuse of the data.

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City of Port Orchard

Existing Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-1

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South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina
Bay St
Eagle Crest
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
The Ridge 3
The Ridge
McCormick Meadows
McCormick Woods #2
Sedgwick
Lowes
Albertson

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

A
B
C
D

Gorst Creek
Gorst Creek tributary
Parish Creek
Anderson Creek
Blackjack Creek
Blackjack Creek tributary
Square Creek tributary
Square Creek
Coulter Creek
Annapolis Creek
Olney Creek
Sullivan Creek
Curley Creek tributary
Curley Creek
Salmonberry Creek
Cool Creek
Long Lake

STATE HWY 3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY 3 W
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
W STATE HWY 16
STATE HWY 3 SW
LONE BEAR LN SW
GREENACRES PL SW
SUNNYSLOPE RD SW
SW OLD CLIFTON RD
SW BAY ST
BAY ST
PORT ORCHARD BLVD
SIDNEY AVE
BETHEL AVE
TREMONT ST W
TREMONT ST
SE LUND AVE
OLNEY AVE SE
JACKSON AVE SE
SE MILE HILL DR
SE SALMONBERRY RD
LONG LAKE RD SE
SW BERRY LAKE RD
SW SEDGWICK RD
SE SEDGWICK RD
SW LIDER RD
SE LIDER RD
SW LAKE FLORA RD
STATE HWY 16
PHILLIPS RD SE
WOODS RD E
WOODS RD SE
E CHESTER RD
CALIFORNIA AVE E
CALIFORNIA AVE SE
ALASKA AVE E
ALASKA AVE SE

Legend

- Deficiency
- No Flooding
- Flooding
- Force Main
- Gravity, No Surcharging
- Gravity, Surcharging

Pump Station
- Sufficient Capacity
- Exceeds Capacity
- Treatment Plant

Base Layers
- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

2022 Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-2

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7.8.4 2026 Scenario – Results

The 2026 model results for peak day flow are shown on Figure 7-3. The gravity sewer and pump station capacity deficiencies are summarized in Tables 7-6 and 7-7. The McCormick Woods Drive SW gravity sewer may not surcharge. The City will monitor the sewer to verify if there is a capacity issues in that pipeline. Orchard Avenue and Bay Street surcharge due to insufficient capacity in the MPS, and Albertsons surcharges due to insufficient capacity in the Albertsons Pump Station.

Table 7-6
2026 Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	2,420	506-2-2-0100	506-2-2-0030	905	4.9
2	Orchard Avenue	30	110	115-2-2-0020	Marina PS	0	1.3
3	Bay Street	24	1,170	115-2-2-0190	115-2-2-0020	0	1.6
4	Bay Street	18	1,900	313-2-2-0070	115-2-2-0190	0	2.3
5	Albertsons	8	570	507-2-2-0040	Albertson PS	0	12

Table 7-7
2026 Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	134	104	295	0
B	Albertsons	441	176	228	0
C	Marina	305	3,800	5,243	0
D	McCormick Woods 1	229	1,000	2,046	0

7.8.5 2036 Scenario – Results

The 2036 model results for peak day flow are shown on Figure 7-4. The gravity sewer and pump station capacity deficiencies are summarized in Tables 7-8 and 7-9.

Table 7-8
2036 Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	2,420	506-2-2-0100	506-2-2-0030	7,915	4.9
2	Orchard Avenue	30	110	115-2-2-0020	Marina PS	0	3.5
3	Bay Street	24	1,170	115-2-2-0190	115-2-2-0020	2,693	4.2
4	Bay Street	18	2,620	313-2-2-0100	115-2-2-0190	40,611	6.0
5	Albertson	8	570	507-2-2-0040	Albertson PS	37,473	13
6	Bay Street	8	120	313-2-2-0110	313-2-2-0100	0	4.6
7	Bay Street	30	40	115-2-2-0030	115-2-2-0020	11	3.1
8	Bay Street	24	10	115-2-2-0040	115-2-2-0030	0	3.3
9	Bay Street	18	230	115-2-2-0070	115-2-2-0040	39	4.0
10	Bay Street	15	950	115-2-2-0090	115-2-2-0050	0	4.2
11	Bay Street	12	840	115-2-2-0110	115-2-2-0090	0	2.4
12	Port Orchard Boulevard	12	890	114-2-2-0040	115-2-2-0200	0	7.0

Table 7-9
2036 Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	198	104	320	0
B	Albertsons	816	176	317	0
C	Marina	400	3,800	5,984	0
D	McCormick Woods 1	425	1,000	2,444	0
E	McCormick Woods 2	88	1,000	1,730	0

South Kitsap Water Reclamation Facility

Marina
Bay St
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
Eagle Crest
McCormick Meadows
The Ridge 3
The Ridge
McCormick Woods #2
Sedgwick
Lowes
Albertson

Sinclair Inlet
Annapolis Creek
Sullivan Creek
Olney Creek
Curley Creek tributary
Curley Creek
Salmonberry Creek
Blackjack Creek
Blackjack Creek tributary
Cool Creek
Square Creek tributary
Square Creek
Parish Creek
Gorst Creek
Gorst Creek tributary
Coulter Creek
Long Lake

STATE HWY 3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY 3 W
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
W STATE HWY 16
STATE HWY 3 SW
LONE BEAR LN SW
GREENACRES PL SW
SUNNYSLOPE RD SW
SW OLD CLIFTON RD
SW BERRY LAKE RD
SW LAKE FLORA RD
SW LIDER RD
SE LIDER RD
SW BAY ST
SW SEDGWICK RD
SE SEDGWICK RD
SE LUND AVE
SE MILE HILL DR
SE SALMONBERRY RD
OLNEY AVE SE
JACKSON AVE SE
LONG LAKE RD SE
PHILLIPS RD SE
BETHEL AVE
SIDNEY AVE
SIDNEY RD SW
BETHEL RD SE
STATE HWY 16
STATE HWY 3
STATE HWY 3 SW
STATE HWY 3 NW
STATE HWY 3 RAMP
STATE HWY 16
OLNEY AVE SE
WOODS RD E
WOODS RD SE
CALIFORNIA AVE E
CALIFORNIA AVE SE
ALASKA AVE E
ALASKA AVE SE
E CHESTER RD
SE SEDGWICK RD
SE SALMONBERRY RD
SE LIDER RD
SW LIDER RD
SW LAKE FLORA RD
SW SEDGWICK RD
SW BAY ST
SW OLD CLIFTON RD
SW BERRY LAKE RD
SUNNYSLOPE RD SW
GREENACRES PL SW
LONE BEAR LN SW
SIDNEY RD SW
BETHEL RD SE
PHILLIPS RD SE
JACKSON AVE SE
LONG LAKE RD SE
SE MILE HILL DR
SE LUND AVE
OLNEY AVE SE
STATE HWY 16
STATE HWY 3
STATE HWY 3 SW
STATE HWY 3 NW
STATE HWY 3 RAMP
STATE HWY 16
UNNAMED

Legend

- No Flooding
- Flooding
- Force Main
- Gravity, No Surcharging
- Gravity, Surcharging

Pump Station

- Sufficient Capacity
- Exceeds Capacity
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\005\maps\Fig 7-3 2026 Peak Day Flow 11x17.mxd 12/15/2015 ctolentino

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

2026 Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-3

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South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina

Bay St

Eagle Crest

Golden Pond

Tremont Place

Canyon Ct

McCormick Woods #1

Harrison Hospital

Pottery

Cedar Heights

Flower Meadows

The Ridge 3

The Ridge

McCormick Meadows

McCormick Woods #2

Sedgwick

Lowes

Albertson

Annapolis Creek

Olney Creek

Sullivan Creek

Curley Creek tributary

Blackjack Creek

Blackjack Creek tributary

Square Creek tributary

Square Creek

Coulter Creek

Parish Creek

Gorst Creek

Gorst Creek tributary

Anderson Creek

Cool Creek

Curley Creek

Long Lake

Salmonberry Creek

W STATE HWY 16

STATE HWY 3 NW

STATE HWY 3 W

STATE HWY 3 RAMP W

STATE HWY 3 SW

CHARLESTON BLVD

SAND DOLLAR RD W

W BELFAIR VALLEY RD

SW BAY ST

SW OLD CLIFTON RD

SW BERRY LAKE RD

SW LIDER RD

SE LIDER RD

SW LAKE FLORA RD

SE SALMONBERRY RD

SE SEDGWICK RD

SE MILE HILL DR

SE LUND AVE

OLNEY AVE SE

BETHEL AVE

SIDNEY AVE

JACKSON AVE SE

LONG LAKE RD SE

PHILLIPS RD SE

WOODS RD SE

CALIFORNIA AVE SE

ALASKA AVE SE

E CHESTER RD

LONE BEAR LN SW

GREENACRES PL SW

SUNNYSLOPE RD SW

Legend

- Deficiency
- No Flooding
- Flooding
- Force Main
- Gravity, No Surcharging
- Gravity, Surcharging

Pump Station

- Sufficient Capacity
- Exceeds Capacity
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.001\005\maps\Fig 7-4 2036 Peak Day Flow 11x17.mxd 12/15/2015 ctolentino

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

2036 Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-4

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7.8.6 Build-Out Scenario – Results

The build-out model results for peak day flow are shown on Figure 7-5. The gravity sewer, pump station capacity, and force main deficiencies are summarized in Tables 7-10, 7-11, and 7-12.

Table 7-10
Build-Out Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	2,620	506-2-2-0100	506-2-2-0020	56,344	4.9
2	Orchard Avenue	30	110	115-2-2-0020	Marina PS	0	3.6
3	Bay Street	24	1,170	115-2-2-0190	115-2-2-0020	51,233	4.4
4	Bay Street	18	2,620	313-2-2-0100	115-2-2-0190	284,218	6.0
5	Albertson	8	570	507-2-2-0040	Albertson PS	146,123	13
6	Bay Street	8	120	313-2-2-0110	313-2-2-0100	0	4.8
7	Bay Street	30	40	115-2-2-0030	115-2-2-0020	35	3.1
8	Bay Street	24	10	115-2-2-0040	115-2-2-0030	0	3.3
9	Bay Street	18	230	115-2-2-0070	115-2-2-0040	207	4.0
10	Bay Street	15	950	115-2-2-0090	115-2-2-0050	0	4.2
11	Bay Street	12	840	115-2-2-0110	115-2-2-0090	0	3.7
12	Port Orchard Boulevard	12	1,670	114-2-2-0090	115-2-2-0200	55,869	7.2
13	Port Orchard Boulevard	10	1,620	114-2-2-0170	114-2-2-0100	0	5.8

Table 7-11
Build-Out Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	505	104	449	1,930
B	Albertsons	1,384	176	448	0
C	Marina	742	3,800	7,142	0
D	McCormick Woods 1	731	1,000	3,221	0
E	McCormick Woods 2	372	1,000	2,500	0
F	Eagle Crest	365	100	313	831

Table 7-12
Build-Out Force Main Deficiencies

Map ID	Pump Station	Diameter (in)	Length (lf)	Peak Velocity (fps)	Time Exceeding 8 fps (minutes)
20	Marina Pump Station	18	8,200	8.81	92

South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina
Bay St
Eagle Crest
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
The Ridge 3
The Ridge
McCormick Meadows
McCormick Woods #2
Sedgwick
Lowes
Albertson

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 20 A B C D E F

Legend

- # Deficiency
- No Flooding
- Flooding
- Force Main
- Gravity, No Surcharging
- Gravity, Surcharging

Pump Station

- P Sufficient Capacity
- P Exceeds Capacity
- T Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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Build-Out Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-5

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.000\05maps\Fig 7-5 Build-Out Peak Day Flow 11x17.mxd 12/15/2015 ctolentino

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7.9 SEDGWICK SUBAREA ANALYSIS

The City and WSUD are currently investigating changing the service area boundary between the two sewer utilities in Basin 8 to more accurately reflect how parcels in that area would be served. The resulting changes under build-out conditions are shown in Table 7-13.

Table 7-13
Sedgwick Subarea Basin 8 Build-Out Changes

Scenario	Population	Employment	Area (acre)	Average Annual Flow (mgd)	Peak Day Flow (mgd)
Current Boundary	1,193	993	529	0.125	0.201
Revised Boundary	1,299	1,061	323	0.135	0.218

The updated build-out peak day flows were loaded into the model to determine additional deficiencies as a result of the service area boundary change. The peak hour flow to the Sedgwick Pump Station is approximately 250 gpm, which exceeds the rated capacity of 180 gpm. However, the model results indicate that the actual capacity may be up to 290 gpm based on the pump curve. It is recommended that a draw down test be performed at the station as flows to the station approach the rated capacity of the pump station. As development occurs, developers will need to obtain a Certificate of Reservation, which will include a capacity analysis. If sewer flows from the development exceed the capacity of the Sedgwick Pump Station, the developer will be required to make capacity upgrades to the station. This project is therefore not included in the CIP.

The Sedgwick Subarea Analysis build-out model results for peak day flow are shown on Figure 7-6. The gravity sewer, pump station capacity, and force main deficiencies are summarized in Tables 7-14, 7-15, and 7-16.

Table 7-14
Sedgwick Subarea Build-Out Gravity Sewer Deficiencies

Map ID	Location	Diam. (in)	Length (lf)	Upstream Manhole	Downstream Manhole	Flooding (gallons)	Surcharge (d/D)
1	McCormick Woods Drive SW	10	2,620	506-2-2-0100	506-2-2-0020	54,221	4.9
2	Orchard Avenue	30	110	115-2-2-0020	Marina PS	0	3.6
3	Bay Street	24	1,170	115-2-2-0190	115-2-2-0020	18,735	4.4
4	Bay Street	18	2,620	313-2-2-0100	115-2-2-0190	354,451	6.0
5	Albertson	8	570	507-2-2-0040	Albertson PS	134,335	13.0
6	Bay Street	8	120	313-2-2-0110	313-2-2-0100	0	4.8
7	Bay Street	30	40	115-2-2-0030	115-2-2-0020	93	3.1
8	Bay Street	24	10	115-2-2-0040	115-2-2-0030	0	3.3
9	Bay Street	18	230	115-2-2-0070	115-2-2-0040	184	4.0
10	Bay Street	15	950	115-2-2-0090	115-2-2-0050	9	4.2
11	Bay Street	12	840	115-2-2-0110	115-2-2-0090	0	3.7
12	Port Orchard Boulevard	12	1,670	114-2-2-0090	115-2-2-0200	19,014	7.2
13	Port Orchard Boulevard	10	1,620	114-2-2-0170	114-2-2-0100	0	5.8

Table 7-15
Sedgwick Subarea Build-Out Pump Station Deficiencies

Map ID	Pump Stations	Lag Pump Runtime (minutes)	PS Capacity (gpm)	PS Peak Inflow (gpm)	Flooding (gallons)
A	Flower Meadows	500	104	449	1,834
B	Albertsons	1,353	176	448	0
C	Marina	655	3,800	7,571	0
D	McCormick Woods 1	709	1,000	3,230	0
E	McCormick Woods 2	365	1,000	2,468	0
F	Eagle Crest	355	100	300	770

Table 7-16
Sedgwick Subarea Build-Out Force Main Deficiencies

Map ID	Pump Station	Diameter (in)	Length (lf)	Peak Velocity (fps)	Time Exceeding 8 fps (minutes)
20	Marina Pump Station	18	8,200	9.32	133

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South Kitsap Water Reclamation Facility

Proposed Sewer Service Border

Sinclair Inlet

Marina

Bay St

Eagle Crest

Golden Pond

Tremont Place

Canyon Ct

McCormick Woods #1

Harrison Hospital

Pottery

Cedar Heights

Flower Meadows

Sedgwick

Lowes

Albertson

McCormick Meadows

The Ridge 3

The Ridge

McCormick Woods #2

Annapolis Creek

Olney Creek

Sullivan Creek

Curley Creek tributary

Gorst Creek tributary

Anderson Creek

Parish Creek

Blackjack Creek

Blackjack Creek tributary

Square Creek tributary

Square Creek

Coulter Creek

Cool Creek

Curley Creek

Long Lake

Salmonberry Creek

STATE HWY 3 NW

CHARLESTON BLVD

SAND DOLLAR RD W

STATE HWY 3 W

STATE HWY 3 RAMP W

W BELFAIR VALLEY RD

W STATE HWY 16

STATE HWY 3 SW

LONE BEAR LN SW

SW OLD CLIFTON RD

SW BERRY LAKE RD

SW LIDER RD

SE LIDER RD

SW LAKE FLORA RD

SUNNYSLOPE RD SW

GREENACRES PL SW

SW BAY ST

SW SEDGWICK RD

SE LUND AVE

SE MILE HILL DR

SE SALMONBERRY RD

SE SEDGWICK RD

E CHESTER RD

WOODS RD E

WOODS RD SE

CALIFORNIA AVE E

CALIFORNIA AVE SE

ALASKA AVE E

ALASKA AVE SE

BETHEL AVE

SIDNEY AVE

JACKSON AVE SE

LONG LAKE RD SE

PHILLIPS RD SE

SHELTON DR SW

Legend

- Deficiency
- No Flooding
- Flooding
- Force Main
- Gravity, No Surcharging
- Gravity, Surcharging

Pump Station

- Sufficient Capacity
- Exceeds Capacity
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00005\maps\Fig 7-6 Sedgwick Subarea Alt Buildout 11x17.mxd 2/10/2016 ctolentino

Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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Sedgwick Subarea Alternative Build-Out Peak Day Flow

General Sewer Plan Update
City of Port Orchard, Washington

Figure 7-6

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SECTION 8
COLLECTION FACILITIES IMPROVEMENTS

8.1 INTRODUCTION

This section provides a compilation of specific projects, improvements, and programs the City should implement to alleviate the deficiencies identified in Section 7. These projects are derived primarily from the system analysis and discussions with the City's operations and engineering staff. Each project is accompanied by a planning level opinion of probable cost and a schedule identifying when the project is anticipated to begin and end. The City should review the CIP periodically to adjust for significant changes in the priority of each project, its cost, and scope.

Collection facilities improvement projects for the City wastewater system are categorized into the following five categories:

- **Capacity:** Improvements classified as insufficient in capacity are determined based on whether or not the infrastructure can effectively convey the incoming flow. Gravity sewer pipes are considered to have insufficient capacity when the pipe is full or surcharged. Force mains are considered to have insufficient capacity when the velocities exceed 8 feet per second. Pump stations are considered to have insufficient capacity when inflow exceeds the flow produced by the pump station with the largest pump out of service. As described in Section 7, the conveyance system was evaluated using existing flows and flows projected for 2022, 2026, 2036, and build-out conditions. The evaluations determined system deficiencies when subjected to these existing and future flow conditions. Following identification of system deficiencies, the computer model was used to evaluate and select system improvements to alleviate the system deficiencies.
- **Operations & Maintenance (O&M):** O&M projects will rehabilitate or replace facilities identified by the City O&M staff as having unacceptably high maintenance requirements, both in terms of frequency and in magnitude.
- **Obsolescence:** Improvements classified as obsolete are based on the age of the infrastructure. Mechanical and electrical equipment is expected to have a typical usable life of 25 years. Structures are expected to have a typical usable life of 50 years. Pipes are expected to have a typical usable life of 100 years.
- **General:** General improvement projects are those identified by City staff for various reasons that do not fall within any of the remaining four categories. These projects may be needed to simplify system operation, ease O&M efforts and reduce O&M costs, consolidate and/or eliminate redundant facilities, reduce or eliminate non-critical O&M concerns, or to meet ongoing sewer system management needs.
- **Developer:** Projects identified as developer dependent are needed to serve new developments but are not needed to provide continuation of service to existing customers.

When possible, system improvement projects should be coordinated with other utilities to minimize disruption and reduce associated costs such as road and surface restoration.

8.2 SIX-YEAR CAPITAL IMPROVEMENT PROGRAM

8.2.1 Project Descriptions

CIP 6-1: Marina Pump Station Improvements
The high flow pumps are reaching the end of their useful life, and are projected to have insufficient capacity for peak hour flows within the 6-year planning horizon. The sea wall protecting the controls building is failing and needs to be replaced along with a seismic retrofit of the controls building.

This project will include replacement of the high flow pumps; installation of new variable frequency drives for the new pumps; installation of a bypass vault; replacement of mechanical equipment as necessary; replacement of the emergency generator, automatic transfer switch, and upgrade the fuel storage to include secondary containment; upgrading the drywell ventilation to meet Department of Ecology requirements; removal of the sanitary sewer overflow pipe; relocation of the 8-inch sewer inlet; upgrade of the electrical, instrumentation, and controls; replacement of the sea wall; and a seismic retrofit of the existing controls building.

CIP 6-2: Bay Street Pump Station Improvements
The pumps, mechanical, and electrical components have reached the end of their useful life. There is no generator set on site. There is some structural degradation in the wet well riser.

Replace dilapidated wet well riser; replace dry well access with flush hatch; coat interiors of wet well and dry well; replace existing constant speed dry pit pumps with new constant speed dry pit pumps; replace all mechanical components; replace all electrical components; reroute gravity main from the west around the north side of dry well; install generator set; relocate sidewalk to provide better access for wet well manhole lid.

CIP 6-3 and 6-4: McCormick Pump Station 2 – Design and Construction
The pumps, mechanical, and electrical components have reached the end of their useful life. There is significant corrosion on the mechanical equipment.

Replace pumps, controls and panels, level sensors, rails, and reducers connecting to existing discharge elbows. Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation. Replace check valves, plug valves and saddles downstream of the pump station in kind. Reduce the volume of storage in the wet well to reduce odors caused by long residence time. Employ new corrosion

control system utilizing less toxic chemicals. If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent.

CIP 6-5 and 6-6: McCormick Pump Station 1 – Design and Construction

The pumps, mechanical, and electrical components have reached the end of their useful life. There is significant corrosion on the mechanical equipment.

Replace pumps, controls and panels, level sensors, rails, and reducers connecting to existing discharge elbows. Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation. Replace check valves, plug valves and saddles downstream of the pump station in kind. Reduce the volume of storage in the wet well to reduce odors caused by long residence time. Employ new corrosion control system utilizing less toxic chemicals. If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent.

CIP 6-7: Eagle Crest Generator Set

The Eagle Crest pump station does not have an on-site generator set.

This project would install a generator set and related equipment necessary for the proper function of the generator set, and would include site grading, equipment pads, and an automatic transfer switch.

CIP 6-8: Albertsons Pump Station

The pumps, mechanical, and electrical components have reached the end of their useful life. Flows are expected to exceed pump station capacity as new development occurs. This pump station rehabilitation will be funded by developers.

Replace pumps, controls and panels, level sensors, rails, and reducers connecting to existing discharge elbows. Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation. Replace check valves, plug valves and saddles downstream of the pump station in kind. Install odor control facilities.

8.2.2 Summary

The projects recommended for the 6-year Capital Improvement Program (CIP) are described in Table 8-1 and illustrated on Figure 8-1. The project order was developed with the City.

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Table 8-1
6-Year CIP (2016-2021)

CIP No.	Project	Capacity	Obsolescence	O&M	General	Developer	Project Description
6-1	Marina Pump Station Improvements	☑	☑	☑			▪ Replace existing high flow pumps and install Variable Frequency Drives (VFDs) for new Pumps. ▪ Install bypass vault ▪ Replace mechanical equipment ▪ Replace the existing emergency generator set, automatic transfer switch, and upgrade the fuel storage to include secondary containment. ▪ Upgrade electrical, instrumentation, and controls equipment ▪ Upgrade the drywell ventilation to meet Department of Ecology requirements. ▪ Remove sanitary sewer overflow pipe. ▪ Relocate 8” sewer inlet ▪ Replace sea wall
6-2	Bay Street Pump Station Improvements		☑	☑			▪ Replace dilapidated wet well riser ▪ Replace dry well access with flush hatch ▪ Coat interiors of existing wet well and dry well ▪ Replace existing constant speed dry pit pumps with new constant speed dry pit pumps ▪ Replace all mechanical components ▪ Replace all electrical components ▪ Reroute gravity main from the west around the north side of dry well ▪ Install generator set ▪ Relocate sidewalk to provide better access for wet well manhole lid ▪ Site paving/restoration ▪ Install fencing around site
6-3	McCormick Pump Station 2 - Design	☑	☑	☑			▪ Replace pump system including pumps, controls and panels, level sensors, rails and reducers connecting to existing discharge elbows ▪ Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation ▪ Replace check valves, plug valves and saddles downstream of the pump station in kind ▪ Reduce the volume of storage in the wet well to reduce odors caused by long residence time ▪ Employ new corrosion control system utilizing less toxic chemicals ▪ If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent
6-4	McCormick Pump Station 2 - Construction	☑	☑	☑			▪ Replace pump system including pumps, controls and panels, level sensors, rails and reducers connecting to existing discharge elbows ▪ Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation ▪ Replace check valves, plug valves and saddles downstream of the pump station in kind ▪ Reduce the volume of storage in the wet well to reduce odors caused by long residence time ▪ Employ new corrosion control system utilizing less toxic chemicals ▪ If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent

Table 8-1
6-Year CIP (2016-2021)

CIP No.	Project	Capacity	Obsolescence	O&M	General	Developer	Project Description
6-5	McCormick Pump Station 1 - Design	☑	☑	☑			▪ Replace pump system including pumps, controls and panels, level sensors, rails and reducers connecting to existing discharge elbows ▪ Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation ▪ Replace check valves, plug valves and saddles downstream of the pump station in kind ▪ Reduce the volume of storage in the wet well to reduce odors caused by long residence time ▪ Employ new corrosion control system utilizing less toxic chemicals ▪ If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent
6-6	McCormick Pump Station 1 - Construction	☑	☑	☑			▪ Replace pump system including pumps, controls and panels, level sensors, rails and reducers connecting to existing discharge elbows ▪ Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation ▪ Replace check valves, plug valves and saddles downstream of the pump station in kind ▪ Reduce the volume of storage in the wet well to reduce odors caused by long residence time ▪ Employ new corrosion control system utilizing less toxic chemicals ▪ If odor remains an issue at the station with the new corrosion control system, provide an odor control system that treats hydrogen sulfide and also the complex odors formed by STEP system effluent
6-7	Eagle Crest Generator Set			☑	☑		▪ Install new generator set, equipment pad, automatic transfer switch, and any other appurtenances necessary for proper function of generator set
6-8	Albertsons Pump Station	☑				☑	▪ Replace pumps ▪ Replace all electrical equipment ▪ Replace all mechanical equipment ▪ Clean and re-coat wet well

South Kitsap Water Reclamation Facility

6-1 6-2 6-3 6-4 6-5 6-6 6-7 6-8

Sinclair Inlet

Marina
Bay St
Eagle Crest
Golden Pond
Canyon Ct
Tremont Place
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
The Ridge 3
The Ridge
McCormick Meadows
McCormick Woods #2
Flower Meadows
Sedgwick
Lowes
Albertson

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Anderson Creek
Annapolis Creek
Blackjack Creek
Blackjack Creek tributary
Coal Creek
Coulter Creek
Curley Creek
Curley Creek tributary
Gorst Creek
Gorst Creek tributary
Long Lake
Olney Creek
Parish Creek
Salmonberry Creek
Square Creek
Square Creek tributary
Sullivan Creek

STATE HWY 3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY 3 W
UNNAMED
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
W STATE HWY 16
STATE HWY 3 SW
LONE BEAR LN SW
SW BAY ST
SW BERRY LAKE RD
SW OLD CLIFTON RD
GREENACRES PL SW
SUNNYSLOPE RD SW
SW LAKE FLORA RD
SW LIDER RD
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SE LUND AVE
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WOODS RD E
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CALIFORNIA AVE E
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OLNEY AVE SE
BETHEL AVE
SIDNEY AVE
JACKSON AVE SE
LONG LAKE RD SE
PHILLIPS RD SE
BETHEL RD SE
STATE HWY 3 SE
TREMONT ST W
TREMONT ST
BAY ST
PORT ORCHARD BLVD

Legend

- CIP
- Manhole
- Force Main
- Gravity Main
- CIP
- Pump Station
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

6-Year CIP

General Sewer Plan Update
City of Port Orchard, Washington

Figure 8-1

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8.3 10-YEAR CAPITAL IMPROVEMENT PROGRAM

8.3.1 Project Descriptions

CIP 10-1: McCormick Woods Drive SW Gravity Sewer Upgrades
If development occurs in Basin 6, the existing gravity sewer could surcharge and flood during peak hour conditions. It is recommended that the pipe be upsized as necessary to prevent surcharging. This project will be funded by developers.

CIP 10-2: Flower Meadows Pump Station
The pumps, mechanical, and electrical components have reached the end of their useful life.

Replace pumps, controls and panels, level sensors, rails, and reducers connecting to existing discharge elbows. Provide free standing roof structure above the pump control panel with integrated lights to illuminate area and to protect workers from the rain with a design similar to the McCormick Ridge installation. Replace check valves, plug valves and saddles downstream of the pump station in kind. Install odor control facilities.

CIP 10-3: Golden Pond Generator Set or Abandonment
The existing generator set is undersized for the pump station.

This project would either replace the existing generator set and automatic transfer switch, or would abandon the pump station entirely and install a new gravity sewer to convey flows from the Golden Pond and Tremont Place pump stations to the Eagle Crest pump station. This alternative would need to be further evaluated in the future.

8.3.2 Summary

The projects recommended for the 10-year Capital Improvement Program (CIP) are described in Table 8-2 and illustrated on Figure 8-2.

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Table 8-2
10-Year CIP (2022-2026)

CIP No.	Project	Capacity	Obsolescence	O&M	General	Developer	Project Description
10-1	McCormick Woods Drive SW Gravity Sewer Upgrades	☑				☑	▪ Replace 1,390 lf of 10-inch pipe with 15-inch pipe from manhole 115-2-2-0200 to manhole 115-2-2-0020 ▪ May not be necessary depending on future development patterns
10-2	Flower Meadows Pump Station	☑		☑			▪ Replace pumps ▪ Replace all electrical equipment ▪ Replace all mechanical equipment ▪ Clean and re-coat wet well
10-3	Golden Pond Generator Set or Abandonment		☑	☑	☑		▪ Evaluate feasibility and cost effectiveness of rerouting flows from Golden Pond and Tremont Place pump stations to the Eagle Crest pump station ▪ Either install new gravity sewers and abandon Golden Pond and Tremont Place, or replace existing generator set and automatic transfer switch at Golden Pond

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South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina
Bay St
Eagle Crest
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
Sedgwick
Lowes
Albertson
McCormick Meadows
The Ridge 3
The Ridge
McCormick Woods #2
10-1
10-2
10-3

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Anderson Creek
Annapolis Creek
Blackjack Creek
Blackjack Creek tributary
Coal Creek
Coulter Creek
Curley Creek
Curley Creek tributary
Gorst Creek
Gorst Creek tributary
Long Lake
Olney Creek
Parish Creek
Square Creek
Square Creek tributary
Sullivan Creek
Salmonberry Creek
UNNAMED

STATE HWY 3 NW
CHARLESTON BLVD
SAND DOLLAR RD W
STATE HWY 3 W
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
W STATE HWY 16
STATE HWY 3 SW
LONE BEAR LN SW
SW BAY ST
SW OLD CLIFTON RD
SW BERRY LAKE RD
SW SEDGWICK RD
SW LIDER RD
SW LAKE FLORA RD
SUNNYSLOPE RD SW
GREENACRES PL SW
SIDNEY RD SW
SE LUND AVE
SE MILE HILL DR
SE SALMONBERRY RD
SE SEDGWICK RD
SE LIDER RD
STATE HWY 16 SE
BETHEL AVE
SIDNEY AVE
OLNEY AVE SE
JACKSON AVE SE
LONG LAKE RD SE
PHILLIPS RD SE
WOODS RD SE
CALIFORNIA AVE SE
ALASKA AVE SE
E CHESTER RD

Legend

- CIP
- Manhole
- Force Main
- Gravity Main
- CIP
- Pump Station
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\005\maps\Fig 8-2 10-Year CIP 11x17.mxd 3/8/2016 ctolentino

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Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

10-Year CIP

General Sewer Plan Update
City of Port Orchard, Washington

Figure 8-2

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8.4 20-YEAR CAPITAL IMPROVEMENT PROGRAM

8.4.1 Project Descriptions

CIP 20-1: Bay Street Gravity Sewer Upgrades

The existing gravity sewer between Port Orchard Boulevard and the Marina Pump Station is projected to be under capacity within the 20-year planning horizon. The pipe should be upsized, or a parallel gravity sewer should be installed, to ensure sufficient hydraulic capacity and to prevent flooding and surcharging during peak hour conditions.

CIP 20-2: Port Orchard Boulevard Gravity Sewer Upgrades

The existing gravity sewers in Port Orchard Boulevard are projected to be under capacity within the 20-year planning horizon. The pipes should be upsized to ensure sufficient hydraulic capacity and to prevent flooding and surcharging during peak hour conditions. Because there are two parallel pipes, pipe bursting or pipe reaming may be used to minimize costs and disruptions during construction.

8.4.2 Summary

The projects recommended for the 20-year Capital Improvement Program (CIP) are described in Table 8-3 and illustrated on Figure 8-3.

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Table 8-3
20-Year CIP (2027-2036)

CIP No.	Project	Capacity	Obsolescence	O&M	General	Developer	Project Description
20-1	Bay Street Gravity Sewer Upgrades	☑					▪ Replace 1,330 lf of 18-inch pipe with 30-inch pipe from manhole 115-2-2-0200 to manhole 115-2-2-0020
20-2	Port Orchard Boulevard Gravity Sewer Upgrades	☑					▪ Replace 5,760 lf of 12-inch pipe with 15-inch pipe from manhole 312-2-2-0220 to manhole 115-2-2-0200

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South Kitsap Water Reclamation Facility

Marina
Bay St
20-1
20-2
Sinclair Inlet
Eagle Crest
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
Sedgwick
Lowes
Albertson
McCormick Meadows
The Ridge 3
The Ridge
McCormick Woods #2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Annapolis Creek
Sullivan Creek
Olney Creek
Curley Creek tributary
Blackjack Creek
Blackjack Creek tributary
Square Creek tributary
Square Creek
Gorst Creek
Gorst Creek tributary
Parish Creek
Coulter Creek
Anderson Creek
Salmonberry Creek
Cool Creek
Curley Creek
Long Lake
SW BAY ST
BAY ST
SW OLD CLIFTON RD
SW BERRY LAKE RD
SW SEDGWICK RD
SW LIDER RD
SE LIDER RD
SE LUND AVE
SE MILE HILL DR
SE SALMONBERRY RD
SE SEDGWICK RD
W STATE HWY 16
STATE HWY 3 W
STATE HWY 3 SW
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
SAND DOLLAR RD W
CHARLESTON BLVD
TREMONT ST W
TREMONT ST
SIDNEY AVE
BETHEL AVE
OLNEY AVE SE
JACKSON AVE SE
LONG LAKE RD SE
PHILLIPS RD SE
WOODS RD SE
CALIFORNIA AVE SE
ALASKA AVE SE
E CHESTER RD
LONE BEAR LN SW
GREENACRES PL SW
SUNNYSLOPE RD SW
SW LAKE FLORA RD
STATE HWY 3 SW
STATE HWY 16 SE
SOUTH TORCH BLVD
SW BAY ST
SIDNEY RD SW
BETHEL RD SE
SE LIDER RD
SE SEDGWICK RD
SE SALMONBERRY RD
OLNEY AVE SE
SE MILE HILL DR
WOODS RD SE
CALIFORNIA AVE E
ALASKA AVE E
LONE BEAR LN SW
SUNNYSLOPE RD SW
SW LIDER RD
SW LAKE FLORA RD
STATE HWY 16 SE
SE SEDGWICK RD
PHILLIPS RD SE
LONG LAKE RD SE
SE SALMONBERRY RD
SALMONBERRY RD SE
BETHEL RD SE
SIDNEY RD SW
SW SEDGWICK RD
SW BERRY LAKE RD
SW OLD CLIFTON RD
STATE HWY 3 SW
STATE HWY 3 NW
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
SAND DOLLAR RD W
CHARLESTON BLVD
E CHESTER RD
SE MILE HILL DR
SE LUND AVE
SE SEDGWICK RD
SE SALMONBERRY RD
SW BERRY LAKE RD
SW LIDER RD
SE LIDER RD
SW LAKE FLORA RD
STATE HWY 16 SE
STATE HWY 3 SW
STATE HWY 3 NW
STATE HWY 3 RAMP W
W BELFAIR VALLEY RD
SAND DOLLAR RD W
CHARLESTON BLVD
E CHESTER RD
SE MILE HILL DR
SE LUND AVE
SE SEDGWICK RD
SE SALMONBERRY RD
SW BERRY LAKE RD
SW LIDER RD
SE LIDER RD
SW LAKE FLORA RD
STATE HWY 16 SE

Legend

- CIP
- Manhole
- Force Main
- Gravity Main
- CIP
- Pump Station
- Treatment Plant

Base Layers

- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.000005\maps\Fig 8-3 20-Year CIP 11x17.mxd 12/15/2015 ctolentino

Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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City of Port Orchard

20-Year CIP

General Sewer Plan Update
City of Port Orchard, Washington

Figure 8-3

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8.5 OPINIONS OF PROBABLE COST

Opinions of probable project costs for the 6-year CIP are listed in Table 8-4. These projects have been defined only to a preliminary level of design with approximate dimensions. All projects will require further definition and design refinement as part of the design process.

Construction costs were estimated from bid results for similar projects in the Puget Sound area and RS Means cost data for 2014. 2014 is used as the cost basis to match the project costs developed as part of the 2014 Sewer Utility Gap Analysis described further in Section 9 - Financial. The opinion of probable construction cost includes the costs to build the various components, sales tax, and contingency. Opinions of probable project costs include planning, surveying, engineering services, permitting, bid advertisement, contract award, and services during construction. No costs are included for financing, easements, right-of-way, or property acquisition.

Actual costs can and will differ from the opinions of probable costs. Volatility in the bidding climate, the number of contractors bidding on a project, and their approach to bidding and completing the work will all impact actual project costs.

Table 8-4
Opinion of Probable Project Costs, 6-Year CIP (2016-2021)

CIP No.	Project	Opinion of Probable Construction Cost[(1)(2)]	Opinion of Probable Project Cost[(1)(3)]
6-1	Marina Pump Station Improvements	$2,670,000	$3,800,000
6-2	Bay Street Pump Station Improvements	$730,000	$1,100,000
6-3	McCormick Pump Station 2 - Design	N/A	$190,000
6-4	McCormick Pump Station 2 - Construction	$1,100,000	$1,100,000
6-5	McCormick Pump Station 1 - Design	N/A	$180,000
6-6	McCormick Pump Station 1 - Construction	$1,100,000	$1,100,000
6-7	Eagle Crest Generator Set	$119,000	$155,000
		Estimated City Total	$7,625,000

Notes:
1) All costs are in 2014 dollars.
2) The opinion of probable construction cost includes the costs to build the various components, sales tax, and contingency.
3) Opinions of probable project costs include planning, surveying, engineering services, permitting, bid advertisement, contract award, construction, and services during construction.

Additional improvements required as development occurs will be funded by developers under a less definite time frame. Some further sewer extensions from the existing system will also be required to serve specific parcels within the various developments. These extensions are not

included in the CIP and cannot be identified until the development plan is defined, which may occur in several phases.

The City-funded 6-year capital improvement program schedule is shown as Table 8-5.

Table 8-5
6-Year Capital Improvement Program (2016-2021) in 2014 Dollars

CIP No.	Project	Project Costs per Year[(1)]						
		Total	2016	2017	2018	2019	2020	2021
6-1	Marina Pump Station Improvements	$3,800,000	$1,900,000	$1,900,000				
6-2	Bay Street Pump Station Improvements	$1,100,000					$1,100,000	
6-3	McCormick Pump Station 2 - Design	$190,000			$190,000			
6-4	McCormick Pump Station 2 - Construction	$1,100,000				$1,100,000		
6-5	McCormick Pump Station 1 - Design	$180,000			$180,000			
6-6	McCormick Pump Station 1 - Construction	$1,100,000				$1,100,000		
6-7	Eagle Crest Generator Set	$155,000						$155,000
Total		$7,625,000	$1,900,000	$1,900,000	$370,000	$2,200,000	$1,100,000	$155,000

Notes:
1) Opinions of probable project costs include planning, surveying, engineering services, permitting, bid advertisement, contract award, construction, and services during construction.

8.6 SEWER EXTENSIONS INTO UNDEVELOPED BASINS

New sewer extensions will be needed to serve new developments expected in unsewered areas of the City as shown on Figure 8-4. Specific plans for the sewer extensions have not been prepared and will be the responsibility of the developer. Some of the developments shown will require local pump stations.

Major land developers will be preparing site-specific plans for street layouts, residential lot distribution, commercial parcels, sensitive area delineations, required setbacks with buffers, and other land use intentions for approval by the permitting authorities. These land use decisions, and the timing of when specific parcels are developed will influence the sewer collection facilities within these basins. The City has decided that no additional STEP units will be allowed.

Coordination between the City and the West Sound Utility District will be required as properties are developed along the fringes of their two sewer service areas to establish which agency will serve which properties. These sewer extensions are not expected to require significant financial investment by the City.

South Kitsap Water Reclamation Facility

Sinclair Inlet

Marina
Bay St
Eagle Crest
Golden Pond
Tremont Place
Canyon Ct
McCormick Woods #1
Harrison Hospital
Pottery
Cedar Heights
Flower Meadows
Sedgwick
Lowes
Albertson
The Ridge 3
The Ridge
McCormick Meadows
McCormick Woods #2

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Legend

Future Sewer Extension
- Pump Station
- Force Main
- Gravity Main

Existing Sewer System
- Pump Station
- Treatment Plant
- Force Main
- Gravity Main

Base Layers
- City of Port Orchard
- Port Orchard UGA
- West Sound UD Boundary
- Parcels
- Water Bodies
- Water Courses

Sewer System: City of Port Orchard 2015
Kitsap County base data 2015
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Future Sewer Extensions

General Sewer Plan Update
City of Port Orchard, Washington

Figure 8-4

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\005\maps\Fig 8-4 Future Sewer Extensions 11x17.mxd 12/15/2015 ctolentino

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SECTION 9
FINANCIAL

9.1 FINANCIAL SUMMARY

The financial analysis for the sewer system was performed by Katy Isaksen & Associates as part of the “City of Port Orchard Utility Gap Analysis”, and is included as Appendix H.

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SECTION 10
OPERATIONS AND MAINTENANCE PROGRAM

10.1 INTRODUCTION

The operation and maintenance activities performed by the City to ensure performance and reliability of the wastewater collection system are summarized in this chapter. City personnel maintain approximately 8 miles of force mains, 49 miles of gravity sewers, 14 miles of STEP mains, 16 pump stations, and a Supervisory Control and Data Acquisition (SCADA) telemetry system.

10.2 CITY MANAGEMENT AND PERSONNEL

The City's Public Works Department is composed of approximately 21 full time employees (FTE) that comprise a combined crew for road, water, sewer, and stormwater maintenance.

The City is governed by a City Council and Mayor, and the Public Works Director oversees the Public Works Utilities Department. This department is responsible for the operation and maintenance of the City's road, water, sewer, and stormwater systems.

10.3 OPERATIONS AND MAINTENANCE ACTIVITIES

This section presents the operations and maintenance activities, including preventive and corrective routines.

Pump Stations
City staff currently visits and inspects each pump station on a daily basis, and should continue maintenance at this level. The stations, including wet wells, should be hosed down daily. The wet wells should be pumped out and cleaned on a bi-annual basis or as needed. The pumps should be cleaned out as needed to continue operating at or near their design point.

Force Mains
City staff should operate all force main valves on an annual basis. Force mains should be inspected on an annual basis, and should be flushed when pressure increases.

Gravity Sewers and Manholes
Preventive maintenance for gravity sewer lines includes programs for inspection and cleaning. Inspections should include visual observation of manholes and a program of closed-circuit television (CCTV) inspection of sewer pipes. Gravity lines should be cleaned by flushing or jetting at least every year. The cleaning and inspection programs should identify the majority of problems so that they may be repaired in the maintenance or capital improvement programs, instead of resulting in a failure or overflow.

Summary

A summary of the sewer collection system recommended maintenance standards is provided as Table 10-1.

Table 10-1
Recommended Collection System Maintenance Standards

Maintenance Task	Quantity or Length of Component	Recommended Standard
Pump Station Inspections	16	0.1 FTE per station per year(1)
Gravity Sewer CCTV Inspections	369,600 LF	369,600 LF per year
Gravity Sewer Cleaning	369,600 LF	369,600 LF per year
Force Main Flushing	41,400 LF	Annual inspection; flushing if force main pressure increases(2)

Notes:
1) FTE is full time equivalent and is equal to 1,768 hours per year (85 percent of a full year).
2) Recommendation based on EPA 832-F-00-071, *Wastewater Technology Fact Sheet, Sewers, Force Main,* September 2000.

10.4 STAFFING NEEDS

The City employs 21 FTE's, of which 15 are assigned to the Public Works Shop and 6 are administrative staff. There are no staff members who work solely on the sewer system.

The City employs 4 field people who work primarily in the sewer division. One metric to compare staffing rates among sewer utilities is employees per 100,000 LF of pipe. While this does not account for variations in number of pump stations, customers served, treatment plant operations, or other factors, it is a useful way to compare approximate staffing efficiency with similar utilities. A summary of the sewer utility staffing for some utilities in the Puget Sound region and the City is presented as Table 10-2.

Table 10-2
Sewer Utility Staffing Comparison per Total Length of Pipe

Agency	Total Current Staff	Total Length of Pipe (LF)	Employees per 100,000 LF of Pipe
City of Port Orchard[2]	**3.5**	**369,600**	**0.95**
City of Monroe[1]	4	223,600	1.79
City of Bellevue[2]	22	2,777,280	0.79
City of Enumclaw[1]	2	248,160	0.81
City of Kent[2]	9	1,056,000	0.85
City of Kirkland[2]	5.5	633,600	0.87
City of Lacey[2]	6	897,600	0.67
City of Mercer Island[2]	4	707,520	0.57
Average Employee per 100,000 LF of Pipe			**0.91**
Median Employee per 100,000 LF of Pipe			**0.83**

Notes:
1) Operates one or more wastewater treatment plant (WWTP)(s).
2) Does not operate a WWTP.

Table 10-3
Sewer Utility Staffing Comparison per Pump Station

Agency	Total Current Staff	Pump Stations	Employees per Pump Station
City of Port Orchard[2]	**3.5**	**16**	**0.22**
City of Monroe[1]	4	10	**0.40**
City of Bellevue[2]	22	46	**0.48**
City of Enumclaw[1]	2	12	**0.17**
City of Kent[2]	9	11	**0.82**
City of Kirkland[2]	5.5	6	**0.92**
City of Lacey[2]	6	47	**0.13**
City of Mercer Island[2]	4	18	**0.22**
Average Employee per Pump Station			**0.42**
Median Employee per Pump Station			**0.31**

Notes:
1) Operate a WWTP(s).
2) No WWTP.

Based on the results of the poll, the City is above the average and median in the number of employees per 100,000 linear feet of pipe, and below the average and the median in number of employees per pump station.

10.5 RECOMMENDED OPERATION AND MAINTENANCE IMPROVEMENTS

The City has been proactive in taking steps to solve the most critical maintenance issues. The City has been responsive to these improvements and has incorporated them into the CIP. Therefore, no specific improvements are required, but it is recommended that the City adjust operations and maintenance procedures as issues arise.

SECTION 11
RECLAIMED WATER

11.1 RECLAIMED WATER

In 2006, WSUD received a grant to assist in the planning, permitting, and engineering design of a reclaimed water distribution system. The intent of such a system was to aid in optimizing the District's wastewater management and environmental stewardship by reducing the South Kitsap Water Reclamation Facilities marine discharge and beneficially reusing a precious water resource and reducing potable water demand.

In 2011, approximately one mile of reclaimed water distribution piping was constructed by the City and the WSUD. The distribution system piping is shown on Figure 11-1. In 2013, a hydrogeologic study was performed for WSUD which is part of Water Resource Inventory Area 15 (WRIA 15). This study determined that the existing aquifer and recharge have sufficient capacity to meet demand for the next 20 to 50 years. Per capita water demand has also been decreasing due to lower flow water fixtures and conservation. As a result, reducing potable water demand is not currently necessary.

Until the end of 2015, there was only one reclaimed water customer being served. The costs to provide reclaimed water to this customer were higher than what the customer was charged, resulting in the City and WSUD subsidizing the reclaimed water customer. Reclaimed water was provided to this customer until the end of 2015, at which point reclaimed water distribution ceased. Reclaimed water is blended with effluent from the secondary clarifiers prior to discharge.

If water system demands increase to the point that reclaimed water is necessary to adequately address water demands in the area, the reclaimed water distribution system will be placed back into service.

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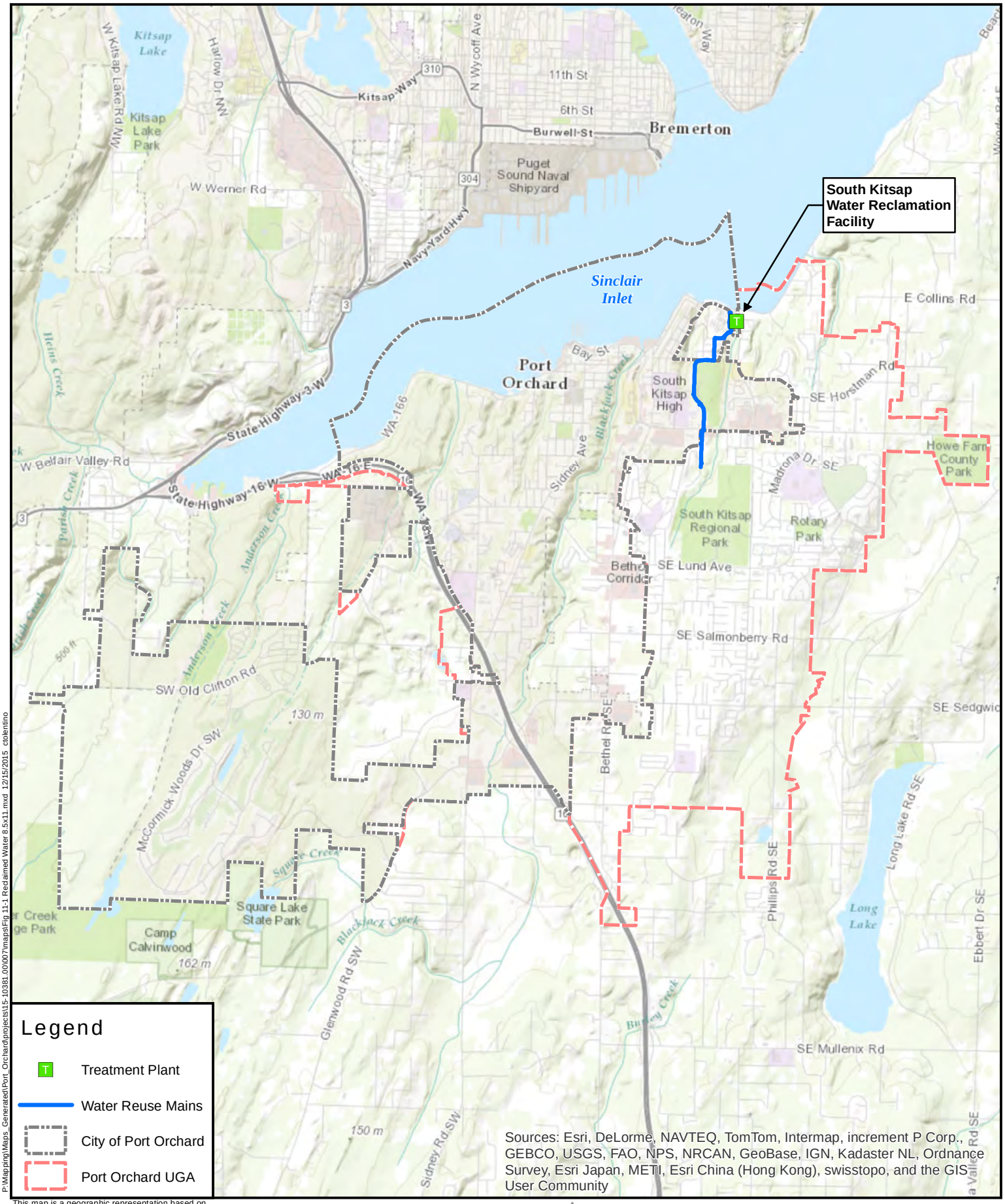

P:\Mapping\Maps_Generated\Port_Orchard\projects\15-10381.00\007\maps\Fig 11-1 Reclaimed Water 8.5x11.mxd 12/15/2015 ctolentino

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City of Port Orchard

Reclaimed Water

General Sewer Plan Update
City of Port Orchard, Washington

Figure 11-1

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APPENDICES

Appendix A

SEPA Checklist

CITY OF PORT ORCHARD
Department of Community Development
216 Prospect Street, Port Orchard, WA 98366
Phone: (360) 874-5533 • Fax: (360) 876-4980
planning@cityofportorchard.us
www.cityofportorchard.us

CITY OF PORT ORCHARD
DETERMINATION OF NON-SIGNIFICANCE (DNS)

DESCRIPTION OF PROPOSAL: The subject proposal is the 2015 update to the City's comprehensive sewer plan, as required by the state Growth Management Act. The comprehensive sewer plan provides guidance for the City's capital projects improvements and operations, maintenance and repair needs through 2036, based on updated population and programmatic information.

PROPONENT: City of Port Orchard Public Works Department

LOCATION OF PROPOSAL: Citywide (Non-Project Action)

LEAD AGENCY: City of Port Orchard

SEPA OFFICIAL: Nicholas Bond, Development Director
City of Port Orchard
216 Prospect Street
Port Orchard, WA 98366

DETERMINATION: The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). The decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request. The proposal is a non-project action per WAC 197-11-774; however, all project-level improvements will be subject to individual environmental review at the time of their application.

The DNS is issued pursuant to WAC 197-11-340(2)(a)(v); the lead agency will not act on this proposal for 15 days from the date of issue.

DATE OF ISSUANCE: **April 8, 2016**

COMMENT DEADLINE: **April 22, 2016 at 4:00pm**

4/4/16

Nicholas Bond, AICP, Department of Community Development Director — Date

APPEAL PERIOD: Pursuant to RCW 43.21C, any person wishing to appeal this determination may file such an appeal within fourteen (14) days from the date of the end of the comment period. You should be prepared to make specific factual objections. There is a fee to appeal this determination.

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2014

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants: [help]

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND [help]

1. Name of proposed project, if applicable: [help]
   City of Port Orchard - 2015 Comprehensive Sanitary Sewer Plan Update

2. Name of applicant: [help]
   City of Port Orchard Public Works Department

3. Address and phone number of applicant and contact person: [help]
City of Port Orchard Public Works Department
216 Propsect Street
Port Orchard, WA 98366
(360) 876-4991
Contact: **Mark R. Dorsey, P.E.**

4. Date checklist prepared: [help]
May 2015

5. Agency requesting checklist: [help]
City of Port Orchard Planning Department
Washington State Department of Ecology

6. Proposed timing or schedule (including phasing, if applicable): [help]
The proposed date for adoption of the 2015 Comprehensive Sanitary Sewer Plan Update (Plan) by the Port Orchard City Council is expected to be May 2016.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]
This is a non-project action adopting the Plan. In addition to the City's Plan and the Capital Improvement Plan (CIP), incremental sanitary sewer facilities may be constructed in conjunction with private development, as they occur.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]
City of Port Orchard 2013 Comprehensive Plan Update (update will be prepared in 2016)
City of Port Orchard 2015 Water System Plan Update (in process)
City of Port Orchard 2015 Comprehensive Sewer Plan (in process)
Kitsap County Comprehensive Plan Update, August 2012
West Sound Utility District Sewer Comprehensive Plan, November 2007

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]
Property owners and developers have, and are expected to apply for, approval of development that will require sanitary sewer service. These developments are not addressed specifically in the Plan. The Plan provides for necessary public sewer collection and treatment improvements necessary to support such development in accordance with the Comprehensive Plan and development code. All project-level improvements will be subject to environmental review at the time of their application. No pending proposal will affect this non-project action.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]
The Plan must be approved by the Washington State Department of Ecology. Review by other jurisdictions and agencies include Kitsap County, West Sound Utility District, The City of Bremerton, the City of Port Orchard City Council, Kitsap County Health District

and the State Department of Health.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]
As needed for for demonstrating compliance with the Growth Management Act (GMA), this proposal involves adoption of amendments to the 2009 City of Port Orchard Comprehensive Sewer Plan. The amendments identify three categories of action:

Programmatic – Updating the Comprehensive Sewer Plan to address a revised 20-year population forecast for the urban growth area which has been expanded since the 2009 Plan. This will enable the City to address future needs for sanitary sewer service within the defined urban growth area.

Capital Projects – Updating the list of specific capital projects that are necessary to implement the Comprehensive Sewer Plan. These will be included in the Comprehensive Plan Capital Improvement Program Element. Subsequent project-level environmental review will be conducted at the time these projects are proposed for implementation.

Operation, Maintenance& Repair – Day-to-day and periodic projects necessary to maintain the current and future sewer system in working order are described in the Comprehensive Sewer Plan as further addressed in the sewer utility operations and maintenance standards and procedures.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The service area covered by the 2015 Comprehensive Sanitary Sewer Plan Update includes area within the current City of Port Orchard municipal limits and portions of the designated Urban Growth Area (UGA), which includes established boundaries of Kitsap County ULID #6, as agreed upon by Kitsap County, the City of Bremerton and the West Sound Utility District. Port Orchard is located on the Kitsap peninsula, south of Sinclair Inlet. The main body of Puget Sound is to the east.

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth

a. General description of the site [help]
(circle one): Flat, rolling, **hilly**, steep slopes, mountainous, other _____

The City of Port Orchard is characterized by shoreline adjacent to Sinclair Inlet. The topography is generally hilly with some flat areas.

b. What is the steepest slope on the site (approximate percent slope)? [help]
There are steep slopes within the City, however, this non-project action will not impact slopes generally, and any project proposed under this ordinance will be reviewed separately for SEPA compliance where required

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]
Soils and soil types are not generally impacted by this non-project action. An extensive discussion of the soils and their properties can be found in the *USDA Soil Survey of Kitsap County*.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]
Unstable soils and steep slopes will not be impacted by this non-project action. Separate site-specific review will determine impacts to soils and slopes and SEPA compliance.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]
No filling or grading is proposed as part of this non-project action. Fill or grading related to site-specific proposals under this ordinance will be reviewed separately for SEPA compliance.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]
No clearing or construction is proposed as part of this non-project action.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]
No construction is proposed as part of this non-project action.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]
No specific measures are proposed as part of this non-project action. Each project will be evaluated as part of site-specific project review for compliance with SEPA and other regulations in the Port Orchard Municipal Code.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]
This non-project action will have no impact on air quality. Air quality will be evaluated as part of site-specific project review and SEPA analysis.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

This non-project action will have no impact on air quality. Air quality will be evaluated as part of site-specific project review and SEPA analysis.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]
This non-project action will have no impact on air quality. Air quality will be evaluated as part of site-specific project review and SEPA analysis.

3. **Water**

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]
Port Orchard is bordered on the north by the waters of Puget Sound. There are numerous wetlands, streams and creeks. Impacts on shoreline, surface water, seasonal streams and wetlands will be evaluated as part of site-specific project review and SEPA analysis.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]
This non-project action will not require any work over, in or adjacent to these waters. Impacts on wetlands, surface water, seasonal streams and shoreline will be evaluated as part of site-specific project review and SEPA analysis.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]
This non-project action will not require any filling or dredging. Impacts as a result of filling or dredging will be evaluated as part of site-specific project review and SEPA analysis.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]
This non-project action will not require any surface water withdrawals or diversions. The proposed permit, policy, and ordinances will provide additional protection for all water bodies. Impacts of this type will be evaluated as part of site-specific project review and SEPA analysis.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]
Some areas of the City are identified as lying within the 100-year flood plain (as defined in the Federal Flood Disaster Protection Act of 1973.) This non-project action does not impact flood areas specifically. Any proposal involving flood areas will comply with Chapter 15.38, *Flood Damage Prevention,* of the Port Orchard Municipal Code and will be evaluated as part of site-specific review and SEPA analysis.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]
This non-project action will not require discharge of materials to surface waters. The proposed ordinance will prohibit the discharges of water materials and provide additional

protection for all water bodies. Impacts of this type will be evaluated as part of site-specific project review and SEPA analysis.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]
This non-project action will not require any withdrawal of groundwater or discharge to groundwater. Impacts of this type will be evaluated as part of site-specific project review and SEPA analysis.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]
This non-project action will not require any discharge of waste material to groundwater. Existing health regulations control the location, type and density of development which utilizes septic tanks.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]
This non-project action will not impact surface and stormwater. Stormwater flow, runoff of any type and outfalls will be evaluated as part of site-specific project review and SEPA analysis

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]
This non-project action will not impact ground or surface waters and the goals to minimize the effects of discharge of waste materials. Possible contamination of ground or surface waters with waste materials will be evaluated as part of site-specific project review and SEPA analysis.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
This non-project action will not have a effect on drainage patterns. Possible impacts to drainage patterns will be evaluated as part of site-specific project review and SEPA analysis.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
This non-project action will not have a effect on surface, ground or runoff waters. Possible impacts to surface, ground, and runoff water will be evaluated as part of site-specific project review and SEPA analysis.

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

- ✔ deciduous tree: alder, maple, aspen, other
- ✔ evergreen tree: fir, cedar, pine, other
- ✔ shrubs
- ✔ grass
- ✔ pasture
- ✔ crop or grain

_____ Orchards, vineyards or other permanent crops.
_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____water plants: water lily, eelgrass, milfoil, other

- ✔ other types of vegetation

b. What kind and amount of vegetation will be removed or altered? [help]
This non-project action will have no effect on vegetation removal or alteration. Vegetation removal and enhancement will be evaluated as part of site-specific project review and SEPA analysis.

c. List threatened and endangered species known to be on or near the site. [help]
This non-project action will have no impact on threatened or endangered species. Species will be evaluated as part of site-specific project review and SEPA analysis.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]
No landscaping is proposed as part of this non-project action. Open space and planting regulations will be evaluated as part of site-specific project review and SEPA analysis.

e. List all noxious weeds and invasive species known to be on or near the site.
This non-project action will have no impact on noxious weeds and invasive species. Flora will be evaluated as part of site-specific project review and SEPA analysis.

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include: [help]

birds: **hawk, heron, eagle, songbirds, other**
mammals: **deer, bear,** elk, **beaver, other: sea lion, raccoon**
fish: **bass**, **salmon**, **trout**, **herring**, **shellfish**, **other**

b. List any threatened and endangered species known to be on or near the site. [help]
This non-project action will not have an effect on wildlife. Effects of proposals on wildlife will be evaluated as part of site-specific project review and SEPA analysis.

c. Is the site part of a migration route? If so, explain. [help]

The Puget Sound, including Port Orchard, is an important nesting place, feeding area, and wintering ground for thousands of birds in the Pacific Flyway. This non-project action will have no effect on migration patterns. Effects on wildlife will be evaluated as part of site-specific project review and SEPA analysis.

d. Proposed measures to preserve or enhance wildlife, if any: [help]
This non-project action will not have an effect on animals or birds so there are no proposed measures to preserve or enhance wildlife. Effects of site-specific project proposals on wildlife will be evaluated as part of the site-specific project review and SEPA analysis.

e. List any invasive animal species known to be on or near the site.
This non-project action will not have an effect on invasive animal species. Effects of proposals on wildlife will be evaluated as part of site-specific project review and SEPA analysis.

6. **Energy and natural resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]
No energy is required for this non-project action. Energy consumption will be evaluated as part of site-specific project review and SEPA analysis and in accordance with the Washington State Energy Code which the City has adopted.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]
This non-project action will have no effect on solar access. Solar access will be evaluated as part of site-specific project review and SEPA analysis.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]
None. The City uses the Washington State Energy Code to enhance electricity conservation. Energy conservation features will be evaluated as part of site-specific project review and SEPA analysis.

7. **Environmental health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]
This non-project action will cause threats of environmental health hazards. Environmental health hazards will be evaluated as part of site-specific project review and SEPA analysis.

1) Describe any known or possible contamination at the site from present or past uses.
This non-project action will not have an effect on any known or possible contamination sites. Effects of individual proposals on contamination sites will be evaluated as part of site-specific project review and SEPA analysis.

2) Describe existing hazardous chemicals/conditions that might affect project

development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
This non-project action will not have an effect on any known hazardous chemicals/conditions. Effects of individual proposals on existing hazardous chemicals/conditions that might effect project development and design will be evaluated as part of site-specific project review and SEPA analysis.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
This non-project action will not involve any hazardous chemicals. Individual proposals will be evaluated for toxic or hazardous chemicals as part of site-specific project review and SEPA analysis.

4) Describe special emergency services that might be required.
No special emergency measures will be required as part of this non-project action.

5) Proposed measures to reduce or control environmental health hazards, if any:
No measures to reduce or control environmental health hazards are necessary as part of this non-project action.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]
Noise levels in Port Orchard are regulated under Chapter 9.24 *(Offenses Against Public Order)* of the Port Orchard Municipal Code. This non-project action will not be affected by noise levels.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]
This non-project action will have no effect on noise levels. Noise impacts of individual proposals will be evaluated as part of site-specific project review and SEPA analysis.

3) Proposed measures to reduce or control noise impacts, if any: [help]
Noise levels on Port Orchard are regulated under Chapter 9.24 *(Offenses Against Public Order)* of the Port Orchard Municipal Code.

8. **Land and shoreline use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]
Land uses in Port Orchard are primarily residential and commercial, with some industrial, light Manufacturing, recreation, and open space. This non-project action will have no effect on current land uses on nearby or adjacent properties. Impacts of individual proposals on current land uses on nearby or adjacent properties will be evaluated as part of site-specific project review and SEPA analysis.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

Not applicable since this is a non-project action. Individual proposals will be evaluated for the site's previous land use as part of site-specific project review and SEPA analysis.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

This non-project action will have no effect on, nor would be effected by, surrounding working farm or forest land normal business operations. The impact of surrounding working farm or forest land normal business operations to individual proposals will be evaluated as part of site-specific project review and SEPA analysis.

c. Describe any structures on the site. [help]

The proposal is a non-project action, and includes no specific development activity. Any future proposed development activity will be evaluated as part of site-specific project review and SEPA analysis.

d. Will any structures be demolished? If so, what? [help]

This non-project action requires no demolition. Any future proposed demolition will be evaluated as part of site-specific project review and SEPA analysis.

e. What is the current zoning classification of the site? [help]

Zoning in Port Orchard is according to the Official Zoning Map, adopted January 14th, 2014, which is available at the Department of Planning and Community Development.

f. What is the current comprehensive plan designation of the site? [help]

Comprehensive Plan designations are according to the Comprehensive Plan Land Use Map, adopted January 14th, 2014, in accordance with GMA requirements. The Land Use Map is available at the Department of Planning and Community Development.

g. If applicable, what is the current shoreline master program designation of the site? [help]

Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

Environmentally sensitive areas in Port Orchard include wetlands, aquifer recharge areas, geologically hazardous areas, continuous and seasonal streams and waters including the waters of Puget Sound, and fish and wildlife habitat. These areas are inventoried in the City's Comprehensive Plan and are regulated under Chapter 14.04, *State Environmental Policy Act*, of the Port Orchard Municipal Code. Environmentally sensitive areas will be evaluated as part of site-specific project review and SEPA analysis.

i. Approximately how many people would reside or work in the completed project? [help]
Not applicable to this non-project action.

j. Approximately how many people would the completed project displace? [help]
None.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]
Not applicable to this non-project action.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]
None.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:
None.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]
Not applicable to this non-project action.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]
No units will be eliminated by the non-project action.

c. Proposed measures to reduce or control housing impacts, if any: [help]
None.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]
This non-project action has no effect on building and structure height. Building and structure height are regulated in the Zoning Code.

b. What views in the immediate vicinity would be altered or obstructed? [help]
This non-project action will have no impact on views. View alteration and obstruction is regulated by the Zoning Code and the Shoreline Management Master Program. Views will be evaluated as part of site-specific project review and SEPA analysis.

c. Proposed measures to reduce or control aesthetic impacts, if any: [help]
None.

11. **Light and glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]
This non-project action will not produce any light and/or glare. Light and glare will be evaluated as part of site-specific project review and SEPA analysis.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]
This non-project action will not produce any light and/or glare. Light and glare will be evaluated as part of site-specific project review and SEPA analysis.

c. What existing off-site sources of light or glare may affect your proposal? [help]
This non-project action will not be affected by any off-site source of light or glare. Off-site sources of light and glare will be evaluated as part of site-specific project review and SEPA analysis.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]
None.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]
Not applicable to this non-project action.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]
This non-project action will not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]
None.

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe. [help]
Archeological and historic resources are recorded at the State of Washington Departments of Community, Trade and Economic Development, Office of Archeology and Historic Preservation.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]
A map and listing of all the historic resources is available at the Department of Planning and Community Development, 216 Prospect Street, Port Orchard, WA. 98366.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the

department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]
Not applicable to this non-project action.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.
None.

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]
State Route 16 connects the City with the balance of the Kitsap Peninsula. The City has an extensive system of arterials, suburban and local public streets. Location of, and access to, public streets and highways will be evaluated as part of site-specific project review and SEPA analysis.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]
The City is served by Kitsap Transit. Kitsap Transit operates a commuter system which is coordinated with the ferry schedules in neighboring communities in addition to a dial-a-ride service.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]
This is a non-project action. Parking requirements are contained in Chapter 16.45, *Parking Standards*, of the Port Orchard Municipal Code.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]
This non-project action will not create the need for any new or improved streets. Transportation facilities will be evaluated as part of site-specific project review and SEPA analysis.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]
The various modes of transportation will be evaluated as part of site-specific project review and SEPA analysis.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]
This non-project action will have no direct impact on vehicular trips. Trip generation and the cumulative impact will be evaluated as part of site-specific project review and SEPA analysis.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.
This non-project action will have no direct impact on, or be effected by, the movement of agricultural and forest products on roads or streets in the area. Movement of agricultural and forest products on roads or streets in the area will be evaluated as part of site-specific project review and SEPA analysis.

h. Proposed measures to reduce or control transportation impacts, if any: [help]
None.

15. **Public services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]
This non-project action will have little effect on public services, except as would normally be required for individual proposals. The need for public services will be evaluated as part of site-specific project review and SEPA analysis.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]
None.

16. **Utilities**

a. Circle utilities currently available at the site: [help]
electricity, **natural gas**, **water**, **refuse service**, **telephone**, **sanitary sewer**, **septic system**, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]
This non-project action will not directly affect public utilities. The provision of utilities for individual proposals will be evaluated as part of site-specific project review and SEPA analysis.

C. SIGNATURE [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Adam Schuyler

Name of signee ADAM SCHUYLER

Position and Agency/Organization PROJECT MANAGER / BHC

Date Submitted: 3/22/2016

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?
This non-project action will have no effect on discharges to water bodies. No negative impacts will occur in terms of emissions to air; production or storage of toxic or hazardous substances; or production of noise.

   Proposed measures to avoid or reduce such increases are:
Effects on discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise will be reviewed as part of site-specific review and SEPA analysis.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?
This non-project action will have no effects to plants, animals, fish or marine life. All specific effects to plant, animal, fish and other marine life will be evaluated as part of site-specific project review and SEPA analysis.

   Proposed measures to protect or conserve plants, animals, fish, or marine life are:
Effects of individual proposals on wildlife and marine life will be reviewed as part of site-specific review, and SEPA analysis.

3. How would the proposal be likely to deplete energy or natural resources?
This non-project action will not affect energy or natural resources. Effects of individual proposals on energy or natural resources will be reviewed as part of site-specific review, and SEPA analysis.

   Proposed measures to protect or conserve energy and natural resources are:
Construction of individual projects is reviewed under the Washington State Energy Code, adopted under Chapter 15 of the Port Orchard Municipal Code.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?
This non-project action not impact environmentally sensitive areas or other areas designated for protection. Effects of individual proposals on environmentally sensitive areas or other protected areas will be reviewed as part of site-specific review, and SEPA analysis.

   Proposed measures to protect such resources or to avoid or reduce impacts are:

Impacts of individual proposals on environmentally sensitive areas or other protected areas will be reviewed as part of site-specific review, and SEPA analysis.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?
This non-project action will not affect land or shoreline use. Impacts of individual proposals on land or shoreline use will be reviewed as part of site-specific review, and SEPA analysis.

   Proposed measures to avoid or reduce shoreline and land use impacts are:
   Impacts of individual proposals on land or shoreline use will be reviewed as part of site-specific review, and SEPA analysis.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?
This non-project action will have no effect on the demand for transportation or public service and utilities.

   Proposed measures to reduce or respond to such demand(s) are:
   None. Projects approved under this ordinance are subject to review by the City Planning Department, Public Works Department, and the local Health District.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.
The non-project proposal is consistent with all local, state and federal requirements for the protection of the environment.

Appendix B

Interlocal Agreements

WEST SOUND UTILITY DISTRICT

RESOLUTION 01-07

A RESOLUTION OF THE BOARD OF COMMISSIONERS
OF WEST SOUND UTILTIY DISTRICT NO.1
FORMALIZING AND PROVIDING GUIDANCE TO THE NEW DISTRICT

WHEREAS RCW 57.32.010 authorizes water and sewer districts to consolidate into combined districts if such combination "shall be conducive to the public health, welfare, and convenience and be of special benefit to the lands of the districts.", and

WHEREAS, the voters in Annapolis Water District and Karcher Creek Sewer District ("prior districts") approved the consolidation of each district into a new district entitled "West Sound Utility District No.1" at the November 6, 2007 general election; and

WHEREAS, Kitsap County certified the said election on November 27, 2007, which served to formally establish West Sound Utility District as a municipal corporation of Washington State, and terminate the legal existence of the prior districts; and

WHEREAS, West Sound's Board of Commissioners have determined to enter into this resolution to formalize creation of the new district and to establish initial guidance for its operation, now, therefore,

THE BOARD OF COMMISSIONERS OF WEST SOUND UTILITY DISTRICT ("West Sound") HEREBY RESOLVES as follows:

1. Prior Resolutions to Remain Valid. The resolutions entered into by the prior districts shall continue to be valid, to wit, the resolutions previously entered into by Annapolis Water District shall continue to govern West Sound's water operations, and the resolutions entered into by Karcher Creek Sewer District shall continue to govern West Sound's waste water operations. From this starting point, West Sound will act accordingly to consolidate, amend, and/or terminate the resolutions of the prior districts, so one uniform set of resolutions governing all district operations and matters will result.

2. Pre-Consolidation Debts. All pre-consolidation debts duly incurred, and agreements entered into, by Annapolis Water District and/or Karcher Creek Sewer District, shall continue to be honored by West Sound and satisfied according to their terms.

3. Management of Joint Wastewater Treatment Facility. Karcher Creek Sewer District presently has management responsibility for the Joint Wastewater Treatment Facility in South Kitsap County owned and operated with other governmental entities. West Sound shall assume all of Karcher Creek's prior management responsibilities for this facility as of the date of its formal creation.

4. One Finance Department. West Sound shall have one financial department and shall prepare a single consolidated district annual report.

5. Existing Water & Sewer Expenses / Future Expenses. All debts of Annapolis Water District at the time of consolidation shall be paid from the water supply related revenues of the West Sound, and all debts of Karcher Creek Sewer District at the time of consolidation shall be paid from the wastewater related revenues of West Sound. Thereafter, as a general proposition, water supply related debts shall be paid from water supply related revenues, and wastewater operation debts shall be paid from wastewater related revenues.

6. Revenue Bonds. Any revenue bonds representing the sole obligation of Annapolis Water District prior to consolidation, shall be satisfied after consolidation from water supply related revenues, and any revenue bonds representing the sole obligation of Karcher Creek Sewer District prior to consolidation, shall be satisfied after consolidation from wastewater operation revenues. Any cost sharing agreements for the repayment of revenue bonds in place between the prior districts before consolidation, shall continue unabated: that portion of the bonds to be repaid by Annapolis Water District, shall continue to be repaid from water supply operation revenues, and that portion of the bonds to be repaid by Karcher Creek Sewer District, shall continue to be repaid from wastewater operation revenues.

7. Administrative Expenses. The administrative expenses of West Sound, for those joint services provided to water supply and sewer operations, such as district management, financial administration, customer service, and the like, shall be paid jointly from water supply and sewer operation related revenues as determined by the board members of West Sound from time to time.

8. Insurance. At the time of consolidation, West Sound shall consolidate all the prior districts' respective insurance coverage, such as liability and casualty insurance, and obtain the same through the Water-Sewer Risk Pool. After consolidation, prior separate requirements placed on developers for project insurance dealing with water supply and wastewater shall be combined into one unified requirement.

9. Property Ownership. At the time of consolidation, all prior monies, personal property, and real property, owned by Annapolis Water District and Karcher Creek Sewer District, shall become the sole property of West Sound.

10. Consolidation Agreement. The Consolidation Agreement entered into by Annapolis Water District on March 28, 2007, and by Karcher Creek Sewer District on April 2, 2007, shall continue in effect as applicable.

11. General Manger / Legal Counsel. The General Manager of both prior districts, namely, LAWRENCE J. CURLES, shall continue to be the General Manager of West Sound. The prior general legal counsel for Annapolis Water

District, RICHARD GROSS, shall continue as the general legal counsel for West Sound.

INTRODUCED, CONSIDERED, AND PASSED THIS 12th DAY OF DECEMBER 2007.

Jerry Lundberg

Susan Way

William Huntington

James Hart

INTERGOVERNMENTAL CONTRACT FOR

WASTEWATER FACILITIES MANAGEMENT

1. Purpose of Agreement. It is the purpose of this contract to provide for an intergovernmental arrangement appropriate to carry out the improvement of the existing wastewater transmission, treatment and discharge facilities serving the City of Port Orchard and Sewer District No. 5 and capable of serving other areas as may in the future be so served, as called for in the Sinclair Inlet Sewerage Plan, dated June, 1976, and to operate and maintain such facilities. It is recognized that this contract may be relied on by the holders of revenue bonds of the Participants in this contract. This contract is entered into in accordance with RCW 35.13A.070 and amends and supersedes (1) the Intergovernmental Contract for Wastewater Facilities Management entered into by the City and the District on August 1, 1977; and (2) the Agreement for Trunk Line Expense entered into by the City and the District on August 9, 1977.

2. Definitions. The following words and phrases used in this contract shall have the following meanings:

(a) "City" shall mean the City of Port Orchard, Washington.

(b) "District" shall mean Sewer District No. 5, Kitsap County, Washington.

(c) "Equivalent Residential Unit (ERU)" shall mean:

(1) One separate single family residence; or

(2) With respect to residential duplexes and multiple residential structures, one per single family unit; or

(3) With respect to all remaining users served by the Joint Facilities, each 700 cubic feet or less

of monthly discharge of sewage based on metered water consumption.

An ERU shall be counted if the structure to which it is charged is either connected to or billed for availability of use by Local Facilities.

Any structure having a mixed residential and nonresidential use shall be charged one ERU for each residential unit and the estimated value of ERU usage for the balance of the structure.

(d) "Future Joint Facilities" shall mean any Joint Facilities, not Original Joint Facilities, which include all future additions and betterments to and improvements of the treatment plant described in subparagraph 2(e) as that will have been expanded and upgraded and all other sewerage facilities which the Participants shall from time to time agree in writing to include as Joint Facilities.

(e) "Joint Facilities" shall mean the sewage treatment facilities, sewage outfall lines, sewage pumping stations, sewage force mains, and appurtenances and communication facilities related thereto, and other sewage facilities which are used to transport, treat and dispose of sewage from more than one participant, and which include the Original Joint Facilities and Future Joint Facilities.

(f) "Joint Facilities Bonds" shall mean sewer revenue bonds issued by the City to pay only Joint Facility Costs of the Joint Facilities or Future Joint Facilities, and bonds issued to refund such bonds. The payment of the revenue bonds shall be made by assessments of properties within a utility local improvement district or districts to be created by the City, and which will include all property of the District together with properties adjoining that of the District.

(g) "Joint Facilities Costs" shall include all costs and expenses attributable to the construction and installation of Joint Facilities and financing thereof, including but not limited to the actual cost of design and construction, relocation of the District's office, compliance with any applicable environmental policy act or procedures, engineering fees, legal fees, financial consultant fees, interest during construction, Joint Facilities Bond discount, taxes, publication costs, contract administration costs and other costs and expenses relating to the planning, design, construction, installation, and financing of the treatment plant and such office relocation, excluding the costs of acquiring all land necessary to the construction of the treatment plant as a part of the Original Joint Facilities. Joint Facilities costs include the costs and expenses attributable to the construction and installation of the Port Orchard Marina pump station and force main.

(h) "Joint Facilities Maintenance and Operation Expenses" shall mean all costs and expenses relating to labor, fringe benefits, power, light, water, heat, chemicals, equipment including repair and replacement thereof, tools, materials, supplies, insurance premiums, contract services, legal services, inspections and tapes and "in lieu of taxes" directly and properly chargeable to the operation and maintenance of the Joint Facilities plus administrative overhead expenses chargeable to the Joint Facilities.

(i) "Local Facilities" shall mean all sewer facilities other than Joint Facilities owned or operated by individual Participants for the local collection and transmission of sewage to be delivered to the Joint Facilities.

(j) "Original Joint Facilities" shall mean the sewage treatment plant constructed pursuant to this contract, the force main and the pumping station from the City, and the necessary

land required therefor, all as more specifically described in Exhibits A and B.

(k) "Participants" shall mean the City and the District, and hereafter any other political subdivision or municipal corporation which contracts with the then existing Participants to be served by the Joint Facilities pursuant to the terms of this contract and such other terms as may then be agreed upon, but Participants may agree to permit any person or governmental entity to use the Joint Facilities without becoming a Participant.

3. Land and Right-of-Way Acquisition. It is understood by and between the Participants that the treatment plant as a part of the Original Joint Facilities shall be wholly constructed on land, described on Exhibit A attached hereto and by this reference made a part hereof, which is located outside the present corporate limits of the City. The portion of such land identified as "state land" on Exhibit A shall be acquired by the City from the State of Washington at the sole expense of the City. The cost of acquiring the "state land" by the City shall not be included within the Joint Facilities Costs. All right, title and interest in and to the remaining portion of the land necessary to the construction and completion of the treatment plant, identified as "sewer district land" on Exhibit A, is presently owned by the District. In consideration of the exercise of the rights set forth herein, the District hereby covenants to convey to the City all of its right, title and interest to the "sewer district land" for Joint Facilities purposes, but subject to reversion to the District when it is no longer used for such purposes.

4. Construction of the Original Joint Facilities. Except as otherwise provided in the Agreement, the City shall construct

the sewage treatment plant and the other Original Joint Facilities described on Exhibit B, attached hereto and by this reference made a part hereof. Construction shall include, but not be limited to, engineering design and inspection, financing and legal services, advertising for bids, awarding construction contracts, supervising and inspecting construction and accepting work as complete.

(a) The City, with the participation of the District as described below, will create a utility local improvement district or districts, and assessments shall be pledged to the payment of revenue bonds which shall be issued to finance the Joint Facility Costs. Such utility local improvement district or districts will include all property of the District, together with properties adjoining that of the District.

(b) The District shall have the right to approve the inclusion of any properties outside the District within the utility local improvement district and shall further have the right to final approval of the assessment formula for the utility local improvement district for properties within and outside the District, but not within the corporate boundaries of the City.

(c) In addition to revenue raised from bonds, as provided herein, the City shall apply for and administer federal and state grants available therefor, and shall secure such regulatory approvals and make such environmental assessments as may be required.

(d) During construction of the Original Joint Facilities, any change order exceeding by $1,000.00 the amount stated in the original contract specifications, as bid, must be approved by one representative of both the City and the District, those representatives being voting members of the Advisory Committee as provided below.

(e) The District reserves the right to withdraw from this Agreement before the award of a construction contract if the total Joint Facilities costs exceed $16,000,000 after bids have been ~~advertised~~ opened.

5. Maintenance and Operation of Joint Facilities. The maintenance and operation of the Joint Facilities shall be conducted as follows:

(a) The District shall maintain and operate the Joint Facilities in accordance with high engineering standards and in conformity with the then current standards and requirements established by applicable state and federal agencies having jurisdiction over such maintenance and operation. Included with such maintenance and operation shall be the carrying of public liability insurance with limits in accordance with standard practice at any such time. The District shall hold the other Participants harmless and defend all claims for personal injury or property damage arising out of the maintenance and operation of the Joint Facilities which are not caused by neglect or failure of such Participants to perform maintenance or operation as contemplated in paragraph 11.

(b) In the event of mismanagement by the District materially affecting the cost of maintenance or operation of the Joint Facilities, or a material violation of state or federal standards or requirements due to neglect, misfeasance or malfeasance by the District, operation and maintenance shall revert to the City subject to the maintenance and operations standards set forth in paragraph 5. It shall be the responsibility of the Advisory Committee and/or an Arbitrator, as provided in paragraph 15, to determine whether there has been a violation, mismanagement or failure by the District so material as to warrant transfer of management and operation of the Joint Facilities to the City.

(c) The party responsible for operation and maintenance of the Joint Facilities shall be liable for all penalties and assessments charged against the Facility by any state or federal agency resulting from negligence, misfeasance or malfeasance in the maintenance and operation of the facility, and shall further indemnify and hold harmless the other from any such penalty or assessment.

(d) The employment of the Chief Operator of the Joint Facilities shall be made by the District only upon the express approval of the Advisory Committee.

(e) In the event that a supervisor of the District is responsible to oversee the function of the Chief Operator, not more than 20% of the salary of the supervisor shall be charged as a Joint Facility Maintenance and Operation Expense. Clerical support will be a Joint Facility Maintenance and Operation Expense as required, subject to review of the Advisory Committee.

6. Financing Construction and Maintenance of Joint Facilities.

(a) The Joint Facilities Costs shall be financed by a utility local improvement district as provided in paragraph 4. The costs for said Joint Facilities shall be shared as follows:

(1) Each party shall pay an amount proportionate to the assessed valuation of the properties of each party as it bears to the total assessed valuation of the properties included in the utility local improvement district.

(2) For purposes of determining the assessed valuation of the properties of the parties, the District shall include all properties within and adjoining its boundaries but not within the corporate boundaries of the City.

(3) Each party's proportionate share of the cost for the Original Joint Facilities, as provided above, shall

determine the proportionate interest that each party has in the plant capacity, measured in terms of ERU's.

(b) Either party shall have the right to acquire additional ERU's from the other party. The party acquiring any additional ERU shall pay to the other an amount agreed upon by the parties. If the parties cannot agree upon an amount, the valuation of the ERU shall be submitted to the Advisory Committee and in the event of dispute the valuation shall be determined by binding arbitration, as provided in paragraph 13.

(c) The costs of those facilities not included within the Joint Facilities as defined in paragraph 2(e) or within the Joint Facilities Costs as defined in paragraph 2(g), shall be the sole responsibility of the party constructing them.

(d) Joint Facilities Maintenance and Operations Expenses shall be paid as follows:

(1) Within three months of completion of construction and by October 1 of each year thereafter, the District shall notify the City of its proposed budget for the Joint Facilities, showing the Joint Facilities Maintenance and Operation Expense and the ERU charge rate for the ensuing year. Thereafter the District shall adopt its final budget, subject to approval of the Advisory Committee. The ERU charges for the Participants shall be based on that final budget, except as otherwise provided in this paragraph. By October 1 of each year following the year in which the estimates apply, the District shall determine and notify the City of the actual Joint Facilities Maintenance and Operation Expenses. If the actual requirements and expenses exceed the total payments made by the City and District pursuant to this paragraph for that preceding calendar year, then the City within thirty (30) days after such notification shall pay to the District its share, based on its total ERUs for the previous year, of that deficit. If the

actual requirements and expenses were less than the total payments made by the City and District pursuant to this paragraph for that preceding calendar year, then the District shall retain those excess payments and credit the excess payments against the next payments due from the City.

(2) During any year the District shall operate within the Joint Facilities budget. Expenditures not included in the budget shall not be made without the approval of the Advisory Committee. Should the Joint Facilities Maintenance and Operation Expenses increase above budget estimates, the District shall notify the Advisory Committee, which shall have the sole power to amend the Joint Facilities budget and to increase the ERU charge rate to the Participants, after first notifying the City of such increase. Any amendment to the Joint Facilities budget will be made only after demonstrating actual need, based on unforeseen circumstances over which the District had no reasonable control.

(3) Neither the District nor the City shall have an interest in the Local Facilities of the other, and each party shall be solely responsible for the management, operation, and expense of its Local Facilities. The management ~~, and~~ operation, and maintenance of the Port Orchard Marina Pump Station and transmission line, and force main transmission line from Port Orchard to the treatment plant and the expenses thereof shall be the sole responsibility of the City.

7. Billings - Payments. Commencing on _____ for all City ERU charges prescribed in paragraph 6, the District shall bill the City on the first day of each calendar month for charges accrued to the first day of the immediately preceding month, and the City shall pay such charges so billed by the 20th day of the month in which such bill is received, after which time such billing shall be delinquent. Charges omitted in one month may be billed in the following months. Delinquent charges

shall accrue interest on the unpaid balance at the rate of 8% per annum from date of delinquency until paid.

8. Covenants to Make Payments. The City irrevocably covenants, obligates and binds itself to pay the District the charges representing the City's share of the Joint Facilities Maintenance and Operation Expenses as determined in accordance with paragraph 6(d), out of the gross sewer revenues and/or water and sewer revenues of the ~~District,~~ City or from such other money legally available to the ~~District~~ City for such purpose as determined by the ~~District~~ City, and such sewage service charges shall, subject to the qualification below, be deemed maintenance and operation expenses of the City's system of sewers or water and sewer system in any future bond issue or other financing of the City payable in whole or in part from the revenues of such system and shall be payable and constitute a charge prior and superior to any charge or lien of any revenue bonds issued by the City payable from the gross revenues of its system, unless such future bond issue or other financing shall be on a parity of lien on such revenues with presently outstanding revenue bonds and such outstanding bonds do not permit such priority of payment.

It is recognized that the City has outstanding revenue bonds payable in whole or in part from the gross revenues of its sewerage and/or water system. Nothing in this section is intended to violate, nor shall it be construed to violate, any covenants respecting those outstanding bonds, and such covenants, to the extent there is a conflict between them and this section, shall control with respect to such outstanding bonds and bonds issued on a parity therewith.

The City irrevocably covevants and agrees to establish rates and collect fees for sewer service or sewer and water service in the case of a combined utility which will be at least

sufficient to pay the sewer service charge to the District and to pay the other maintenance and operation expenses of its system and the principal of and interest on all revenue bonds issued by it for its sewer or water and sewer utility and to meet the coverage covenants thereof which will constitute a charge upon the gross revenues of its system. The District agrees to establish rates and collect fees for sewer service which will be at least sufficient to pay the expenses of maintenance and operation of its water and sewer utility and meet the principal, interest and coverage requirements of any and all revenue bonds of the District which constitute a charge upon the gross revenue of such utility.

9. Maintenance of Local Facilities and Sewage Quality - Insurance - Liability. The Participants shall maintain and operate their respective Local Facilities and control and regulate the discharge of sewage into those Local Facilities in accordance with high engineering standards and in conformity with the standards established by the state and federal agencies having jurisdiction over the same. If there are any deficiencies in the respective Local Facilities or the discharge of sewage into them causing excessive flow or below standard quality sewage, such deficiencies shall be corrected by the applicable Participant forthwith. Deficiencies may constitute excessive flow, BOD discharges for a five-day period of over 300 parts per million, suspended solids over 300 parts per million, or quality of sewage discharge which damages the sewage treatment process or Joint Facilities, increases the Joint Facilities Maintenance and Operation Expenses per unit of sewage treated, or causes the violation of any federal or state law or regulation. The offending Participant shall pay for any additional cost or expense caused by its breach of this paragraph.

10. Local Rates and Charges. Each Participant agrees to conform its rates and charges for sewage collection, treatment and disposal service to equitable standards consistent with the requirements of applicable federal and state agencies, including the United States Environmental Protection Agency.

11. Expansion - Improvement of Joint Facilities.

(a) Expansion. At such time as any of the Joint Facilities (a) reach 90% of capacity, or (b) are required to be expanded by federal, state or other governmental agencies having jurisdiction over the facilities, the City shall immediately commence the planning, design and construction of the expansion of such Future Joint Facilities. Expansion of the Joint Facilities shall be deemed required if directed by a federal, state or other governmental agency in order to comply with existing standards or regulations of such agency or applicable statutes. The Future Joint Facilities to be constructed shall be agreed upon by the Participants, but in no event shall be of a less capacity and quality than is required by applicable federal, state or local standards or regulations or the minimum capacity and quality which good engineering practice would dictate under the circumstances. Should the City fail to initiate and/or complete the expansion, the District may assume the planning and design responsibilities and cause the construction to be done, and may issue its revenue bonds to pay the costs thereof, and such bonds shall be deemed Joint Facilities Bonds for the purposes of required payments under this contract. The Participants shall confer and negotiate a method for financing the expansion which shall be based on the method of payment for the original Joint Facilities Costs as set forth in this contract at paragraph 6.

(b) Improvement. If regulatory agencies with jurisdiction over the Joint Facilities direct the upgrading of the

Joint Facilities by the making of qualitative improvements to such facilities, the City shall immediately commence the planning, design and construction of the improvements. Should the City fail to initiate and/or complete the improvements, the District shall assume the planning and design responsibilities and cause the improvements to be made, and may issue its sewer revenue bonds to pay the costs thereof, and such bonds shall be deemed Joint Facilities Bonds for the purposes of required payments under this contract. The Participants shall confer and negotiate a method for financing the improvements which shall be based on the method of payment for the original Joint Facilities Costs as set forth in this contract at paragraph 6.

12. Advisory Committee. For the purpose of reviewing the maintenance and operation of the Joint Facilities, the plans for Future Joint Facilities, to foster cooperation between the Participants under this Contract and otherwise perform the duties assigned to it by this Contract, there is created the Joint Sewerage Facilities Advisory Committee which shall consist of three (3) representatives of each of the Participant's legislative bodies, which appointments shall be made as determined by the individual Participants. Each representative shall have one vote in the committee, including the chairperson.

The Advisory Committee shall select its chairman and such other officers, shall fix a time and place of its meetings, and establish such rules and procedures as it deems appropriate. Except as provided below, the Advisory Committee shall be advisory to the Participants respecting all conditions required in the Contract. The District shall submit to the Advisory Committee all proposed and final budgets, grants, grant applications and other matters it deems appropriate or the Advisory Committee requests relating to the Joint Facilities. All Participants shall submit to the Advisory Committee annually and

at other times when requested, all data pertaining to water consumption, sewerage discharge, sewer connections, sewage quality, plans for additional Local Facilities, ERUs and other information relating to the Joint Facilities.

The first task of the Advisory Committee shall be the review and assessment of all nonresidential units of each Participant connected or billed for availability of use to the Local Facilities and the assignment of an initial ERU factor for each such use. The Advisory Committee shall annually review the ERU factor assigned to each nonresidential unit and shall make necessary adjustments based on actual or estimated sewage discharge as the committee deems appropriate.

13. Disputes. In the event of a dispute between any of the Participants relating to the amount of Joint Facilities Costs, the estimated or actual Joint Facilities Maintenance and Operation Expenses, the number of ERUs of any Participant or the compliance with any maintenance, operation or construction standards or requirements, any party to such dispute may submit the dispute to the Superior Court of Kitsap County for arbitration proceedings provided by Chapter 7.04 RCW. Such arbitration shall be limited to the interpretation and application of this contract and may not impair the contract and debt obligations of ~~Port Orchard~~ the City or the District, or the powers of the District to determine the methods used in the management of the Joint Facilities. The arbitrator appointed shall prescribe the rules of the arbitration not agreed upon by the parties to the dispute. The parties to the dispute may agree upon any other method of resolving this dispute.

14. Industrial Cost Recovery - Industrial Share Payment. Under the provisions of United States Public Law 92-500 sewerage agencies providing wastewater treatment must identify all industrial/commercial waste dischargers as defined by the United

States Environmental Protection Agency (EPA). Once identified, PL 92-500 requires that the industry must repay that portion of any federal grant received by local agencies for wastewater treatment relating to the treatment of that discharger's industrial waste discharges.

Each Participant agrees that any waste discharger whose total discharge into the Joint Facilities is sufficient to cause that discharger to be classified as a significant industrial waste discharger (as described by Pretreatment of Pollutants Introduced into Publicly Owned Treatment Works, October, 1973, EPA, as that publication or the standards contained therein may be changed from time to time by EPA) shall be required to enter into a contract with the Participant into the Local Facilities of which that discharger discharges sewage in order to provide for waste treatment services and the payment of the required local and industrial cost recovery costs pursuant to PL 92-500 and federal and state regulations.

Any Participant which receives industrial cost recovery funds from any affected industry or a federal or state agency shall pay all such money to the City which in turn shall use that money for the same purposes as set forth for payments by the District attributable to bond coverage in paragraph 10, but no matching money from any Participant shall be required.

In addition to the industrial cost recovery payment and any sewer charges of a Participant for its Local Facilities, the industry shall pay to the City or to the District for payment to the City its share of the Joint Facilities Costs based on its share of sewage flow capacity and the cost of those portions of the Joint Facilities designed to handle BOD loadings and suspended solids from that industry and the industry's share of the Joint Facilities Maintenance and Operation Expenses and bond coverage requirements based on sewage flow and the expenses

of handling and treating the BOD loadings and suspended solids for that industry, which additional payment is referred to in this contract as the "industrial share payment." The precise amount of the industrial share payment payable by any industry cannot be determined at this time, but will be specified in a later contract between that industry, the Participant, the Local Facilities into which that industry initially discharges it sewage, and the City, which later contract shall also provide for the times and manner such payment will be made.

15. Access to Joint Facilities - Cooperation. The Participants enter into this contract committing all sewage discharges into their Local Facilities to be transported to the Joint Facilities for treatment and disposal, thus foregoing the opportunity of treating and disposing of such sewage individually and not risking the control of the growth of, or the accessibility to, sewers to property owners within their respective communities by other Participants or, to property owners lying outside the boundaries of all Participants but within the areas for which the Joint Facilities are designed to serve, by any Participant. Because this contract contemplates that all Participants will be using the Joint Facilities and most, if not all, participants will be transporting sewage collected in their Local Facilities through the political jurisdictions of one or more other Participants, the Participants declare and agree that this contract is not intended as an instrument to permit one Participant to control the amount of sewerage collection service furnished by another or by a nonparticipant within the area for which the Joint Facilities are designed to serve, and all Participants will cooperate to provide the others, Participants and such nonparticipants alike, with reasonable access for sewage flow to the Joint Facilities either by sharing capacity, if reasonably available, through Local Facilities at reasonable and

nondiscriminatory charges or by permitting the acquisition of necessary rights-of-way, franchises and permits through and under puolic streets and property under reasonable conditions for such access.

Participants agree that they will permit any area outside their boundaries but within the designed service area of the Joint Facilities to be served by those Joint Facilities in accordance with the above standards and under terms respecting the quantity and quality of sewage discharge no more burdensome than those applicable to Participants. Other terms may be provided relating to "late comers'" sharing equitably in the capital investment of the Participants in the Joint Facilities. The Participants may agree to permit other municipal corporations and political subdivisions to become Participants under this contract as long as such new Participant agrees to abide by the covenants in paragraph 8 and assumes like responsibilities of the District provided in this contract.

16. Assignment. Without the written consent of all Participants no Participant shall have the right to assign this contract or any of its rights and obligations hereunder either by operation of law or by voluntary agreement or to terminate its obligations hereunder by dissolution or otherwise unless one Participant shall be lawfully merged into another Participant, municipal corporation or political subdivision, or all of the Local Facilities of one Participant located within the area for which the Joint Facilities were designed to serve shall be lawfully acquired by another Participant, and this contract shall be binding upon and inure to the benefit of the respective successors and assigns of the Participants, except that in the event that a metropolitan municipal corporation shall be created pursuant to law to perform the function of sewage disposal for the area for which the Joint Facilities are designed to serve,

the City may assign the Joint Facilities' responsibilities hereunder to such metropolitan municipal corporation subject to all other terms and conditions of this contract. In the event that any Participant should be dissolved or should no longer be authorized to operate sewer facilities, the Local Facilities owned and operated by such Participant shall be assigned and transferred to the City subject to any outstanding debts of the Participant which had been incurred for the specific purpose of constructing or acquiring such facilities and subject to the acceptance by the City of the obligation to continue to provide sewer service to the residents served by such Local Facilities upon payment by such residents of sewage disposal charges determined as herein provided and the reasonable costs of local sewer service.

17. Notices. Whenever in this contract notice is required to be given, the same shall be given by registered mail addressed to the respective Participants at the following addresses:

City of Port Orchard
City Hall
216 Prospect
P. O. Box 186
Port Orchard, Washington 98366

Kitsap County Sewer District No. 5
1344 ~~2200~~ Beach Drive
Port Orchard, Washington 98366

unless a different address shall be hereafter designated in writing by either of the Participants.

The date of giving such notice shall be deemed to be the date of mailing thereof. Billings and payments described in paragraph 7 may be made by regular mail.

18. Effective Date - Term of Contract. The effective date of this contract shall be _____, 1983. Because this contract gives all Participants rights to use and, therefore, interest in the Joint Facilities, such rights must continue until by agreement they are terminated. This contract shall be for at least a term of 35 years from August 1, 1977, or

such longer period as any Joint Facilities Bonds are outstanding or the payment thereof is not fully provided for, secured and funded, and shall continue thereafter until terminated by the agreement of all Participants. Any Participant may individually withdraw from the obligations of this contract with the consent of the other Participants after all of such bonds are retired or payment thereof is fully provided for, secured and funded, and the remaining Participants shall continue to be bound by this contract as it may be amended.

IN WITNESS WHEREOF, the Participants hereto have executed this contract as of January 31, 1983.

CITY OF PORT ORCHARD, WASHINGTON

By [signature]

Title Mayor

Attest _____

Title _____

SEWER DISTRICT NO. 5
KITSAP COUNTY, WASHINGTON

[signature]
Commissioner

[signature]
Commissioner

[signature]
Commissioner

0205p

PORT ORCHARD-SEWER DISTRICT NO. 5

WASTEWATER FACILITIES MANAGEMENT CONTRACT

AMENDMENTS

The January 31, 1983, "Intergovernmental Contract for Wastewater Facilities Management" is amended as follows:

1. There is added to subparagraph 2(h), (definition of "Joint Facilities Maintenance and Operation Expenses") between the word "types" and the word "and" on line six of that subparagraph, the following words: ,"debt service coverage requirements on City-issued revenue bonds".

2. A new subparagraph 6(e) is added as follows:
"(e) The parties shall share debt service coverage requirements for the revenue bonds issued by the City under Section 4(a), consistent with the coverage provisions of the ordinance authorizing the issuance of such bonds; each party shall maintain debt service coverage in an amount proportionate to the initial assessed valuation of the properties of each party as it bears to the total initial assessed valuation of the properties included in the utility local improvement district. The cost of maintaining coverage

requirements shall be treated as a maintenance and operation expense of the Joint Facilities. If, when any principal or interest payment is due on the City revenue bonds referred to in paragraph 4(a), above, sufficient money is not available to make such payment from utility local improvement district assessments or any reserve fund established for payment of debt service on the bonds, the City may draw upon funds maintained by the District for debt service coverage and apply those funds to the payment of principal and interest on the bonds. The City shall draw upon each party's debt service coverage funds in an amount proportionate to the initial assessed valuation of the properties included in the utility local improvement district. In the event the City issues additional obligations to pay for improvements relating to a utility local improvement district that includes properties within the District, the District shall adjust the debt service coverage amounts it maintains in order to maintain an amount of coverage consistent with the terms of the ordinance authorizing such additional obligations."

IN WITNESS WHEREOF, the parties hereto have executed these amendments as of 4 November, 1983.

CITY OF PORT ORCHARD, WASHINGTON

By Lee F. Caldwell
Mayor

Attest
City Clerk

SEWER DISTRICT NO. 5

Commissioner

Commissioner

Commissioner

0391p

RESOLUTION NO. 1328

A RESOLUTION OF THE CITY OF PORT ORCHARD AUTHORIZING THE MAYOR TO SIGN CONTRACT RELATIVE TO AMENDMENTS TO WASTEWATER FACILITIES MANAGEMENT CONTRACT BETWEEN CITY OF PORT ORCHARD AND KITSAP COUNTY SEWER DISTRICT NO. 5

THE CITY COUNCIL OF THE CITY OF PORT ORCHARD DOES HEREBY RESOLVE:

THAT: the Mayor of the City of Port Orchard be and hereby is authorized to sign City of Port Orchard - Kitsap County Sewer District No. 5 Wastewater Facilities Management Contract Amendments adding subparagraphs relative to both parties sharing debt service coverage requirements for the revenue bonds issued by the City of Port Orchard.

PASSED by the City Council and APPROVED by the Mayor of the City of Port Orchard on this 28th day of November, 1983.

Lee F. Caldwell
LEE F. CALDWELL, MAYOR

ATTEST:

R. G. Lloyd
R. G. Lloyd, City Clerk

INTERGOVERNMENTAL CONTRACT FOR

WASTEWATER FACILITIES MANAGEMENT

1. Purpose of Agreement. It is the purpose of this contract to provide for an intergovernmental arrangement appropriate to carry out the improvement of the existing wastewater transmission, treatment and discharge facilities serving the City of Port Orchard and Sewer District No. 5 and capable of serving other areas as may in the future be so served, as called for in the Sinclair Inlet Sewerage Plan, dated June, 1976, and to operate and maintain such facilities. It is recognized that this contract may be relied on by the holders of revenue bonds of the Participants in this contract. This contract is entered into in accordance with RCW 35.13A.070 and amends and supersedes (1) the Intergovernmental Contract for Wastewater Facilities Management entered into by the City and the District on August 1, 1977; and (2) the Agreement for Trunk Line Expense entered into by the City and the District on August 9, 1977.

2. Definitions. The following words and phrases used in this contract shall have the following meanings:

(a) "City" shall mean the City of Port Orchard, Washington.

(b) "District" shall mean Sewer District No. 5, Kitsap County, Washington.

(c) "Equivalent Residential Unit (ERU)" shall mean:

(1) One separate single family residence; or

(2) With respect to residential duplexes and multiple residential structures, one per single family unit; or

(3) With respect to all remaining users served by the Joint Facilities, each 700 cubic feet or less

of monthly discharge of sewage based on metered water consumption.

An ERU shall be counted if the structure to which it is charged is either connected to or billed for availability of use by Local Facilities.

Any structure having a mixed residential and nonresidential use shall be charged one ERU for each residential unit and the estimated value of ERU usage for the balance of the structure.

(d) "Future Joint Facilities" shall mean any Joint Facilities, not Original Joint Facilities, which include all future additions and betterments to and improvements of the treatment plant described in subparagraph 2(e) as that will have been expanded and upgraded and all other sewerage facilities which the Participants shall from time to time agree in writing to include as Joint Facilities.

(e) "Joint Facilities" shall mean the sewage treatment facilities, sewage outfall lines, sewage pumping stations, sewage force mains, and appurtenances and communication facilities related thereto, and other sewage facilities which are used to transport, treat and dispose of sewage from more than one participant, and which include the Original Joint Facilities and Future Joint Facilities.

(f) "Joint Facilities Bonds" shall mean sewer revenue bonds issued by the City to pay only Joint Facility Costs of the Joint Facilities or Future Joint Facilities, and bonds issued to refund such bonds. The payment of the revenue bonds shall be made by assessments of properties within a utility local improvement district or districts to be created by the City, and which will include all property of the District together with properties adjoining that of the District.

(g) "Joint Facilities Costs" shall include all costs and expenses attributable to the construction and installation of Joint Facilities and financing thereof, including but not limited to the actual cost of design and construction, relocation of the District's office, compliance with any applicable environmental policy act or procedures, engineering fees, legal fees, financial consultant fees, interest during construction, Joint Facilities Bond discount, taxes, publication costs, contract administration costs and other costs and expenses relating to the planning, design, construction, installation, and financing of the treatment plant and such office relocation, excluding the costs of acquiring all land necessary to the construction of the treatment plant as a part of the Original Joint Facilities. Joint Facilities costs include the costs and expenses attributable to the construction and installation of the Port Orchard Marina pump station and force main.

(h) "Joint Facilities Maintenance and Operation Expenses" shall mean all costs and expenses relating to labor, fringe benefits, power, light, water, heat, chemicals, equipment including repair and replacement thereof, tools, materials, supplies, insurance premiums, contract services, legal services, inspections and tapes and "in lieu of taxes" directly and properly chargeable to the operation and maintenance of the Joint Facilities plus administrative overhead expenses chargeable to the Joint Facilities.

(i) "Local Facilities" shall mean all sewer facilities other than Joint Facilities owned or operated by individual Participants for the local collection and transmission of sewage to be delivered to the Joint Facilities.

(j) "Original Joint Facilities" shall mean the sewage treatment plant constructed pursuant to this contract, the force main and the pumping station from the City, and the necessary

land required therefor, all as more specifically described in Exhibits A and B.

(K) "Participants" shall mean the City and the District, and hereafter any other political subdivision or municipal corporation which contracts with the then existing Participants to be served by the Joint Facilities pursuant to the terms of this contract and such other terms as may then be agreed upon, but Participants may agree to permit any person or governmental entity to use the Joint Facilities without becoming a Participant.

3. Land and Right-of-Way Acquisition. It is understood by and between the Participants that the treatment plant as a part of the Original Joint Facilities shall be wholly constructed on land, described on Exhibit A attached hereto and by this reference made a part hereof, which is located outside the present corporate limits of the City. The portion of such land identified as "state land" on Exhibit A shall be acquired by the City from the State of Washington at the sole expense of the City. The cost of acquiring the "state land" by the City shall not be included within the Joint Facilities Costs. All right, title and interest in and to the remaining portion of the land necessary to the construction and completion of the treatment plant, identified as "sewer district land" on Exhibit A, is presently owned by the District. In consideration of the exercise of the rights set forth herein, the District hereby covenants to convey to the City all of its right, title and interest to the "sewer district land" for Joint Facilities purposes, but subject to reversion to the District when it is no longer used for such purposes.

4. Construction of the Original Joint Facilities. Except as otherwise provided in the Agreement, the City shall construct

the sewage treatment plant and the other Original Joint Facilities described on Exhibit B, attached hereto and by this reference made a part hereof. Construction shall include, but not be limited to, engineering design and inspection, financing and legal services, advertising for bids, awarding construction contracts, supervising and inspecting construction and accepting work as complete.

(a) The City, with the participation of the District as described below, will create a utility local improvement district or districts, and assessments shall be pledged to the payment of revenue bonds which shall be issued to finance the Joint Facility Costs. Such utility local improvement district or districts will include all property of the District, together with properties adjoining that of the District.

(b) The District shall have the right to approve the inclusion of any properties outside the District within the utility local improvement district and shall further have the right to final approval of the assessment formula for the utility local improvement district for properties within and outside the District, but not within the corporate boundaries of the City.

(c) In addition to revenue raised from bonds, as provided herein, the City shall apply for and administer federal and state grants available therefor, and shall secure such regulatory approvals and make such environmental assessments as may be required.

(d) During construction of the Original Joint Facilities, any change order exceeding by $1,000.00 the amount stated in the original contract specifications, as bid, must be approved by one representative of both the City and the District, those representatives being voting members of the Advisory Committee as provided below.

(e) The District reserves the right to withdraw from this Agreement before the award of a construction contract if the total Joint Facilities costs exceed $16,000,000 after bids have been ~~advertised~~ opened.

5. Maintenance and Operation of Joint Facilities. The maintenance and operation of the Joint Facilities shall be conducted as follows:

(a) The District shall maintain and operate the Joint Facilities in accordance with high engineering standards and in conformity with the then current standards and requirements established by applicable state and federal agencies having jurisdiction over such maintenance and operation. Included with such maintenance and operation shall be the carrying of public liability insurance with limits in accordance with standard practice at any such time. The District shall hold the other Participants harmless and defend all claims for personal injury or property damage arising out of the maintenance and operation of the Joint Facilities which are not caused by neglect or failure of such Participants to perform maintenance or operation as contemplated in paragraph 11.

(b) In the event of mismanagement by the District materially affecting the cost of maintenance or operation of the Joint Facilities, or a material violation of state or federal standards or requirements due to neglect, misfeasance or malfeasance by the District, operation and maintenance shall revert to the City subject to the maintenance and operations standards set forth in paragraph 5. It shall be the responsibility of the Advisory Committee and/or an Arbitrator, as provided in paragraph 15, to determine whether there has been a violation, mismanagement or failure by the District so material as to warrant transfer of management and operation of the Joint Facilities to the City.

(c) The party responsible for operation and maintenance of the Joint Facilities shall be liable for all penalties and assessments charged against the Facility by any state or federal agency resulting from negligence, misfeasance or malfeasance in the maintenance and operation of the facility, and shall further indemnify and hold harmless the other from any such penalty or assessment.

(d) The employment of the Chief Operator of the Joint Facilities shall be made by the District only upon the express approval of the Advisory Committee.

(e) In the event that a supervisor of the District is responsible to oversee the function of the Chief Operator, not more than 20% of the salary of the supervisor shall be charged as a Joint Facility Maintenance and Operation Expense. Clerical support will be a Joint Facility Maintenance and Operation Expense as required, subject to review of the Advisory Committee.

6. Financing Construction and Maintenance of Joint Facilities.

(a) The Joint Facilities Costs shall be financed by a utility local improvement district as provided in paragraph 4. The costs for said Joint Facilities shall be shared as follows:

(1) Each party shall pay an amount proportionate to the assessed valuation of the properties of each party as it bears to the total assessed valuation of the properties included in the utility local improvement district.

(2) For purposes of determining the assessed valuation of the properties of the parties, the District shall include all properties within and adjoining its boundaries but not within the corporate boundaries of the City.

(3) Each party's proportionate share of the cost for the Original Joint Facilities, as provided above, shall

determine the proportionate interest that each party has in the plant capacity, measured in terms of ERU's.

(b) Either party shall have the right to acquire additional ERU's from the other party. The party acquiring any additional ERU shall pay to the other an amount agreed upon by the parties. If the parties cannot agree upon an amount, the valuation of the ERU shall be submitted to the Advisory Committee and in the event of dispute the valuation shall be determined by binding arbitration, as provided in paragraph 13.

(c) The costs of those facilities not included within the Joint Facilities as defined in paragraph 2(e) or within the Joint Facilities Costs as defined in paragraph 2(g), shall be the sole responsibility of the party constructing them.

(d) Joint Facilities Maintenance and Operations Expenses shall be paid as follows:

(1) Within three months of completion of construction and by October 1 of each year thereafter, the District shall notify the City of its proposed budget for the Joint Facilities, showing the Joint Facilities Maintenance and Operation Expense and the ERU charge rate for the ensuing year. Thereafter the District shall adopt its final budget, subject to approval of the Advisory Committee. The ERU charges for the Participants shall be based on that final budget, except as otherwise provided in this paragraph. By October 1 of each year following the year in which the estimates apply, the District shall determine and notify the City of the actual Joint Facilities Maintenance and Operation Expenses. If the actual requirements and expenses exceed the total payments made by the City and District pursuant to this paragraph for that preceding calendar year, then the City within thirty (30) days after such notification shall pay to the District its share, based on its total ERUs for the previous year, of that deficit. If the

actual requirements and expenses were less than the total payments made by the City and District pursuant to this paragraph for that preceding calendar year, then the District shall retain those excess payments and credit the excess payments against the next payments due from the City.

(2) During any year the District shall operate within the Joint Facilities budget. Expenditures not included in the budget shall not be made without the approval of the Advisory Committee. Should the Joint Facilities Maintenance and Operation Expenses increase above budget estimates, the District shall notify the Advisory Committee, which shall have the sole power to amend the Joint Facilities budget and to increase the ERU charge rate to the Participants, after first notifying the City of such increase. Any amendment to the Joint Facilities budget will be made only after demonstrating actual need, based on unforeseen circumstances over which the District had no reasonable control.

(3) Neither the District nor the City shall have an interest in the Local Facilities of the other, and each party shall be solely responsible for the management, operation, and expense of its Local Facilities. The management, ~~and~~ operation, and maintenance of the Port Orchard Marina Pump Station and transmission line, and force main transmission line from Port Orchard to the treatment plant, and the expenses thereof shall be the sole responsibility of the City.

7. Billings - Payments. Commencing on _____ for all City ERU charges prescribed in paragraph 6, the District shall bill the City on the first day of each calendar month for charges accrued to the first day of the immediately preceding month, and the City shall pay such charges so billed by the 20th day of the month in which such bill is received, after which time such billing shall be delinquent. Charges omitted in one month may be billed in the following months. Delinquent charges

shall accrue interest on the unpaid balance at the rate of 8% per annum from date of delinquency until paid.

8. Covenants to Make Payments. The City irrevocably covenants, obligates and binds itself to pay the District the charges representing the City's share of the Joint Facilities Maintenance and Operation Expenses as determined in accordance with paragraph 6(d), out of the gross sewer revenues and/or water and sewer revenues of the ~~District~~ City, or from such other money legally available to the ~~District~~ City for such purpose as determined by the ~~District~~ City, and such sewage service charges shall, subject to the qualification below, be deemed maintenance and operation expenses of the City's system of sewers or water and sewer system in any future bond issue or other financing of the City payable in whole or in part from the revenues of such system and shall be payable and constitute a charge prior and superior to any charge or lien of any revenue bonds issued by the City payable from the gross revenues of its system, unless such future bond issue or other financing shall be on a parity of lien on such revenues with presently outstanding revenue bonds and such outstanding bonds do not permit such priority of payment.

It is recognized that the City has outstanding revenue bonds payable in whole or in part from the gross revenues of its sewerage and/or water system. Nothing in this section is intended to violate, nor shall it be construed to violate, any covenants respecting those outstanding bonds, and such covenants, to the extent there is a conflict between them and this section, shall control with respect to such outstanding bonds and bonds issued on a parity therewith.

The City irrevocably covevants and agrees to establish rates and collect fees for sewer service or sewer and water service in the case of a combined utility which will be at least

sufficient to pay the sewer service charge to the District and to pay the other maintenance and operation expenses of its system and the principal of and interest on all revenue bonds issued by it for its sewer or water and sewer utility and to meet the coverage covenants thereof which will constitute a charge upon the gross revenues of its system. The District agrees to establish rates and collect fees for sewer service which will be at least sufficient to pay the expenses of maintenance and operation of its water and sewer utility and meet the principal, interest and coverage requirements of any and all revenue bonds of the District which constitute a charge upon the gross revenue of such utility.

9. Maintenance of Local Facilities and Sewage Quality - Insurance - Liability. The Participants shall maintain and operate their respective Local Facilities and control and regulate the discharge of sewage into those Local Facilities in accordance with high engineering standards and in conformity with the standards established by the state and federal agencies having jurisdiction over the same. If there are any deficiencies in the respective Local Facilities or the discharge of sewage into them causing excessive flow or below standard quality sewage, such deficiencies shall be corrected by the applicable Participant forthwith. Deficiencies may constitute excessive flow, BOD discharges for a five-day period of over 300 parts per million, suspended solids over 300 parts per million, or quality of sewage discharge which damages the sewage treatment process or Joint Facilities, increases the Joint Facilities Maintenance and Operation Expenses per unit of sewage treated, or causes the violation of any federal or state law or regulation. The offending Participant shall pay for any additional cost or expense caused by its breach of this paragraph.

10. Local Rates and Charges. Each Participant agrees to conform its rates and charges for sewage collection, treatment and disposal service to equitable standards consistent with the requirements of applicable federal and state agencies, including the United States Environmental Protection Agency.

11. Expansion - Improvement of Joint Facilities.

(a) Expansion. At such time as any of the Joint Facilities (a) reach 90% of capacity, or (b) are required to be expanded by federal, state or other governmental agencies having jurisdiction over the facilities, the City shall immediately commence the planning, design and construction of the expansion of such Future Joint Facilities. Expansion of the Joint Facilities shall be deemed required if directed by a federal, state or other governmental agency in order to comply with existing standards or regulations of such agency or applicable statutes. The Future Joint Facilities to be constructed shall be agreed upon by the Participants, but in no event shall be of a less capacity and quality than is required by applicable federal, state or local standards or regulations or the minimum capacity and quality which good engineering practice would dictate under the circumstances. Should the City fail to initiate and/or complete the expansion, the District may assume the planning and design responsibilities and cause the construction to be done, and may issue its revenue bonds to pay the costs thereof, and such bonds shall be deemed Joint Facilities Bonds for the purposes of required payments under this contract. The Participants shall confer and negotiate a method for financing the expansion which shall be based on the method of payment for the original Joint Facilities Costs as set forth in this contract at paragraph 6.

(b) Improvement. If regulatory agencies with jurisdiction over the Joint Facilities direct the upgrading of the

Joint Facilities by the making of qualitative improvements to such facilities, the City shall immediately commence the planning, design and construction of the improvements. Should the City fail to initiate and/or complete the improvements, the District shall assume the planning and design responsibilities and cause the improvements to be made, and may issue its sewer revenue bonds to pay the costs thereof, and such bonds shall be deemed Joint Facilities Bonds for the purposes of required payments under this contract. The Participants shall confer and negotiate a method for financing the improvements which shall be based on the method of payment for the original Joint Facilities Costs as set forth in this contract at paragraph 6.

12. Advisory Committee. For the purpose of reviewing the maintenance and operation of the Joint Facilities, the plans for Future Joint Facilities, to foster cooperation between the Participants under this Contract and otherwise perform the duties assigned to it by this Contract, there is created the Joint Sewerage Facilities Advisory Committee which shall consist of three (3) representatives of each of the Participant's legislative bodies, which appointments shall be made as determined by the individual Participants. Each representative shall have one vote in the committee, including the chairperson.

The Advisory Committee shall select its chairman and such other officers, shall fix a time and place of its meetings, and establish such rules and procedures as it deems appropriate. Except as provided below, the Advisory Committee shall be advisory to the Participants respecting all conditions required in the Contract. The District shall submit to the Advisory Committee all proposed and final budgets, grants, grant applications and other matters it deems appropriate or the Advisory Committee requests relating to the Joint Facilities. All Participants shall submit to the Advisory Committee annually and

at other times when requested, all data pertaining to water consumption, sewerage discharge, sewer connections, sewage quality, plans for additional Local Facilities, ERUs and other information relating to the Joint Facilities.

The first task of the Advisory Committee shall be the review and assessment of all nonresidential units of each Participant connected or billed for availability of use to the Local Facilities and the assignment of an initial ERU factor for each such use. The Advisory Committee shall annually review the ERU factor assigned to each nonresidential unit and shall make necessary adjustments based on actual or estimated sewage discharge as the committee deems appropriate.

13. Disputes. In the event of a dispute between any of the Participants relating to the amount of Joint Facilities Costs, the estimated or actual Joint Facilities Maintenance and Operation Expenses, the number of ERUs of any Participant or the compliance with any maintenance, operation or construction standards or requirements, any party to such dispute may submit the dispute to the Superior Court of Kitsap County for arbitration proceedings provided by Chapter 7.04 RCW. Such arbitration shall be limited to the interpretation and application of this contract and may not impair the contract and debt obligations of ~~Port Orchard~~ the City or the District, or the powers of the District to determine the methods used in the management of the Joint Facilities. The arbitrator appointed shall prescribe the rules of the arbitration not agreed upon by the parties to the dispute. The parties to the dispute may agree upon any other method of resolving this dispute.

14. Industrial Cost Recovery - Industrial Share Payment. Under the provisions of United States Public Law 92-500 sewerage agencies providing wastewater treatment must identify all industrial/commercial waste dischargers as defined by the United

States Environmental Protection Agency (EPA). Once identified, PL 92-500 requires that the industry must repay that portion of any federal grant received by local agencies for wastewater treatment relating to the treatment of that discharger's industrial waste discharges.

Each Participant agrees that any waste discharger whose total discharge into the Joint Facilities is sufficient to cause that discharger to be classified as a significant industrial waste discharger (as described by Pretreatment of Pollutants Introduced into Publicly Owned Treatment Works, October, 1973, EPA, as that publication or the standards contained therein may be changed from time to time by EPA) shall be required to enter into a contract with the Participant into the Local Facilities of which that discharger discharges sewage in order to provide for waste treatment services and the payment of the required local and industrial cost recovery costs pursuant to PL 92-500 and federal and state regulations.

Any Participant which receives industrial cost recovery funds from any affected industry or a federal or state agency shall pay all such money to the City which in turn shall use that money for the same purposes as set forth for payments by the District attributable to bond coverage in paragraph 10, but no matching money from any Participant shall be required.

In addition to the industrial cost recovery payment and any sewer charges of a Participant for its Local Facilities, the industry shall pay to the City or to the District for payment to the City its share of the Joint Facilities Costs based on its share of sewage flow capacity and the cost of those portions of the Joint Facilities designed to handle BOD loadings and suspended solids from that industry and the industry's share of the Joint Facilities Maintenance and Operation Expenses and bond coverage requirements based on sewage flow and the expenses

of handling and treating the BOD loadings and suspended solids for that industry, which additional payment is referred to in this contract as the "industrial share payment." The precise amount of the industrial share payment payable by any industry cannot be determined at this time, but will be specified in a later contract between that industry, the Participant, the Local Facilities into which that industry initially discharges it sewage, and the City, which later contract shall also provide for the times and manner such payment will be made.

15. Access to Joint Facilities - Cooperation. The Participants enter into this contract committing all sewage discharges into their Local Facilities to be transported to the Joint Facilities for treatment and disposal, thus foregoing the opportunity of treating and disposing of such sewage individually and not risking the control of the growth of, or the accessibility to, sewers to property owners within their respective communities by other Participants or, to property owners lying outside the boundaries of all Participants but within the areas for which the Joint Facilities are designed to serve, by any Participant. Because this contract contemplates that all Participants will be using the Joint Facilities and most, if not all, participants will be transporting sewage collected in their Local Facilities through the political jurisdictions of one or more other Participants, the Participants declare and agree that this contract is not intended as an instrument to permit one Participant to control the amount of sewerage collection service furnished by another or by a nonparticipant within the area for which the Joint Facilities are designed to serve, and all Participants will cooperate to provide the others, Participants and such nonparticipants alike, with reasonable access for sewage flow to the Joint Facilities either by sharing capacity, if reasonably available, through Local Facilities at reasonable and

nondiscriminatory charges or by permitting the acquisition of necessary rights-of-way, franchises and permits through and under public streets and property under reasonable conditions for such access.

Participants agree that they will permit any area outside their boundaries but within the designed service area of the Joint Facilities to be served by those Joint Facilities in accordance with the above standards and under terms respecting the quantity and quality of sewage discharge no more burdensome than those applicable to Participants. Other terms may be provided relating to "late comers'" sharing equitably in the capital investment of the Participants in the Joint Facilities. The Participants may agree to permit other municipal corporations and political subdivisions to become Participants under this contract as long as such new Participant agrees to abide by the covenants in paragraph 8 and assumes like responsibilities of the District provided in this contract.

16. Assignment. Without the written consent of all Participants no Participant shall have the right to assign this contract or any of its rights and obligations hereunder either by operation of law or by voluntary agreement or to terminate its obligations hereunder by dissolution or otherwise unless one Participant shall be lawfully merged into another Participant, municipal corporation or political subdivision, or all of the Local Facilities of one Participant located within the area for which the Joint Facilities were designed to serve shall be lawfully acquired by another Participant, and this contract shall be binding upon and inure to the benefit of the respective successors and assigns of the Participants, except that in the event that a metropolitan municipal corporation shall be created pursuant to law to perform the function of sewage disposal for the area for which the Joint Facilities are designed to serve,

the City may assign the Joint Facilities' responsibilities hereunder to such metropolitan municipal corporation subject to all other terms and conditions of this contract. In the event that any Participant should be dissolved or should no longer be authorized to operate sewer facilities, the Local Facilities owned and operated by such Participant shall be assigned and transferred to the City subject to any outstanding debts of the Participant which had been incurred for the specific purpose of constructing or acquiring such facilities and subject to the acceptance by the City of the obligation to continue to provide sewer service to the residents served by such Local Facilities upon payment by such residents of sewage disposal charges determined as herein provided and the reasonable costs of local sewer service.

17. Notices. Whenever in this contract notice is required to be given, the same shall be given by registered mail addressed to the respective Participants at the following addresses:

City of Port Orchard
City Hall
216 Prospect
P. O. Box 186
Port Orchard, Washington 98366

Kitsap County Sewer District No. 5
1344 E. ~~2280~~ Beach Drive
Port Orchard, Washington 98366

unless a different address shall be hereafter designated in writing by either of the Participants.

The date of giving such notice shall be deemed to be the date of mailing thereof. Billings and payments described in paragraph 7 may be made by regular mail.

18. Effective Date - Term of Contract. The effective date of this contract shall be _____, 1983. Because this contract gives all Participants rights to use and, therefore, interest in the Joint Facilities, such rights must continue until by agreement they are terminated. This contract shall be for at least a term of 35 years from August 1, 1977, or

such longer period as any Joint Facilities Bonds are outstanding or the payment thereof is not fully provided for, secured and funded, and shall continue thereafter until terminated by the agreement of all Participants. Any Participant may individually withdraw from the obligations of this contract with the consent of the other Participants after all of such bonds are retired or payment thereof is fully provided for, secured and funded, and the remaining Participants shall continue to be bound by this contract as it may be amended.

IN WITNESS WHEREOF, the Participants hereto have executed this contract as of January 31, 1983.

CITY OF PORT ORCHARD, WASHINGTON

By _____
Title Mayor

Attest _____
Title City Clerk

SEWER DISTRICT NO. 5
KITSAP COUNTY, WASHINGTON

_____
Commissioner

_____
Commissioner

_____
Commissioner

0205p

RESOLUTION NO. 1288

A RESOLUTION OF THE CITY OF PORT ORCHARD AUTHORIZING THE MAYOR TO SIGN INTERGOVERNMENTAL SERVICES AGREEMENT WITH KITSAP COUNTY SEWER DISTRICT NO. 5 RELATIVE TO THE JOINT SEWER TREATMENT PLANT.

THE CITY COUNCIL OF THE CITY OF PORT ORCHARD DOES HEREBY RESOLVE:

THAT: The Mayor of the City of Port Orchard be and hereby is authorized to sign an Intergovernmental Services Agreement with Kitsap County Sewer District No. 5 relative to Joint Sewer Treatment Plant.

PASSED by the City Council and APPROVED by the Mayor this 10th day of January, 1983.

Lee F. Caldwell
LEE F. CALDWELL, MAYOR

ATTEST:

R. G. Lloyd
R. G. Lloyd, City Clerk

534.50.9

A G R E E M E N T

THIS AGREEMENT, made this 1st day of July, 1974, between the CITY OF PORT ORCHARD, a municipal corporation and a city of the third class in the State of Washington, hereinafter called Port Orchard, and KITSAP COUNTY SEWER DISTRICT NO. 5, a municipal corporation, located in Kitsap County, Washington, hereinafter called Sewer District;

W I T N E S S E T H:

WHEREAS, Port Orchard and Sewer District are contiguous, and both operate a system of sewers, and each has under its jurisdiction a sewage disposal plant; and

WHEREAS, Port Orchard and the Sewer District wish to enter into an agreement providing for payment from the Sewer District to Port Orchard for the use of Port Orchard's sewer facilities; and

WHEREAS, an agreement has been entered into between Port Orchard and the Sewer District on July 1, 1971, for a term of three years, which is subject to renewal on agreeable terms;

NOW, THEREFORE, it is agreed between the parties hereto, as follows:

1. Sewer District has a 12" sewer line, northeasterly on an easement adjacent to the north side of Third Street in Retsil from its intersection with Park Avenue to the Retsil Sewage Disposal Plant. This line is connected with the present sewer line serving property to the south of Third Street in Retsil.

2. Sewer District has raised the sewer line on Mitchell Street to an elevation sufficient to allow it to be connected into the present Port Orchard Line at the junction of Tracy and Bay Streets at manhole 25.

3. Port Orchard will provide the Sewer District with the use of its sewage disposal plant to process all sewage originating in the area indicated in Paragraphs 1 and 2 hereof.

4. Sewer District will maintain and operate all of the sewer lines owned by Sewer District West of Park Ave. and North of Third Street in Retsil, Washington. Manhole #25 plug is to be replaced with a permanent plug and cemented in place.

5. Sewer District will pay Port Orchard, bi-monthly, an amount of THREE DOLLARS ($3.00) less than the current Port Orchard residential rate for each user under the jurisdiction of the Sewer District which has been connected hereunder to the Port Orchard sewer system. These rates will be increased or decreased in the same amount as any increase or decrease in the city's rates.

6. In the event the Sewer District determines that a rate increase is in order, such increase shall not be effective until a study of the terms of this agreement is completed and an increase, as indicated, is agreed to by both parties.

7. This agreement shall terminate three (3) years after its date, but shall be subject to renewal on agreeable terms.

DATED this 1st day of July, 1974.

CITY OF PORT ORCHARD

By Paul A Powers Jr
MAYOR

ATTEST:

By
CITY CLERK

APPROVED AS TO FORM:

By Terry K. McCluskey
TERRY K. McCLUSKEY
ASSISTANT CITY ATTORNEY

KITSAP COUNTY SEWER DISTRICT NO. 5

By

INTERLOCAL AGREEMENT BETWEEN
THE CITY OF PORT ORCHARD
AND KARCHER CREEK SEWER DISTRICT
FOR USE OF THE CITY DECANT STATION

I. PREAMBLE

This Interlocal Agreement (hereafter "AGREEMENT") for reference purposes only is dated September 25, 2007 and is entered into by and between the City of Port Orchard (hereafter "CITY") and Karcher Creek Sewer District (hereafter "DISTRICT").

II. RECITALS

This AGREEMENT establishes the terms with which the DISTRICT may use the CITY's decant station located at 1272 Lloyd Parkway, Port Orchard, WA 98366.

The Interlocal Cooperation Act, Chapter 39.34 RCW, authorizes the parties hereto to enter into the AGREEMENT.

Accordingly, the parties agree as follows:

III. AGREEMENT

A. Purpose.

1. The CITY owns and operates a decant station in which the liquid in its municipal vactor truck is decanted into the CITY's sanitary sewer system.

2. The DISTRICT currently decants the liquid from its DISTRICT vactor truck into its sanitary sewer system via manholes and prefers to use an established decant station in lieu of constructing a new facility.

3. The CITY currently has an agreement with Kitsap County to allow the County's vactor truck to use the CITY's decant station, as defined by Interlocal Agreement KC-219-03.

B. Payment.

1. The DISTRICT shall pay the CITY a sanitary sewer fee corresponding to one (1) sanitary sewer equivalent residential unit (ERU) at the Class 2 rate. Fees for use will be billed bimonthly. The current bimonthly fee is $72.00 however the CITY reserves the right in its sole discretion to increase the sewer rate fees upon reasonable notice. The DISTRICT will pay the bimonthly sewer bill in accordance with CITY utility billing terms, which are thirty (30) days after the due date.

2. The DISTRICT shall pay its fair share pro-rata payment of the cost of operation and maintenance of the decant station, as located on 1272 Lloyd

Parkway. It is understood that this cost will be calculated and billed quarterly by the CITY based on actual annual operation and maintenance costs for the decant station.

C. City and DISTRICT Representatives.

This AGREEMENT shall be jointly administered by the representatives identified in this section. This AGREEMMENT does not create any separate legal or administrative entity.

1. The CITY's representative is the Public Works Director, 216 Prospect Street, Port Orchard, Washington 98366. This person shall represent the CITY in all matters pertaining to the services to be rendered under this AGREEMENT. All requirements of the DISTRICT pertaining to the services and materials to be rendered under this AGREEMENT shall be coordinated through the CITY representative.

2. The DISTRICT's representative is the General Manager, 2924 SE Lund Avenue, Port Orchard, Washington 98366. This person shall represent the DISTRICT in all matters pertaining to the services to be rendered under this AGREEMENT. All requirements of the CITY pertaining to the services and materials to be rendered under this AGREEMENT shall be coordinated through the DISTRICT representative.

D. Responsibilities of the parties.

It is mutually understood that the DISTRICT will provide the CITY with timely payment of all amounts due the CITY as described in Section III, Paragraph B, above.

It is mutually understood that the CITY will provide the DISTRICT with the following:

1. 24-hour access to the decant station for DISTRICT employees, agents, and equipment only. Private vendors' use of the facility is prohibited.

2. Timely notice in advance if the decant station will be temporarily closed for maintenance or repair.

3. Bi-monthly sewer billings and invoices for a pro-rata share of operation and maintenance costs mailed to the attention of the DISTRICT's representative.

E. Hold Harmless/indemnification.

1. The CITY shall defend, indemnify and hold the DISTRICT, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the CITY, its agents, employees, or sub consultants in performance of this

AGREEMENT, except for injuries and damages caused by the sole negligence of the DISTRICT.

2. The DISTRICT shall defend, indemnify and hold the CITY, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the DISTRICT, its agents, employees, or sub consultants in performance of this AGREEMENT, except for injuries and damages caused by the sole negligence of the CITY.

3. This mutual indemnification and hold harmless shall apply regardless of whether the claim is brought pursuant to the Worker's Compensation Act, RCW Title 51, or otherwise.

F. Amendments.

This AGREEMENT shall not be amended except in writing signed by both parties to the AGREEMENT.

G. Duration.

This AGREEMENT shall become effective as set forth in paragraph K, below. This AGREEMENT will continue automatically for twelve (12) month increments commencing with the effective date of the AGREEMENT, unless terminated by either party as detailed in paragraph H, below.

H. Termination.

Either party to this AGREEMENT may elect to terminate this AGREEMENT for any reason by delivering a thirty (30) day written Notice to Terminate to the other party.

I. Severability.

If any provision of this AGREEMENT is determined to be invalid, the remaining provisions shall continue in full force and effect.

J. Financing: Budget.

This AGREEMENT does not contemplate joint financing of the activities within its scope, nor does it contemplate a joint budget.

K. Effective Date; Recording or Web Posting.

This AGREEMENT shall be effective upon being recorded with the Kitsap County Auditor or, alternatively, on the date it is posted on the CITY's and the DISTRICT's web sites or other electronically retrievable public source.

L. Authorization by Governing Body.

The governing bodies of the CITY and the DISTRICT have taken appropriate action by ordinance, resolution or otherwise pursuant to law to authorize the execution of this AGREEMENT.

City of Port Orchard	**Karcher Creek Sewer District**
Kim E. Abel	
Kim Abel Mayor Sept. 25th, 2007	Lawrence J. Curles 21 Aug 07 General Manager

ATTEST:

Michelle Merlino
City Clerk

APPROVED AS TO FORM:

Asst. City Attorney

INTERLOCAL AGREEMENT BETWEEN THE CITY OF PORT ORCHARD AND THE PORT OF BREMERTON FOR WASTEWATER SERVICES

This is an Interlocal Agreement entered into between the City of Port Orchard (hereafter "City") and the Port of Bremerton (hereafter "Port"), herein designated as "Parties."

WHEREAS a principle mandate of the Port is to create economic development, and

WHEREAS the Port is owner of over 1700 acres of land designated under the Growth Management Act as an Urban Growth Area, with Airport and Industrial zoning in the Kitsap County Comprehensive Plan, and said land is planned by the Port and Kitsap County as the location of major employment growth in the future; and

WHEREAS the Kitsap County Comprehensive Plan calls for the addition of 9350 jobs in the next 20 years on lands at and surrounding the Port's lands, said area being named the South Kitsap Industrial Area (SKIA); and

WHEREAS in order for the Port to fulfill its economic development mandate it must ensure that adequate infrastructure is available, including wastewater treatment; and

WHEREAS the Port is owner of a Washington State Department of Ecology approved on-site waste water treatment plant located in the Port's Olympic View Industrial Park, said plant having a limited 72,500 gallon per day domestic waste treatment capacity; and

WHEREAS the City of Port Orchard is a provider of urban services and has stated that it will provide wastewater collection and treatment service to the South Kitsap Industrial Area to stimulate economic development and job creation in South Kitsap; and

WHEREAS there is a need identified in the County Comprehensive Plan and in the SKIA sub area plan now being drafted by Kitsap County for expanded wastewater treatment capacity to the SKIA area; and

WHEREAS the Port, through a series of communications over a number of years with both the City of Port Orchard and the City of Bremerton and through technical documents developed during the SKIA sub area planning process, has determined that connection to the City of Port Orchard wastewater collection system will be the most economical and efficient method of providing municipal wastewater service to the Port and SKIA lands; and

WHEREAS the City has advised that its existing and planned collection system, and the existing and planned capacity of its wastewater treatment facility, can accommodate the anticipated flows from the SKIA service area defined below; and

Port City

5/31.10.06

WHEREAS the City has indicated a willingness to expand its service area to include Port and SKIA service area lands and assume the ownership of the Port's wastewater facility and the operational and administrative duties that accompany ownership; and

WHEREAS on November 13, 2001, the Port and the City entered into a Letter of Intent to facilitate the expanded provision of wastewater treatment service to the Port and the SKIA area;

NOW THEREFORE, in consideration of the mutual promises of the Parties to this Interlocal Agreement, the Parties agree as follows:

1. ***Service Area Designation***

   A. The service area of this Interlocal Agreement for the City's providing of wastewater service, hereafter known as "Service Area", will be the (1) Port of Bremerton properties, which include Bremerton National Airport and Olympic View Industrial Park, (2) the Olympic View Sanitary Landfill, including Waste Management's new transfer station, and (3) such other property designated by Kitsap County to be within the South Kitsap Industrial Area, as defined by the SKIA Sub Area Plan (see Exhibit A). The City agrees that it will amend it planning and wastewater documents, as necessary, to indicate said Service Area.

   B. The wastewater planning will anticipate service to the entire Service Area. However, the specific service planning may be phased to accommodate market growth and economic development patterns.

   C. Annexation of the Service Area is not a prerequisite for wastewater service.

2. ***Port On-site Plant***

   A. The Port will retain ownership of its on-site treatment plant and collection system within the Olympic View Industrial Park until the wastewater system connects to the City collection system.

   B. The Port will contract with the City to administer and operate the Port's wastewater collection and treatment system during the period from Kitsap County adoption of the SKIA Sub Area plan to the time of connection of the Port's wastewater system to the City's wastewater collection system.

   C. The City shall be responsible for administering connections, setting of the sewer fees, collection of the revenue and payment of the applicable wastewater expenses.

   D. Service Area wastewater customers shall pay the out-of-city surcharge, as established by City ordinance. This surcharge is currently 50% of the in-city rate.

E. New sewer connections and expansions shall pay the applicable sewer fees, as established by City ordinance.

F. Existing customers, as listed on Exhibit B, shall not be charged the following retroactive sewer fees as defined in City Ordinance 1577:

1) Connection fee
2) Fee in Lieu of Assessment for collection

G. At the time the wastewater of these properties is treated at the City's wastewater treatment facility, all the Service Area customers shall be required to pay all applicable fees, which shall include the Kitsap County ULID #6 Latecomers Fee and the City's Facility Fee.

H. The existing Port wastewater facility is described in Exhibit C.

3. *Property Transfer*

A. The Port agrees to transfer its wastewater collection system, at no additional charge, and free and clear of all liens or other valid claims, to the City at the time that Service Area wastewater is pumped to the City wastewater collection system. Until the transfer is completed, the Port shall retain all risk of loss to the system, except for that caused by the sole negligence of the City.

B. The Port will retain ownership of its wastewater treatment facility (aeration ponds, settling ponds and drain-fields) and associated property. The Risk of loss to the facility and associated property shall remain, at all times, with the Port, except for loss caused by the sole negligence of the City.

C. Upon assumption of ownership of the collection system, the City shall assume all obligations related to the US Economic Development Administration agreements that assisted in the funding of the collection system. EDA agreements are provided as Exhibit D.

4. *Compensation, equitable*

A. The parties acknowledge good and valuable consideration for the asset transfers, and assumption of obligations contained herein. The Port is receiving value because of the City's sewer system will allow for continued economic growth on its property. The City is receiving value for its increased obligation by charges user fees, and obtaining the benefit of economies of scale in operating its treatment system.

5. **Easement Documentation**

A. Property deeds and recorded easements (WSDOT, Kitsap County, etc.) are listed in Exhibit E for reference purposes.

B. At the time of transfer of the collection system, the Port shall provide the City utility easements for all portions of the collection system ***without additional cost to the City.*** Unless mutually agreed otherwise, all utility easements shall be 20 feet wide. The easement conveyance document shall warrant that the easement areas are clear of liens and any other claims that would adversely affect the intended purpose.

6. Availability of Capacity of the Port's On-Site Wastewater Treatment Plant

A. Prior to the City's assumption of management and operation of the Port's wastewater system, the Port will have the capacity of the existing treatment facility determined by a qualified company, mutually agreed to by the Port and City.

B. The last 10,000 gallons per day of treatment capacity is reserved for the Port and any party or parties it so designates. If the capacity limit is modified, the "last 10,000 gallons" will be based on that newly modified maximum limit.

C. The capacity between the existing capacity and the last 10,000 gallons shall be available to any Service Area property on a first-come-first-serve basis.

D. The City will manage the allocation of capacity of the Port's treatment facility.

E. No residential property will be served by the Port's treatment facility during Phase 1, described below, unless both the City and the Port agree.

7. Customer Status

A. The existing customers are listed in Exhibit B.

B. The Port and City shall notify the existing customers of the change in system management and provide the City with points of contact for future inquiries.

C. Existing customers shall be subject to future rate adjustments and costs for wastewater collection and treatment, as established by City ordinance.

8. Rates and Service Charges

A. Rates for the Service Area shall be established by City ordinance.

9. Developer Extension Requirements

A. Developer Extension Agreements within the Service Area shall be in accordance with City ordinances.

10. Pre-treatment

A. All Service Area customers shall comply with applicable Federal, State, Health, and Local Government laws and regulations for wastewater systems.

B. Prior to issuing a sewer permit, the City shall provide the Kitsap County Health District an opportunity to review and comment upon the wastewater connection.

C. The City shall be responsible for administering the wastewater treatment system, which includes pre-treatment requirements.

11. Implementation Responsibilities

Phase 1 (City assumption of treatment plant and collection system operation and wastewater service)

A. Phase 1 is defined as the period from when the SKIA Sub Area Plan is adopted by Kitsap County until the Service Area wastewater is pumped to the City's collection system.

1) The Port shall retain ownership of its treatment facility and collection system ***and insure the same for all risks during all three Phases. The risk of loss from any and all causes, other than the sole negligence of the City, shall remain with the Port until the collection system is transferred to the City, at which time the risk of loss to the collection system shall be the City's except for loss caused by the sole negligence of the Port.***

2) The Port shall contract with the City to manage and administer the wastewater treatment system that now serves the Port's Bremerton National Airport and Olympic View Industrial Park areas, which systems will be available to the Service Area in the manner described in this agreement.

3) The City shall be responsible for the following:

a) Routine maintenance of the wastewater system ***including but not limited to pump repair.***
b) Rate setting and financial management of the system
c) Coordination with the Department of Ecology, Kitsap County Health District, and other agencies with regards to wastewater treatment.
d) Sewer permitting for new accounts and coordination with Kitsap County Department of Community Development.

Auditing of the wastewater treatment accounts by the State of Washington.

4) The Port shall be responsible for the following:

a) Previous actions or issues regarding the Port's wastewater system.
b) Debts or financial obligations associated with the wastewater system established prior to ownership of the collection system by the City.
c) Providing leadership in the SKIA development process.
d) Participating in the anticipated LID or ULID or other funding mechanisms which will fund Phase 2
e) ***Capital improvements including but not limited to pump replacement.***

B. The planning and construction of the wastewater connection between the Port's system and the City's system is considered Phase 2 and can occur simultaneously with Phase 1.

Phase 2 (Construction of transmission and pumping facilities to City collection line)

C. Phase 2 shall commence with passage of a Resolution from the City authorizing the planning for the connection of the Port's collection system to the City's collection system.

1) The City shall be responsible for the following:

a) To serve as lead agency for planning the implementation of the connection of the Port's collection system to the City's collection system.
b) Cooperate with the Port in investigating alternative technologies, means and methods that may be more cost effective than pumping the Service Area's wastewater to the City's collection system.
c) Maintaining its Comprehensive Sewer Plan and the Capital Facilities Plan to reflect the wastewater needs for the service area in a manner consistent with the Growth Management Act and the Act's capital facilities planning requirements.

2) The Port shall be responsible for the following:

a) Support the local improvement district or other funding mechanism to help fund the required collection system.
b) Cooperate with the City in investigating alternative technologies, means and methods that may be more cost effective than pumping the Port's wastewater to the City's collection system.

3. The City shall not be responsible for funding any of the required Phase II construction and related costs. It will cooperate in the formation of an LID, so long as its costs associated therewith are reimbursed from the LID funding.

Phase 3 (Operation of the Service Area collection system)

D. Phase 3 will commence when the connection of the Port's wastewater collection to the City's collection system has been accepted by the City.

1) The City shall be responsible for the following:

a) Maintenance and operation of the wastewater system
b) Rate setting and financial management of the system
c) Coordination with the Department of Ecology, Kitsap County Health District, and other agencies with regard to wastewater treatment.
d) Sewer permitting for new accounts and coordination with Kitsap County Department of Community Development.

2) The Port shall be responsible for the following:

a) Compliance with rules and regulations of the City wastewater program.

12. Dispute Resolution

A. In the event any suit, action or other proceeding shall be brought in connection with any of the terms or conditions of this Interlocal Agreement, the Parties hereby stipulate that jurisdiction and venue of each suit, action or other proceeding shall be in Kitsap County, Washington.

13. Indemnification and Hold Harmless

A. Each Party shall indemnify and hold the other harmless from any claims, in law or equity, of whatever kind and nature, and from all sources, whether known or unknown at this time, arising directly or indirectly, from matters which regards to which the other party has assumed the risk of loss.

B. Each Party shall indemnify and hold the other party harmless from any claims, in law or equity, of whatever kind and nature, and from all sources, whether known or unknown at this time, arising directly or indirectly, from their own actions, or their failure to act when they had an affirmative duty to take action.

C. The indemnity and hold harmless requirements in paragraph 13 shall extend to the officers, elected official, employees and agents of each party. The requirements also include the costs, expert witness fees, and attorneys fees incurred with regards thereto, whether or not legal action is commenced, or if the matter is resolved in mediation, arbitration, or litigation.

Port

City

for Jay Weatherill

D. In the case of claims for damages, or other relief, in which it is alleged that both parties are negligent, then the parties will work together to minimize duplication of effort in providing the defense, and each party will be responsible to indemnify and hold the other harmless only to the extent of the percentage of liability attributable to that party.

14. General Provisions

A. Sole Agreement. This Agreement may not be amended or modified in any respect whatsoever except by instrument in writing signed by the parties hereto.

B. Captions. The captions of this Agreement are for convenience of reference only and shall not define or limit any of the terms or provisions hereof.

C. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Washington.

D. Severability. The invalidity or unenforceability of any particular provision of this Agreement shall not affect the other provisions hereof, and this Agreement shall be construed in all respects as it such invalid or unenforceable provisions were omitted.

E. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be an original; but such counterparts shall together constitute but one and the same instrument. This Agreement may be executed (i) on an original, (ii) a copy of an original, or (iii) by a facsimile transmission copy of an original followed by delivery of an original.

F. Exhibits. The exhibits attached hereto, together with all documents incorporated by reference therein, form an integral part of this Agreement and are hereby incorporated into this Agreement wherever reference is made to them to the same extent as if they were set out in full at the point in which such reference is made.

G. Incorporation of Recitals. The recitals are incorporated in the body of this Agreement as if set forth at length.

H. Time of the Essence. The time for performance of the parties hereunder is of the essence of this Agreement.

I. Attorney Fees Recoverable. In the event any suit or action is instituted to enforce or interpret any of the terms of this Agreement including any action or participation in or in connection with a case or proceeding under any Chapter of the Bankruptcy Code or any successor statute, the prevailing party shall be entitled to such sum as the court may adjudge reasonable as attorney fees in such suit, action or proceeding or upon any appeal from any judgment, order or decree entered therein.

J. Interpretation, No Presumption. It is acknowledged by the parties that this Agreement has undergone several drafts with the negotiated suggestions of both and therefore no presumptions shall arise favoring either party by virtue of the authorship of any of its provisions.

K. Binding Effect. This Agreement and the terms, covenants, benefits and duties set forth herein shall inure to the benefit of and be binding upon the parties, their heirs, successors, legal representatives and assigns of each of the parties.

L. No Waiver. No waiver of any default under this Agreement shall constitute or operate as a waiver of any subsequent default hereunder, and no delay, failure or omission in exercising or enforcing any right, privilege or option under this Agreement shall constitute a waiver, abandonment or relinquishment thereof or prohibit or prevent any election under or enforcement or exercise of any right, privilege or option hereunder.

Dated this 29 day of ~~May, 2002.~~ December 2003

CITY OF PORT ORCHARD

LESLIE J. WEATHERILL, Mayor

ATTEST:

~~PATRICIA PARKS~~, City Clerk
CAROL L. ETGEN

APPROVED AS TO FORM:

~~LOREN D. COMBS,~~ City Attorney
(Asst. City Atty for)
G. H. Jacoby

PORT OF BREMERTON

CHERYL KINCER, President

BILL MAHAN, Secretary

APPROVED AS TO FORM:

PORT ATTORNEY

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Appendix C

Design Standards for Sanitary Sewer Extensions

The City of Port Orchard 2014 Developer Guidelines includes the Design Standards for Sanitary Sewer Extensions and can be found here:

http://www.cityofportorchard.us/docs/publicworks/publications/2014_dev_guide_rev1.pdf

http://www.cityofportorchard.us/public-works-publications

Appendix D

Projected Populations and Flows per Basin

City of Port Orchard
General Sewer Plan Update
2015 Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
10/21/2015

Basin	Total Area (acre)	2015 Sewered Area (acres)	2015 Population	2015 Employment	2015 Sewer Flow (gallons)	2015 Sewer Flow (gpm/total acre)	2015 I/I Flow (gallons/day)	2015 I/I Flow (gpm/total acre)	2015 Peak Day Flow (gallons/day)	2015 Peak Hour Flow (mgd)
1	56	56	415	5	32,534	0.400	59,021	0.726	91,555	0.17
2	70	71	680	9	53,335	0.528	74,465	0.738	127,800	0.23
3	130	96	308	6	24,182	0.129	100,002	0.535	124,184	0.24
4	177	35	258	0	20,085	0.079	36,154	0.142	56,239	0.10
5	888	0	0	0	0	0.000	301	0.000	301	0.00
6	977	428	1,735	97	138,444	0.098	448,054	0.318	586,498	1.11
7	677	122	160	377	24,542	0.025	128,011	0.131	152,552	0.30
8	529	24	604	432	60,951	0.080	25,220	0.033	86,171	0.14
9	222	133	921	13	72,225	0.226	138,813	0.435	211,038	0.39
10	262	143	65	382	17,296	0.046	149,444	0.396	166,739	0.33
11	50	46	350	166	32,571	0.456	48,005	0.672	80,576	0.14
12	345	290	2,326	766	205,960	0.415	302,894	0.610	508,855	0.91
13	393	147	445	29	35,628	0.063	153,546	0.271	189,174	0.36
14	155	133	499	27	39,805	0.178	139,093	0.623	178,899	0.34
15	371	340	1,887	1,299	188,754	0.354	355,205	0.665	543,959	0.99
16	77	115	597	96	49,624	0.449	120,072	1.087	169,696	0.32
17	293	170	301	1,018	56,066	0.133	178,267	0.422	234,332	0.44
Total	5,671	2,349	11,550	4,723	1,052,001		2,456,566		3,508,567	6.52

City of Port Orchard
General Sewer Plan Update
2022 Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
10/21/2015

Basin	Total Area (acre)	Net Developable Area (acre)	New Sewered Areas incl. ROW (acres)	2022 Sewered Area (acres)	2022 Population	2022 Employment	2022 Sewer Flow (gallons/day)	2022 Sewer Flow (gpm/total acre)	2022 I/I Flow (gallons/day)	2022 I/I Flow (gpm/total acre)	2022 Peak Day Flow (gallons/day)	2022 Peak Hour Flow (mgd)
1	56	0	-	56	415	5	32,530	0.400	59,021	0.726	91,551	0.17
2	70	0	-	71	680	9	53,328	0.528	74,465	0.738	127,793	0.23
3	130	7	10	106	396	6	31,107	0.166	110,832	0.593	141,938	0.27
4	177	4	6	41	313	-	24,413	0.096	42,917	0.169	67,330	0.12
5	888	55	85	85	727	-	56,701	0.044	88,910	0.070	145,612	0.26
6	977	19	30	458	1,991	95	158,334	0.113	479,252	0.341	637,586	1.21
7	677	29	44	166	538	513	58,384	0.060	174,104	0.178	232,488	0.44
8	529	7	11	35	699	500	70,488	0.093	36,733	0.048	107,221	0.17
9	222	5	8	141	990	13	77,619	0.243	147,258	0.461	224,876	0.41
10	262	0	-	143	65	448	19,414	0.051	149,444	0.396	168,858	0.33
11	50	0	0	46	351	170	32,794	0.459	48,162	0.674	80,956	0.14
12	345	4	6	295	2,374	781	210,136	0.423	308,700	0.622	518,836	0.93
13	393	11	16	163	586	37	46,877	0.083	170,728	0.302	217,605	0.42
14	155	5	8	141	570	36	45,609	0.204	147,714	0.662	193,322	0.37
15	371	3	4	344	1,924	1,308	191,900	0.360	359,642	0.674	551,542	1.01
16	77	1	1	116	608	97	50,544	0.457	121,499	1.100	172,043	0.32
17	293	2	4	174	332	1,098	61,012	0.145	182,000	0.431	243,012	0.46
Total	5,671	152	234	2,583	13,558	5,114	1,221,189		2,701,381		3,922,570	7.26

City of Port Orchard
General Sewer Plan Update
2026 Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
10/21/2015

Basin	Total Area (acre)	Net Developable Area (acre)	New Sewered Areas incl. ROW (acres)	2026 Sewered Area (acres)	2026 Population	2026 Employment	2026 Sewer Flow (gallons/day)	2026 Sewer Flow (gpm/total acre)	2026 I/I Flow (gallons/day)	2026 I/I Flow (gpm/total acre)	2026 Peak Day Flow (gallons/day)	2026 Peak Hour Flow (mgd)
1	56	0	-	56	415	5	32,530	0.400	59,021	0.726	91,551	0.17
2	70	0	-	71	680	9	53,328	0.528	74,465	0.738	127,793	0.23
3	130	11	16	112	447	6	35,067	0.188	117,020	0.626	152,086	0.29
4	177	7	10	45	345	-	26,886	0.106	46,782	0.184	73,668	0.13
5	888	87	133	133	1,142	-	89,102	0.070	139,544	0.109	228,646	0.41
6	977	30	47	475	2,137	95	169,742	0.121	497,080	0.353	666,821	1.26
7	677	45	69	192	754	577	77,298	0.079	200,443	0.205	277,741	0.52
8	529	11	17	41	753	535	75,808	0.100	43,312	0.057	119,120	0.20
9	222	8	13	145	1,029	13	80,707	0.253	152,083	0.476	232,790	0.43
10	262	0	-	143	65	482	20,484	0.054	149,444	0.396	169,928	0.34
11	50	0	0	46	352	173	32,962	0.461	48,251	0.675	81,213	0.15
12	345	6	9	298	2,401	795	212,722	0.428	312,017	0.628	524,739	0.94
13	393	17	26	173	667	40	53,282	0.094	180,547	0.319	233,829	0.45
14	155	8	13	146	611	40	48,897	0.219	152,640	0.684	201,537	0.38
15	371	4	7	346	1,944	1,326	194,096	0.364	362,178	0.679	556,274	1.02
16	77	1	2	117	615	98	51,101	0.462	122,315	1.107	173,416	0.32
17	293	4	6	176	349	1,144	63,857	0.151	184,134	0.436	247,991	0.47
Total	5,671	239	368	2,716	14,706	5,338	1,317,869		2,841,275		4,159,143	7.68

City of Port Orchard
General Sewer Plan Update
2036 Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
10/21/2015

Basin	Total Area (acre)	Net Developable Area (acre)	New Sewered Areas incl. ROW (acres)	2036 Sewered Area (acres)	2036 Population	2036 Employment	2036 Sewer Flow (gallons/day)	2036 Sewer Flow (gpm/total acre)	2036 I/I Flow (gallons/day)	2036 I/I Flow (gpm/total acre)	2036 Peak Day Flow (gallons/day)	2036 Peak Hour Flow (mgd)
1	56	0	-	56	415	5	32,530	0.400	59,021	0.726	91,551	0.17
2	70	0	-	71	680	9	53,328	0.528	74,465	0.738	127,793	0.23
3	130	20	31	127	574	6	44,966	0.241	132,490	0.709	177,457	0.33
4	177	13	19	54	424	-	33,069	0.130	56,444	0.222	89,513	0.16
5	888	165	254	254	2,181	-	170,104	0.133	266,129	0.208	436,233	0.79
6	977	58	89	518	2,503	95	198,261	0.141	541,648	0.385	739,909	1.39
7	677	86	132	255	1,294	738	124,582	0.128	266,291	0.273	390,872	0.72
8	529	21	33	57	887	621	89,107	0.117	59,760	0.078	148,867	0.25
9	222	16	24	157	1,128	13	88,426	0.277	164,147	0.514	252,573	0.46
10	262	0	-	143	65	565	23,159	0.061	149,444	0.396	172,603	0.34
11	50	0	0	46	353	182	33,382	0.467	48,475	0.678	81,857	0.15
12	345	11	17	306	2,469	831	219,186	0.441	320,311	0.645	539,497	0.97
13	393	32	49	196	868	50	69,296	0.122	205,093	0.362	274,389	0.52
14	155	16	25	158	712	51	57,119	0.256	164,955	0.739	222,074	0.42
15	371	8	13	352	1,996	1,371	199,587	0.374	368,517	0.690	568,103	1.04
16	77	3	4	119	632	100	52,495	0.475	124,353	1.125	176,848	0.33
17	293	7	11	181	393	1,260	70,969	0.168	189,467	0.449	260,436	0.49
Total	5,671	456	702	3,051	17,575	5,898	1,559,566	0.191	3,191,010	0.391	4,750,576	8.74

City of Port Orchard
General Sewer Plan Update
Build Out Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
10/21/2015

Basin	Total Area (acre)	Net Developable Area (acre)	New Sewered Areas incl. ROW (acres)	Build Out Sewered Area (acres)	Build Out Population	Build Out Employment	Build Out Sewer Flow (gallons/day)	Build Out Sewer Flow (gpm/total acre)	Build Out I/I Flow (gallons/day)	Build Out I/I Flow (gpm/total acre)	Build Out Peak Day Flow (gallons/day)	Build Out Peak Hour Flow (mgd)
1	56	0	-	56	415	5	32,534	0.400	59,021	0.726	91,555	0.17
2	70	0	-	71	680	9	53,335	0.528	74,465	0.738	127,800	0.23
3	130	38	59	155	862	6	67,394	0.361	161,877	0.866	229,271	0.43
4	177	0	-	35	604	-	47,073	0.185	36,154	0.142	83,227	0.14
5	888	320	492	493	4,533	-	353,574	0.277	515,335	0.403	868,909	1.55
6	977	143	219	648	3,331	97	262,932	0.187	677,579	0.482	940,510	1.76
7	677	127	195	317	2,518	1,418	241,778	0.248	332,061	0.340	573,839	1.02
8	529	32	49	73	1,193	993	124,845	0.164	76,023	0.100	200,868	0.33
9	222	65	99	232	1,353	13	105,921	0.332	242,785	0.760	348,707	0.65
10	262	0	-	143	65	923	34,608	0.092	149,444	0.396	184,051	0.35
11	50	10	15	61	358	222	34,987	0.490	63,969	0.895	98,956	0.18
12	345	31	47	337	2,623	1,000	236,614	0.477	352,040	0.709	588,654	1.05
13	393	95	145	292	1,324	91	106,174	0.188	305,683	0.540	411,856	0.78
14	155	27	42	175	940	96	76,411	0.342	182,607	0.818	259,018	0.48
15	371	20	31	370	2,114	1,589	215,740	0.404	387,357	0.726	603,098	1.10
16	77	30	47	161	670	114	55,894	0.506	168,719	1.527	224,613	0.42
17	293	12	19	189	492	1,766	94,900	0.225	198,044	0.469	292,944	0.54
Total	5,671	949	1,459	3,808	24,074	8,343	2,144,713		3,983,163		6,127,876	11.18

City of Port Orchard
General Sewer Plan Update
Sedgwick Alternative Build Out Basin Flow Projections
Prepared by: Peter Cunningham
Reviewed By: Adam Schuyler
12/23/2015

Basin	Total Area (acre)	Net Developable Area (acre)	New Sewered Areas incl. ROW (acres)	Build Out Sewered Area (acres)	Build Out Population	Build Out Employment	Build Out Sewer Flow (gallons/day)	Build Out Sewer Flow (gpm/total acre)	Build Out I/I Flow (gallons/day)	Build Out I/I Flow (gpm/total acre)	Build Out Peak Day Flow (gallons/day)	Build Out Peak Hour Flow (mgd)
1	56	0	0	56	415	5	32,534	0.400	59,021	0.726	91,555	0.17
2	70	0	0	71	680	9	53,335	0.528	74,465	0.738	127,800	0.23
3	130	38	59	155	862	6	67,394	0.361	161,877	0.866	229,271	0.43
4	177	0	0	35	604	0	47,073	0.185	36,154	0.142	83,227	0.14
5	888	320	492	493	4,533	0	353,574	0.277	515,335	0.403	868,909	1.55
6	977	143	219	648	3,331	97	262,932	0.187	677,579	0.482	940,510	1.76
7	677	127	195	317	2,553	1,964	261,982	0.269	332,061	0.340	594,043	1.05
8	529	32	49	73	1,299	1,061	135,274	0.178	76,023	0.100	211,297	0.35
9	222	65	99	232	1,353	13	105,921	0.332	242,785	0.760	348,707	0.65
10	262	0	0	143	65	1,108	40,526	0.107	149,444	0.396	189,970	0.36
11	50	10	15	61	358	222	34,987	0.490	63,969	0.895	98,956	0.18
12	345	31	47	337	2,623	1,000	236,614	0.477	352,040	0.709	588,654	1.05
13	393	95	145	292	1,324	91	106,174	0.188	305,683	0.540	411,856	0.78
14	155	27	42	175	940	96	76,411	0.342	182,607	0.818	259,018	0.48
15	371	20	31	370	2,114	1,589	215,740	0.404	387,357	0.726	603,098	1.10
16	77	30	47	161	670	114	55,894	0.506	168,719	1.527	224,613	0.42
17	293	12	19	189	492	1,766	94,900	0.225	198,044	0.469	292,944	0.54
Total	5,671	949	1,459	3,808	24,215	9,142	2,181,264		3,983,163		6,164,427	11.24

Appendix E

Pump Curves

Model 6NHTA
900 and Various RPM
60 Hertz
Enclosed Impeller

900 RPM

Performances shown are for cool water, close-coupled electric configuration with packing. Other mounting styles or liquids may require horsepower and/or performance adjustments.

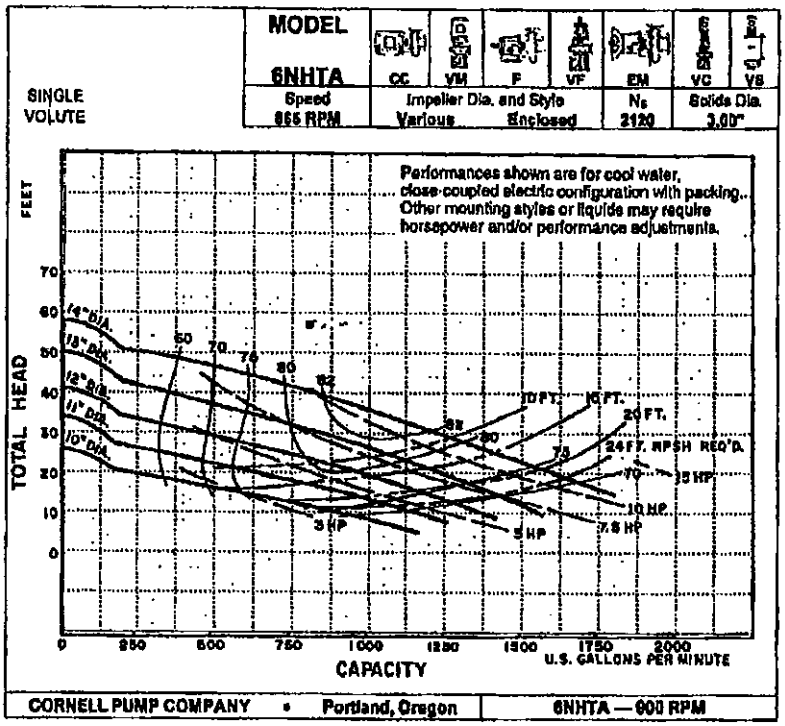
Feet x .305 = Meters

Inches x 25.4 = Millimeters

GPM x .227 = Cubic Meters/Hour

GPM x 3.785 = Liters/Minute

HP x .746 = KW



Various RPM

Performances shown are for cool water, close-coupled electric configuration with packing. Other mounting styles or liquids may require horsepower and/or performance adjustments.

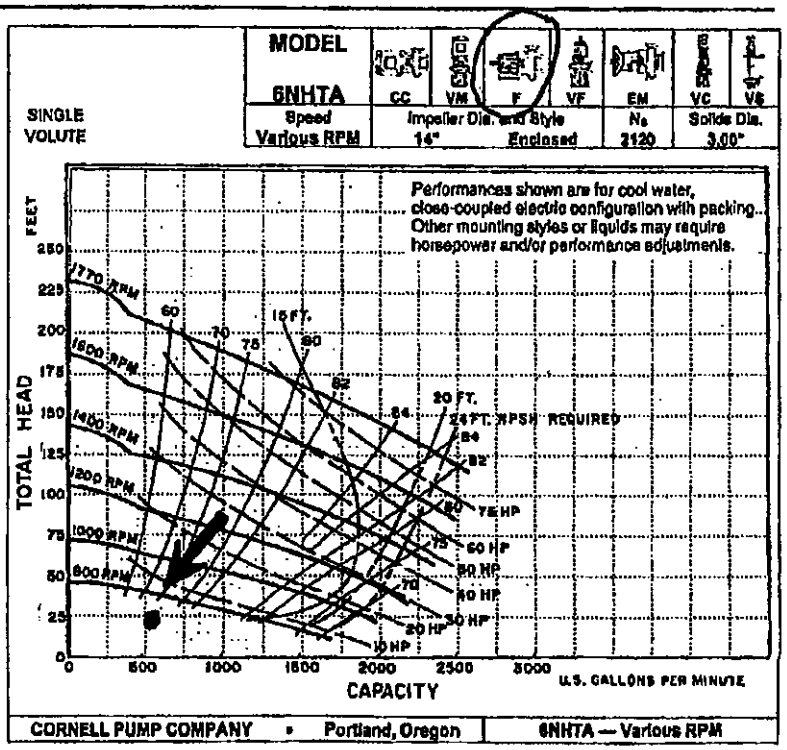
Feet x .305 = Meters

Inches x 25.4 = Millimeters

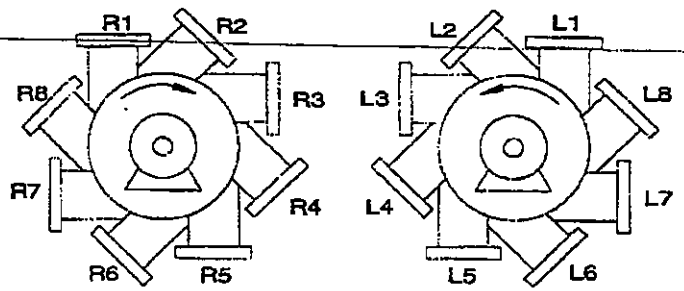
GPM x .227 = Cubic Meters/Hour

GPM x 3.785 = Liters/Minute

HP x .746 = KW



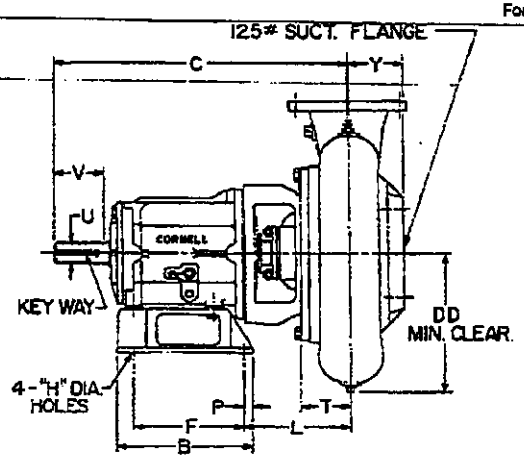
For 125# flange dimensions, see page C85.

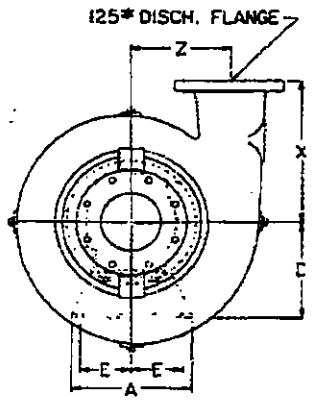


Discharge positions viewed from drive end -- right hand

Discharge positions viewed from drive end -- left hand

3NLT and 3NLA use positions 1, 3, 5 and 7 only.





Do not use for construction unless certified.

Flange connection dimension can vary ± .12 inch.

PUMP DIMENSIONS

Model	Frame	Disch.	Suct.	A	B	C	D	DD	E	F	H	L	P	T	U	V	X	Y	Z	Keyway
3NLT	F5	3	3	7.50	7.30	19.31	5.50	6.75	2.62	4.50	0.56	9.38	1.38	3.31	1.25	3.00	7.50	4.53	4.75	.25 x .12
3NLA	F5	3	3	7.50	7.30	19.34	5.50	6.75	2.62	4.50	0.56	9.41	1.38	3.34	1.25	3.00	7.50	4.44	4.75	.25 x .12
3HM	F16	3	5	12.00	12.88	28.09	9.75	11.12	5.12	10.38	0.81	10.22	0.88	2.72	2.00	4.50	10.00	3.00	8.50	.50 x .25
	F18D	3	5	12.00	12.88	29.09	10.50	11.12	5.12	10.38	0.81	10.72	0.88	2.72	2.50	4.50	10.00	3.00	8.50	.62 x .31
4NNT**, DL, DH	F16	4	4	12.00	12.88	27.12	9.75	9.12	5.12	10.38	0.81	9.25	0.88	3.88	2.00	4.50	9.25	4.25	8.25	.50 x .25
4NHTA**	F16	4	4	12.00	12.88	27.25	9.75	11.50	5.12	10.38	0.81	9.38	0.88	4.00	2.00	4.50	11.00	4.75	9.25	.50 x .25
	F18/F18D	4	4	12.00	12.88	30.50	10.50	11.50	5.12	10.38	0.81	12.12	0.88	4.12	2.50	4.50	11.00	4.75	9.25	.62 x .31
4 x 4 x 14T	F16	4	4	12.00	12.88	27.25	9.75	11.50	5.12	10.38	0.81	9.38	0.88	4.00	2.00	4.50	11.00	4.75	9.25	.50 x .25
	F18/F18D	4	4	12.00	12.88	30.50	10.50	11.50	5.12	10.38	0.81	12.12	0.88	4.12	2.50	4.50	11.00	4.75	9.25	.62 x .31
4 x 4 x 14DL	F16	4	4	12.00	12.88	27.25	9.75	11.50	5.12	10.38	0.81	9.38	0.88	4.00	2.00	4.50	11.00	4.88	9.25	.50 x .25
	F18/F18D	4	4	12.00	12.88	30.50	10.50	11.50	5.12	10.38	0.81	12.12	0.88	4.12	2.50	4.50	11.00	4.88	9.25	.62 x .31
4NHDH	F16	4	4	12.00	12.88	27.22	9.75	11.50	5.12	10.38	0.81	9.34	0.88	3.97	2.00	4.50	11.00	4.50	9.25	.50 x .25
	F18/F18D	4	4	12.00	12.88	30.47	10.50	11.50	5.12	10.38	0.81	12.09	0.88	4.09	2.50	4.50	11.00	4.50	9.25	.62 x .31
6NHTA, G	F16	6	6	12.00	12.88	27.72	9.75	13.75	5.12	10.38	0.81	9.84	0.88	4.47	2.00	4.50	15.00	5.00	10.00	.50 x .25
	F18/F18D	6	6	12.00	12.88	30.97	10.50	13.75	5.12	10.38	0.81	12.59	0.88	4.59	2.50	4.50	15.00	5.00	10.00	.62 x .31
6NHDL, DH	F16	6	6	12.00	12.88	27.34	9.75	13.75	5.12	10.38	0.81	9.47	0.88	4.09	2.00	4.50	15.00	5.00	10.00	.50 x .25
	F18/F18D	6	6	12.00	12.88	30.59	10.50	13.75	5.12	10.38	0.81	12.22	0.88	4.22	2.50	4.50	15.00	5.00	10.00	.62 x .31
8NHG, T	F18/F18D	8	8	12.00	12.88	32.69	10.50	16.75	5.12	10.38	0.81	14.31	0.88	6.31	2.50	4.50	14.50	6.25	12.50	.62 x .31

**4NNT and 4NHTA also available with centerline discharge; see page B111.

Dimension "V" is maximum usable shaft.

Mounting foot is .62 on F5; .75 on F16 and F18.

Dimensions are the same for grease and oil (K) lubricated frames.

HORIZONTAL FRAME MOUNTED PUMPS (F)
TANGENTIAL DISCHARGE

Centrific 4.1

SOLIDS HANDLING SELECTIONS

PERFORMANCES SHOWN ARE APPROXIMATE WATER PERFORMANCES

CHECK CATALOG FOR NPSHR, CURVE SHAPE, ETC. BEFORE MAKING FINAL SELECTION

DESIGN POINT 550 GPM 20 Ft. @ 0 RPM

---------- NORMAL SPEED OPTIONS ----------

Model	Trim-Angle	HP	% Eff.
4NHTA	10.88 0	3.65	75
6NHTA	10.69 0	3.73	73
4414T	11.06 0	3.90	71
6NHG	10.13 0	3.99	67

---------- ADDITIONAL OPTIONS--CONSULT FACTORY ----------

NOTE: These selections also meet your design point
Consult with Cornell prior to final selection

Model	Calculated Speed	Trim-Angle	HP	% Eff.	
4NNT	925	10.09 0	3.58	76	Above Speed
6NHTB	742	12.00 0	4.31	64	Below Speed
8NHTA	733	12.00 0	4.56	59	Below Speed
8NHG	686	12.00 0	4.93	55	Below Speed
8NHT	798	12.00 0	6.25	37	Below Speed
10NHTA	592	15.00 0	7.13	34	Below Speed

CORNELL PUMP COMPANY

2323 S.E. Harvester Drive
Portland,Oregon 97222

Phone (503) 653-0330
FAX (503) 653-0338

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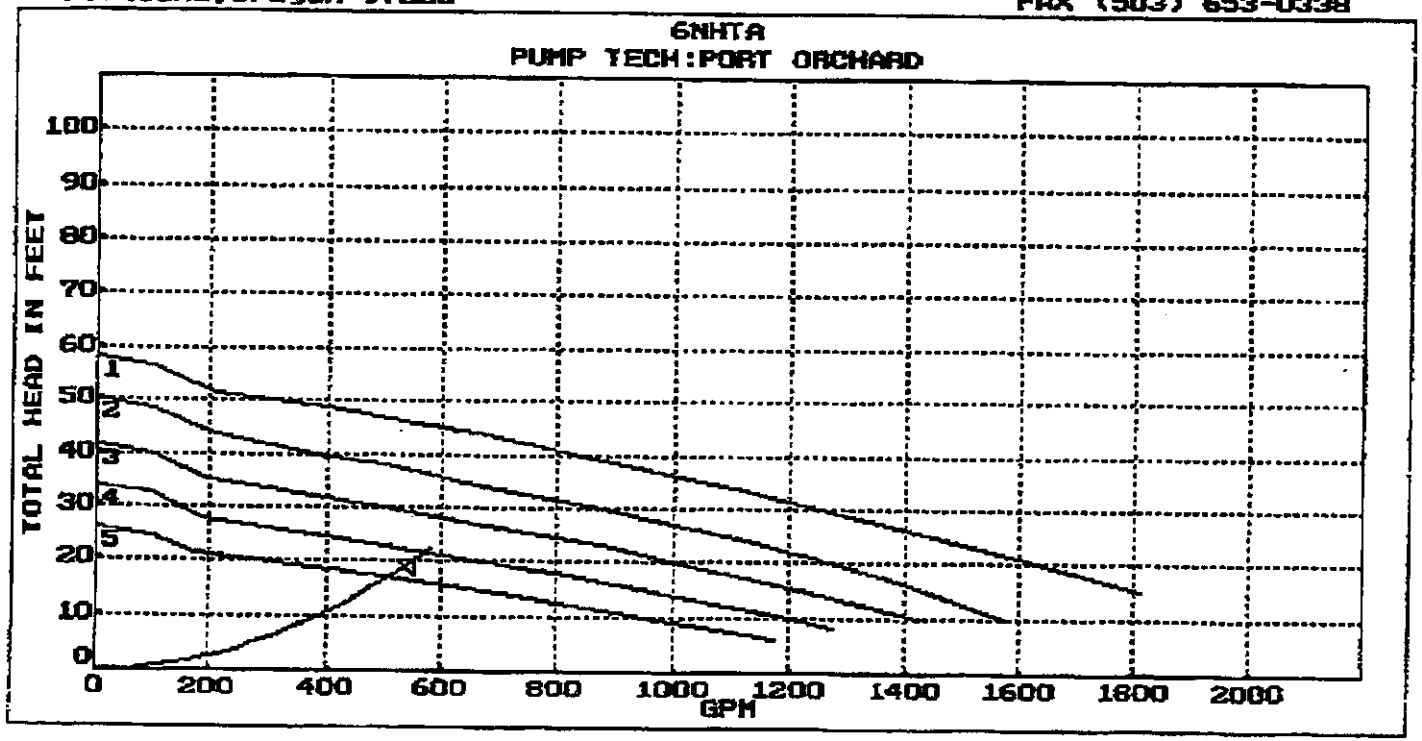


Design Point		
Flow	USGPM	550
Head	ft	20
Speed	RPM	865
Trim	inches	11
Horsepower		3.7
Efficiency	%	73.4
Static Head	ft	0.0

	Curve	Trim	Max HP @1.0 SG
	1	14.00	11.84
	2	13.00	8.51
→	3	12.00	6.40
	4	11.00	4.64
	5	10.00	3.19

Efficient By Design

(11½" ((

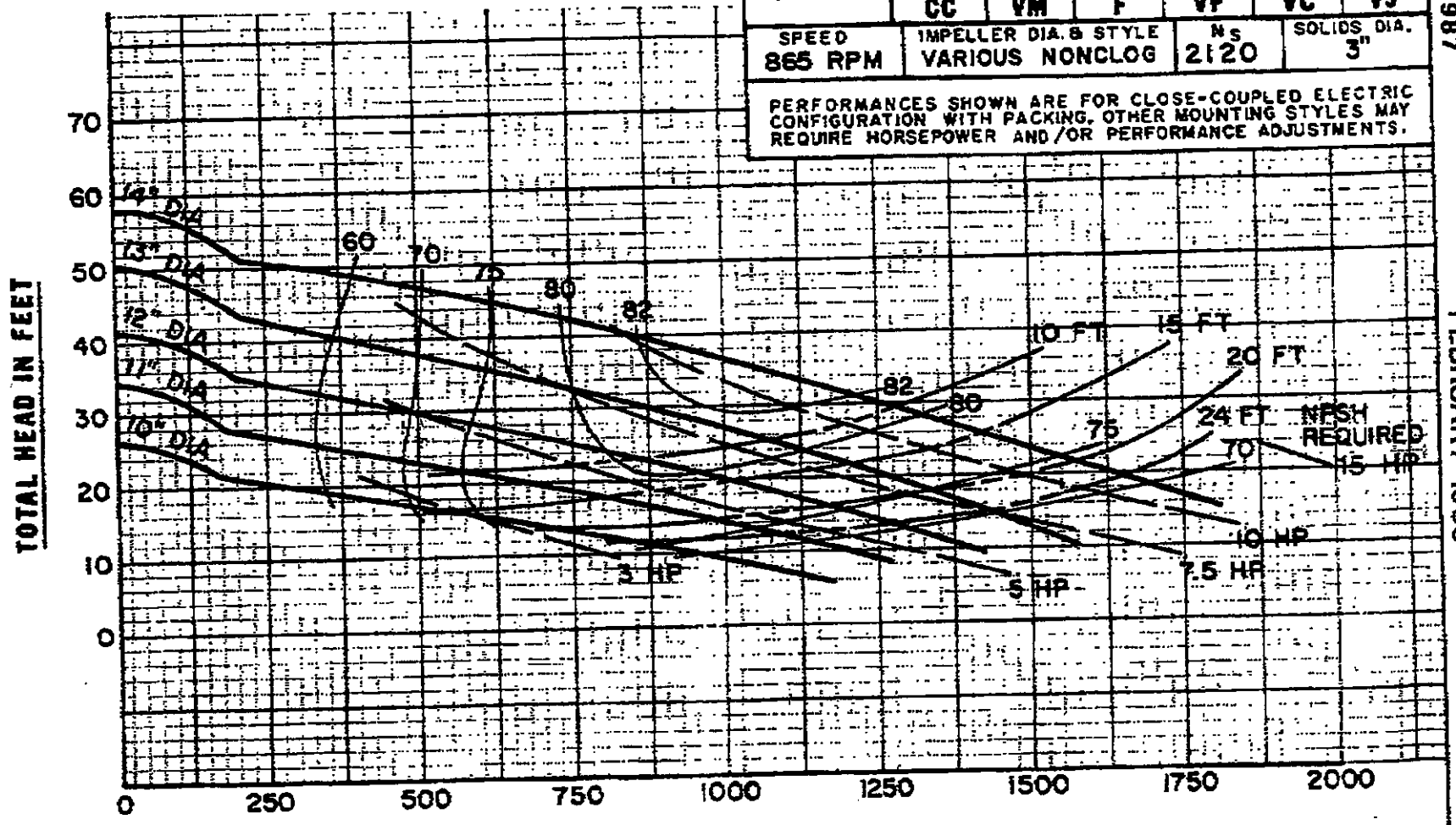
JAN-30-95 MON 16:08 CASCADE MACHINERY & ELECT P.01

SUPERSEDES APRIL 1987

MODEL	CC	VM	F	VF	VC	VS
6NHTA						

SPEED	IMPELLER DIA. & STYLE	N_S	SOLIDS DIA.
865 RPM	VARIOUS NONCLOG	2120	3"

PERFORMANCES SHOWN ARE FOR CLOSE-COUPLED ELECTRIC CONFIGURATION WITH PACKING. OTHER MOUNTING STYLES MAY REQUIRE HORSEPOWER AND/OR PERFORMANCE ADJUSTMENTS.



FT. X (.305) = METERS
GPM X (.227) = CUBIC METERS PER HOUR

FEBRUARY 1988

756-62

CORNELL PUMP CO. - PORTLAND, OREGON | 6NHTA – 900

Customer :
Project name :

Pump Performance Datasheet

Encompass 2.0 - 14.5.0.0

Item number	: Default	Size	: Myers - 4VC/4VCX
Service	:	Stages	: 1
Quantity	: 1	Based on curve number	: SUB_S_E_AH_00027_E_4 Rev 2012-03-23
Quote number	:	Date last saved	: 20 Feb 2015 6:25 PM

Operating Conditions

Flow, rated	: 1,349.3 USgpm
Differential head / pressure, rated (requested)	: 108.8 ft
Differential head / pressure, rated (actual)	: 108.8 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Frequency	: 60 Hz

Performance

Speed, rated	: 1,750 rpm
Impeller diameter, rated	: 12.00 in
Impeller diameter, maximum	: 12.00 in
Impeller diameter, minimum	: 8.00 in
Efficiency	: 75.00 %
NPSH required / margin required	: - / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: N/A Metric units
Minimum Continuous Stable Flow	: 300.0 USgpm
Head, maximum, rated diameter	: 180.0 ft
Head rise to shutoff	: 65.38 %
Flow, best eff. point (BEP)	: 1,349.3 USgpm
Flow ratio (rated / BEP)	: 100.00 %
Diameter ratio (rated / max)	: 100.00 %
Head ratio (rated dia / max dia)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Solids concentration, by volume	: 0.00 %
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 0.999 / 0.999 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

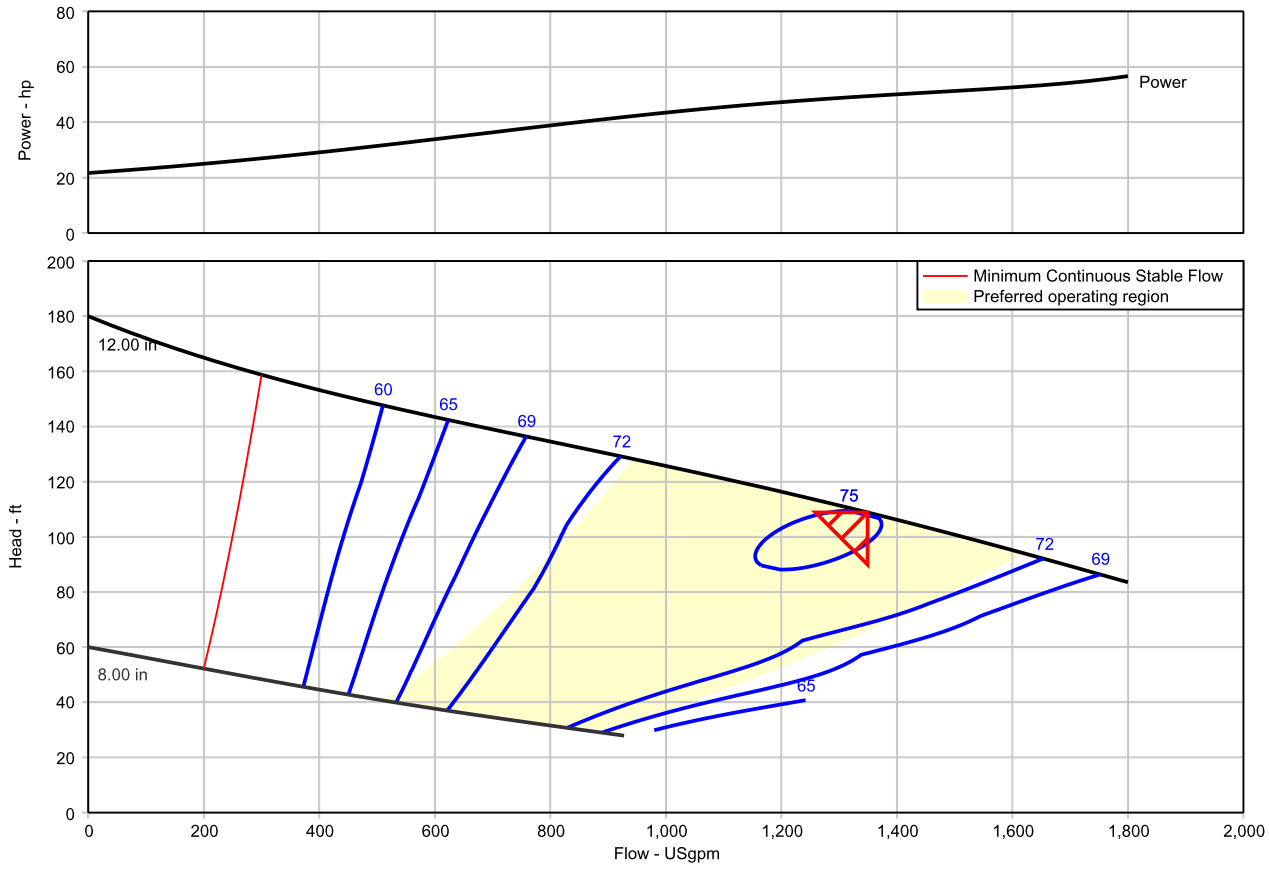
Material selected	: Standard

Pressure Data

Maximum working pressure	: 77.88 psi.g
Maximum allowable working pressure	: N/A
Maximum allowable suction pressure	: N/A
Hydrostatic test pressure	: N/A

Driver & Power Data

Driver sizing specification	: Maximum power
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 37.07 hp
Power, rated	: 49.42 hp
Power, maximum, rated diameter	: 56.64 hp
Minimum recommended motor rating	: 60.00 hp / 44.74 kW



Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: McCormick Woods 2 PS
Date: 3/3/2015

McCormick Woods 2 PS, Hydromatic, model S6LX, 25 hp, 1,000 gpm, 60 ft tdh, 10.50" impeller

Pump:

Size: S6L/S6LX

Type: NCLOG-6
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 10.5 in

Curve: S6L1750

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 6 in

Pump Limits:

Temperature: 140 °F
Pressure: 125 psi g
Sphere size: 3.25 in

Power: ---
Eye area: ---

Search Criteria:

Flow: 1000 US gpm

Head: 60 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

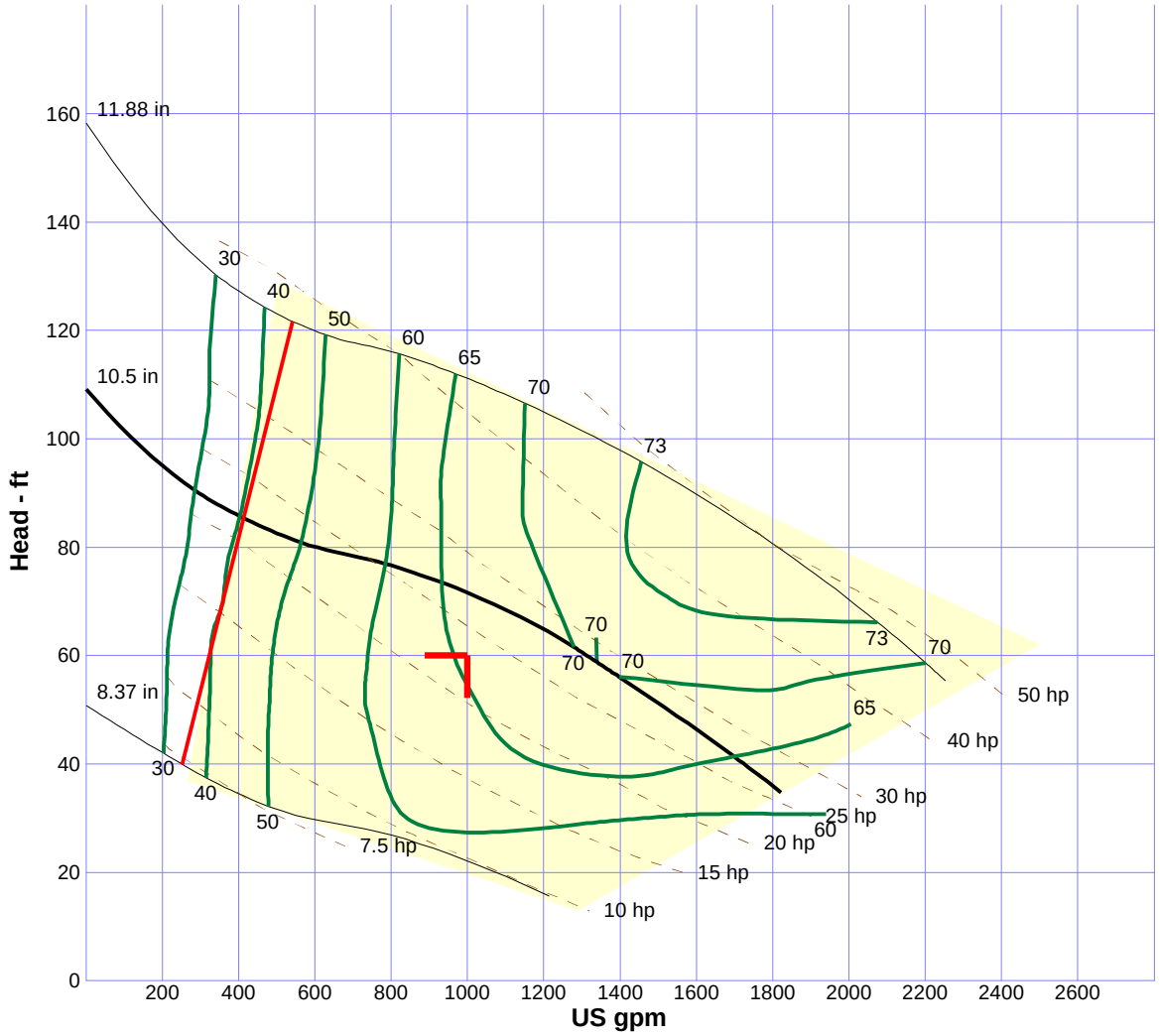
Motor:

Consult HYDROMATIC to select a motor for this pump.

---- Data Point ----	
Flow:	1000 US gpm
Head:	71.1 ft
Eff:	66%
Power:	27 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	109 ft
Shutoff dP:	47.3 psi
Min flow:	401 US gpm
BEP:	70% @ 1337 US gpm
NOL power:	28.4 hp @ 1278 US gpm

-- Max Curve --
Max power: 50 hp @ 1800 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1200	1750	64.2	69	28	---
1000	1750	71.1	66	27	---
800	1750	76.6	61	25.6	---
600	1750	80.2	52	23.4	---
400	1750	---	---	---	---

Pump Data Sheet - HYDROMATIC

Company: Pumptech Inc
Name:
Date: 5/29/2007

SUPPLIED BY CONTRACTOR

HYDROMATIC

Imp:

Size: H4H/H4HX-1000

Type: NCLOG-4
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 8.75 in

Curve:

Impeller: 15146

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: --- in
Discharge: 4 in

Pump Limits:

Temperature: 140 °F
Pressure: 150 psi g
Sphere size: 3 in

Power: --- hp
Eye area: --- in²

Search Criteria:

Flow: 200 US gpm

Head: 63 ft

Fluid:

Water
Density: 62.25 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: --- ft

Motor:

Consult HYDROMATIC to select a motor for this pump.

--- Data Point ---

Flow:	200 US gpm
Head:	65.8 ft
Eff:	47%
Power:	7.01 hp
NPSHr:	--- ft

--- Design Curve ---

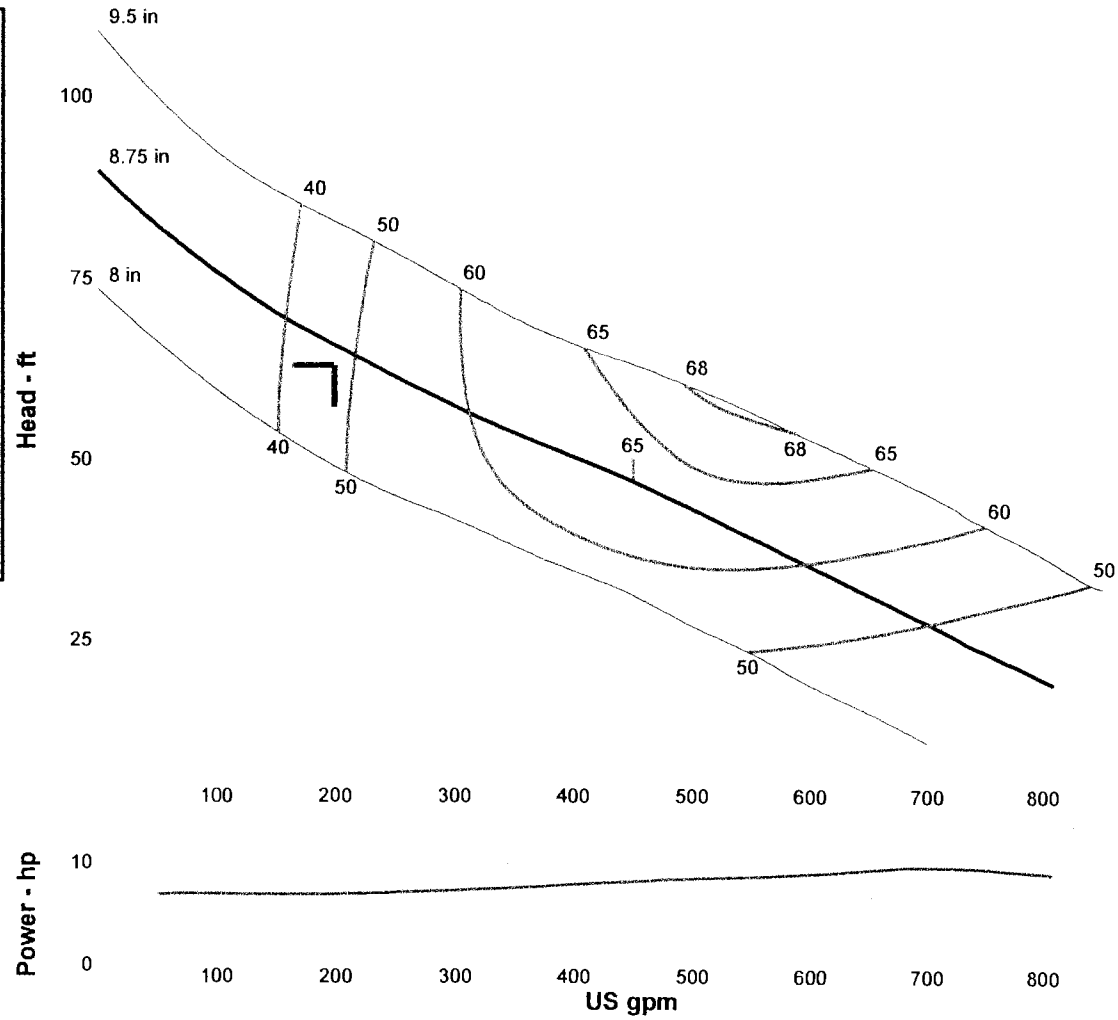
Shutoff head:	89.8 ft
Shutoff dP:	38.8 psi
Min flow:	--- US gpm

BEP: 65% @ 451 US gpm

!OL power:
9.67 hp @ 700 US gpm

-- Max Curve --

Max power:
14 hp @ 840 US gpm

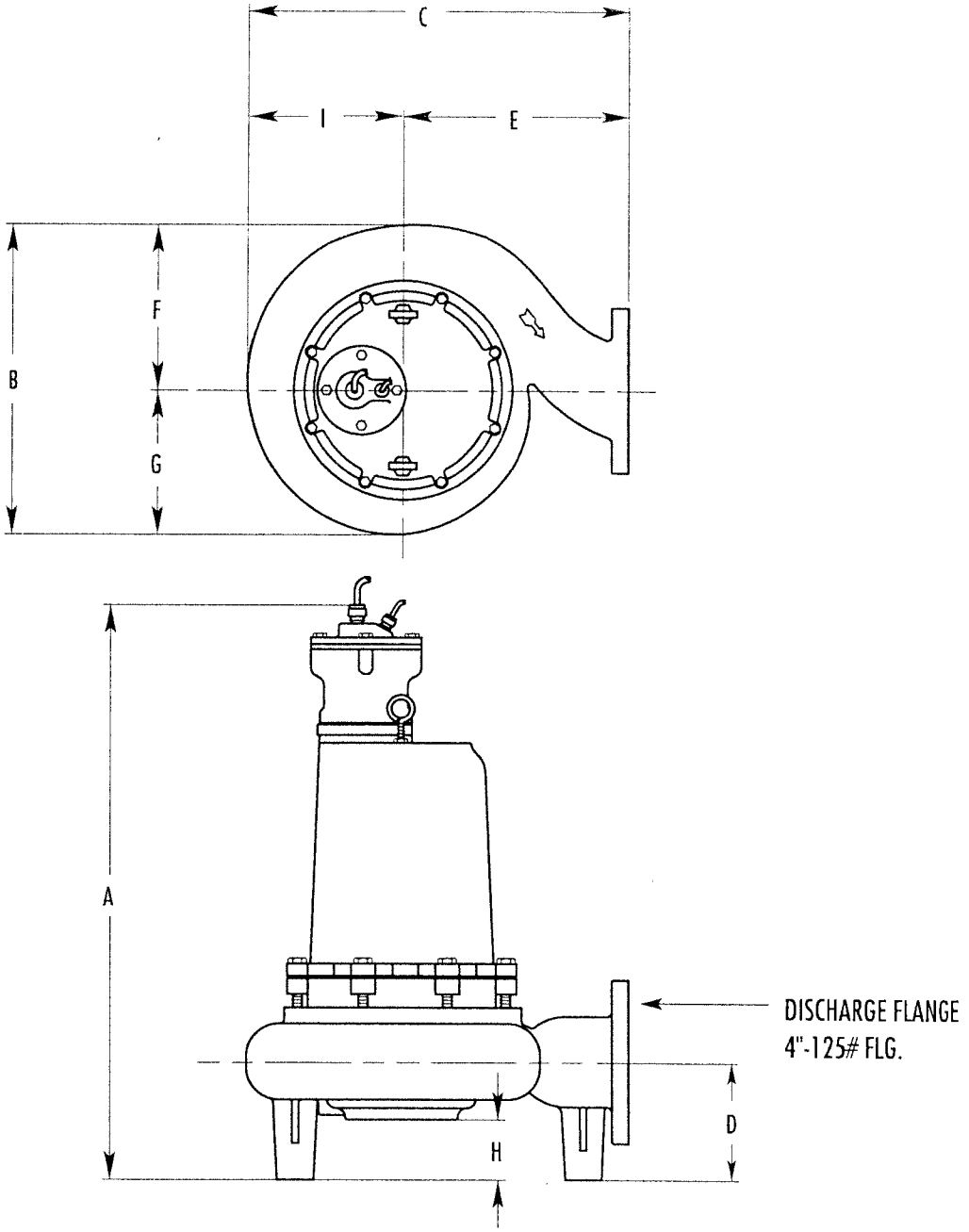


Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
240	1750	62.4	52	7.13	---
200	1750	65.8	47	7.01	---
160	1750	69.3	40	6.93	---
120	1750	73.8	31	6.97	---
80	1750	78.4	22	7.02	---

SUPPLIED BY CONTRACTOR

Dimensional Data H4H/H4HX



	A	B	C	D	E	F	G	H	I
H4H	32-3/16	16-1/2	20-3/4	6-1/2	12-1/2	8-13/16	7-11/16	3-3/16	8-1/4
H4HX	36-5/8	16-1/2	20-3/4	6-1/2	12-1/2	8-13/16	7-11/16	3-3/16	8-1/4

ALL DIMENSIONS IN INCHES

NOTE: CASTING DIMENSIONS MAY VARY ± 1/8"

SUPPLIED BY CONTRACTOR

Electrical Data — H4H/H4HX

MODEL: H4H/H4HX—Non-Clog Sewage Pump

R.P.M.	1750			
MOTOR TYPE	ENCLOSED, OIL COOLED INDUCTION, VFD SUITABLE			
MOTOR DESIGN NEMA TYPE	B (3ø) L (1ø)			
GENERAL INSULATION CLASS	H			
STATOR WINDING CLASS	H			
MAXIMUM STATOR TEMPERATURE	180°C [356°F]			
MOTOR PROTECTION	BI-METALLIC, TEMPERATURE SENSITIVE DISC, SIZED TO OPEN AT 130°C AND AUTOMATICALLY RESET @ 30–35°C DIFFERENTIAL, ONE IN SINGLE PHASE, TWO IN THREE PHASE			
ELECTRICAL RATINGS	HEAT SENSOR	24VDC 5AMPS	115VAC 5AMPS	230VAC 5AMPS
	SEAL FAIL	300VAC 5mA		
VOLTAGE TOLERANCE	±10%			

HP	VOLTAGE	PHASE	NEC CODE	SF	FULL LOAD AMPS	SF AMPS	LCKD. RTR. AMPS	RUN KW	START KVA	RUN KVA	MTR. EFF. @ SF	MTR. EFF. 100% FL	MTR. EFF. 75% FL	MTR. EFF. 50% FL	PWR. FACT. @ SF	PWR. FACT. 100% FL	PWR. FACT. 75% FL	PWR. FACT. 50% FL
7.5	230	1	D	1.2	32.2	38.7	137	7.3	31.5	7.4	.77	.77	.75	.67	.98	.98	.97	.92
7.5	200	3	H	1.2	25.2	29.5	147	7.0	51	8.8	.80	.80	.79	.73	.82	.80	.76	.66
	230				21.9	25.7	128											
	460				11	12.8	64											
	575				8.8	10.3	51.2											
10	200	3	H	1.2	33.9	39.9	186	9.3	64.5	11.7	.80	.81	.79	.75	.81	.79	.75	.66
	230				29.4	34.7	162											
	460				14.7	17.3	81											
	575				11.8	13.9	65											
15	200	3	G	1.2	50.8	60.9	267	13.7	92.5	17.6	.80	.82	.81	.79	.80	.78	.71	.60
	230				44.2	53	232											
	460				22.1	26.5	116											
	575				17.7	21.2	92.8											

SUPPLIED BY CONTRACTOR

Technical Data | **H4HX**

MODEL: H4HX — Explosion Proof Non-Clog Sewage Pumps

Physical Data:

DISCHARGE SIZE	4" 125# ANSI
SOLIDS SIZE	3" SPHERICAL
IMPELLER TYPE	BALANCED, ENCLOSED, MONO-VANE
CABLE LENGTH	25' STANDARD 50' OPTIONAL
PAINT	PAINTED AFTER ASSEMBLY. GREEN, WATER REDUCIBLE ENAMEL, ONE COAT, AIR DRIED

Temperature:

MAXIMUM LIQUID	104°F LABELED/140°F
MAXIMUM STATOR	356°F
OIL FLASH POINT	390°F
HEAT SENSOR Open: Closed:	257°F MAX./239°F MIN. 194°F MAX./119°F MIN.

Technical Data:

POWER CORD TYPE		STW-A WATER RESISTANT 600V, 60°C			
SENSOR CORD TYPE		18-5 STW-A WATER RESISTANT 600V, 60°C, 5.5 AMPS			
MATERIALS OF CONSTRUCTION	MOTOR HOUSING	CAST IRON	ASTM	A-48	CLASS 30
	CASING	CAST IRON	ASTM	A-48	CLASS 30
	IMPELLER	DUCTILE IRON	ASTM	A-536	
	CASING WEAR RING	BRONZE	ASTM	B-584-836	ALLOY 115
	MOTOR SHAFT	416 STAINLESS STEEL			
	HARDWARE	300 SERIES STAINLESS STEEL			
	"O" RINGS	BUNA N			
MECHANICAL SEALS Standard: Optional: Optional:		UPPER AND LOWER CARBON / CERAMIC / BUNA-N, TYPE 21 LOWER TUNGSTEN CARBIDE / TUNGSTEN CARBIDE / BUNA-N, TYPE 21 LOWER SILICON CARBIDE / SILICON CARBIDE / BUNA-N, TYPE 21			
UPPER BEARING		(RADIAL) SINGLE ROW — BALL			
LOWER BEARING		(THRUST) SINGLE ROW — BALL			

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: McCormick North Phase 2
Date: 3/3/2015

(McCormick North Phase 2, H4HX1000EC 1750 RPM, 8.75" for 200GPM at 63ft - Contractor: Rotschy , MAS # 77938)- McCormick Meadows, Hydromatic, model H4HX, 10 hp, flow unknown, 65.8 ft

Pump:

Size: H4H/H4HX-1000

Type: NCLOG-4
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 8.75 in

Curve:

Impeller: 15146

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 4 in

Pump Limits:

Temperature: 140 °F
Pressure: 150 psi g
Sphere size: 3 in

Power: ---
Eye area: ---

Search Criteria:

Flow: 200 US gpm

Head: 63 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

Motor:

Consult HYDROMATIC to select a motor for this pump.

---- Data Point ----

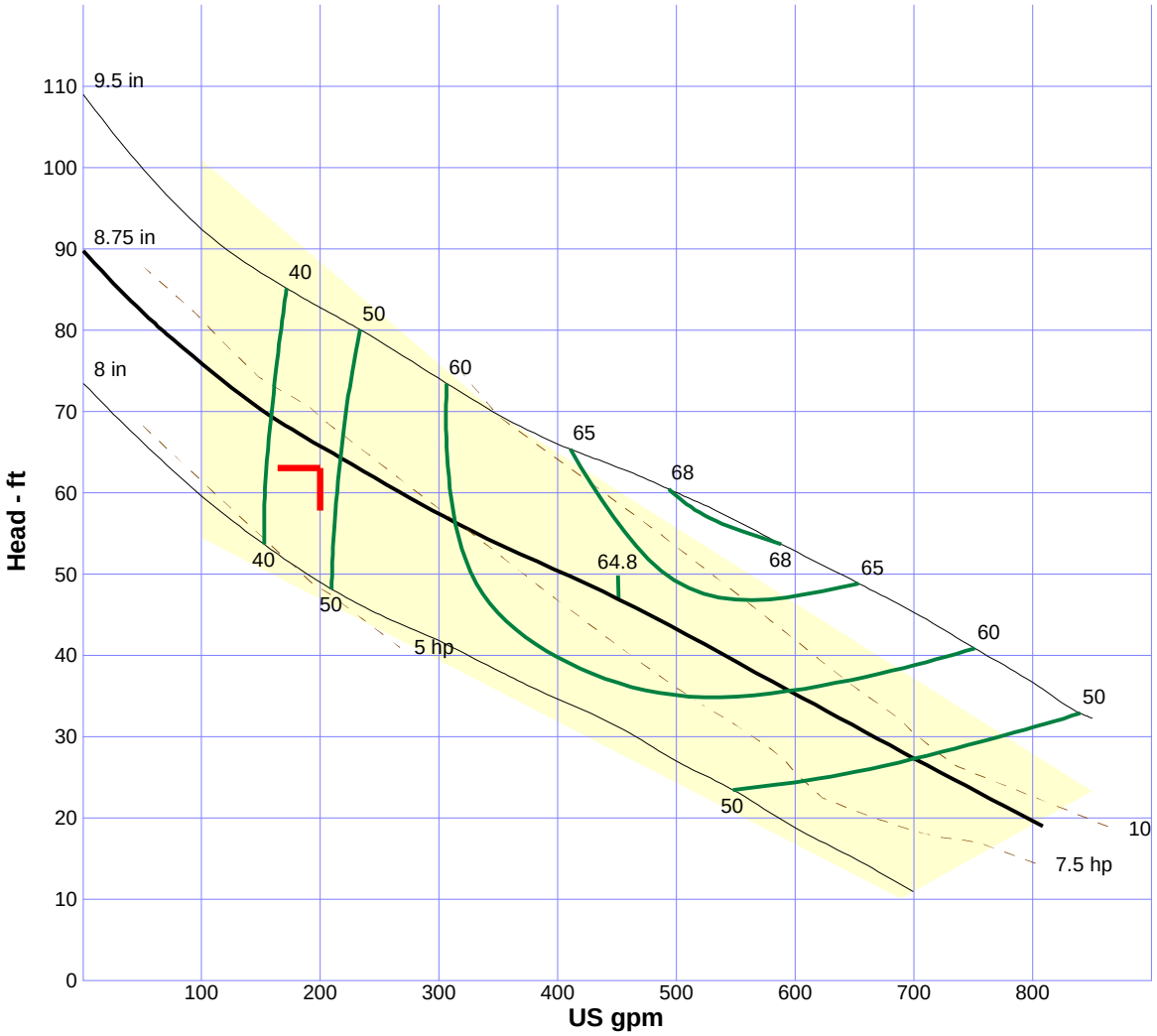
Flow:	200 US gpm
Head:	65.8 ft
Eff:	47%
Power:	7.02 hp
NPSHr:	---

---- Design Curve ----

Shutoff head:	89.8 ft
Shutoff dP:	38.9 psi
Min flow:	---
BEP:	65% @ 451 US gpm
NOL power:	9.69 hp @ 700 US gpm

-- Max Curve --

Max power: 14 hp @ 840 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
240	1750	62.4	52	7.15	---
200	1750	65.8	47	7.02	---
160	1750	69.3	40	6.95	---
120	1750	73.8	31	6.99	---
80	1750	78.4	22	7.03	---

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: Ridge 3 PS, H4QX3000FC
Date: 3/3/2015

Ridge 3 PS, Hydromatic, model H4QX3000FC, 30 hp, 690 gpm, 95 ft tdh, 11.5" impeller

HYDROMATIC®

Pump:

Size: H4Q/H4QX

Type: NCLOG-4
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 11.5 in

Curve:

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 4 in

Pump Limits:

Temperature: 140 °F
Pressure: ---
Sphere size: 3 in

Power: ---
Eye area: ---

Search Criteria:

Flow: 690 US gpm

Head: 95 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

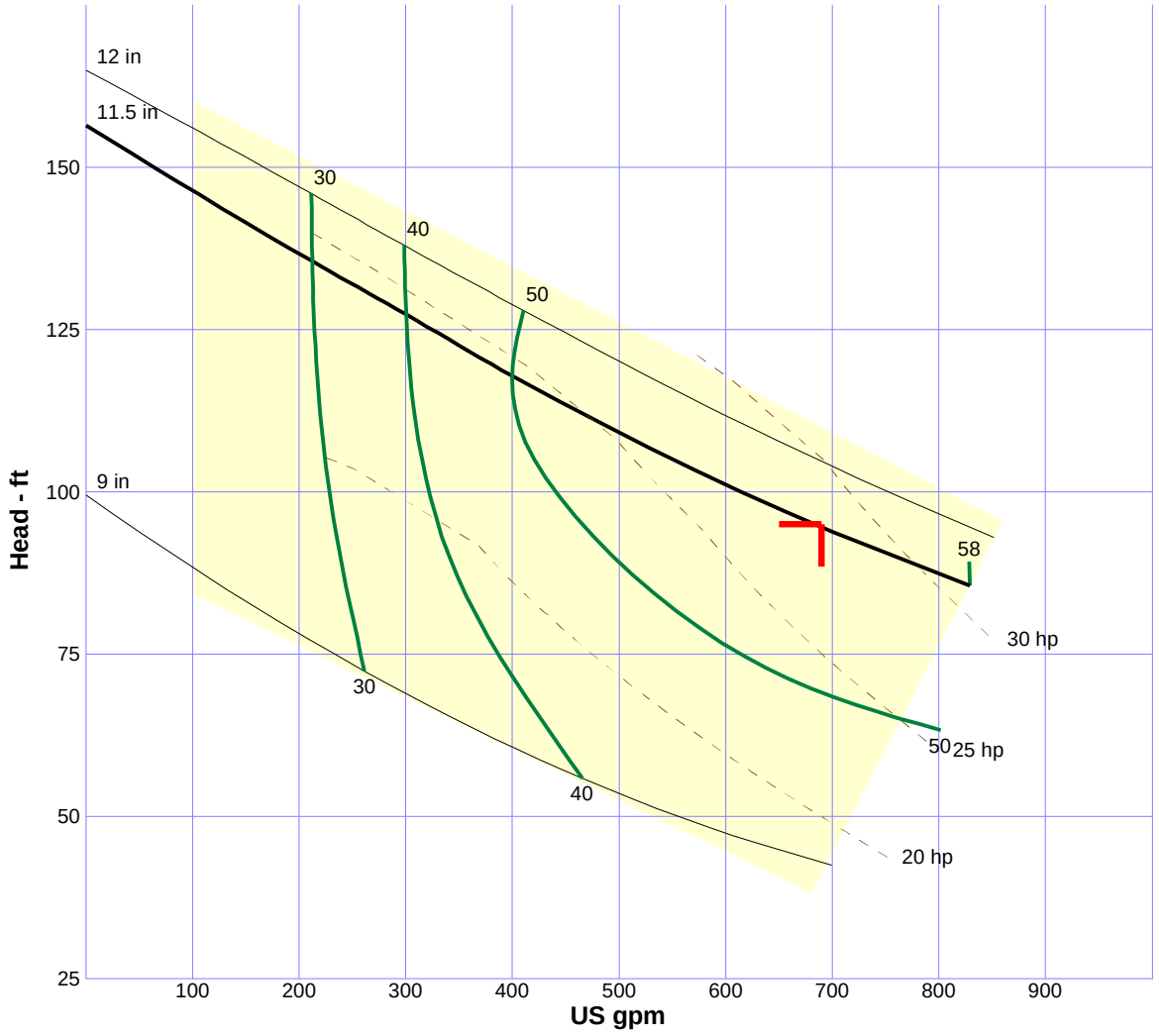
Motor:

Consult HYDROMATIC to select a motor for this pump.

---- Data Point ----	
Flow:	690 US gpm
Head:	96 ft
Eff:	55%
Power:	28.7 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	157 ft
Shutoff dP:	67.8 psi
Min flow:	---
BEP:	58% @ 829 US gpm
NOL power:	31 hp @ 829 US gpm

-- Max Curve --	
Max power:	33 hp @ 851 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
828	1750	85.6	58	30.9	---
690	1750	96	55	28.7	---
552	1750	106	53	26.4	---
414	1750	117	50	24.1	---
276	1750	130	37	24.2	---

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: Ridge 3 PS, H4QX3000FC
Date: 3/3/2015

Ridge 3 PS, Hydromatic, model H4QX3000FC, 30 hp, 690 gpm, 95 ft tdh, 11.5" impeller

HYDROMATIC®

Pump:

Size: H4Q/H4QX

Type: NCLOG-4
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 11.5 in

Curve:

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 4 in

Pump Limits:

Temperature: 140 °F
Pressure: ---
Sphere size: 3 in

Power: ---
Eye area: ---

Search Criteria:

Flow: 690 US gpm

Head: 95 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

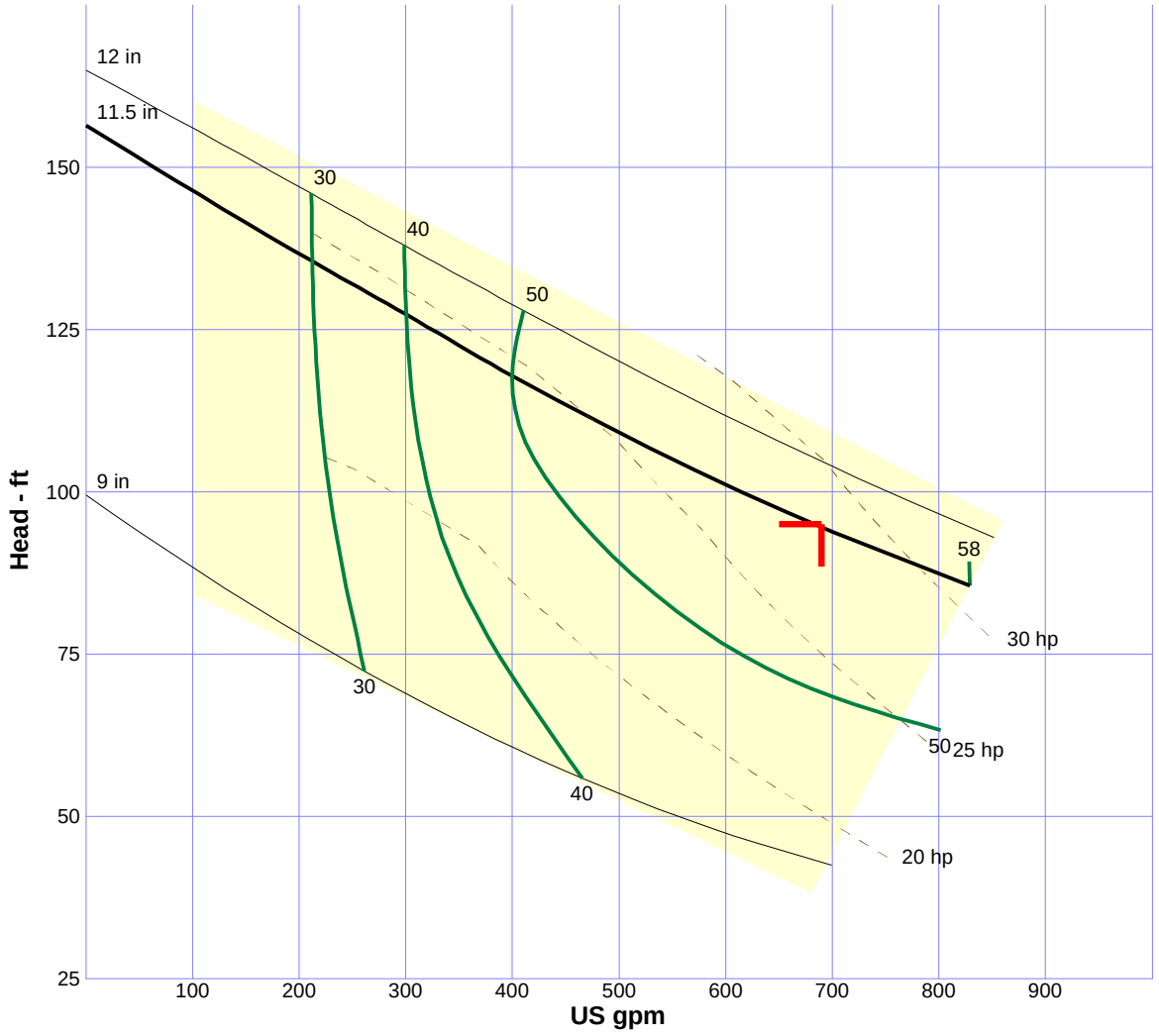
Motor:

Consult HYDROMATIC to select a motor for this pump.

---- Data Point ----	
Flow:	690 US gpm
Head:	96 ft
Eff:	55%
Power:	28.7 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	157 ft
Shutoff dP:	67.8 psi
Min flow:	---
BEP:	58% @ 829 US gpm
NOL power:	31 hp @ 829 US gpm

-- Max Curve --	
Max power:	33 hp @ 851 US gpm

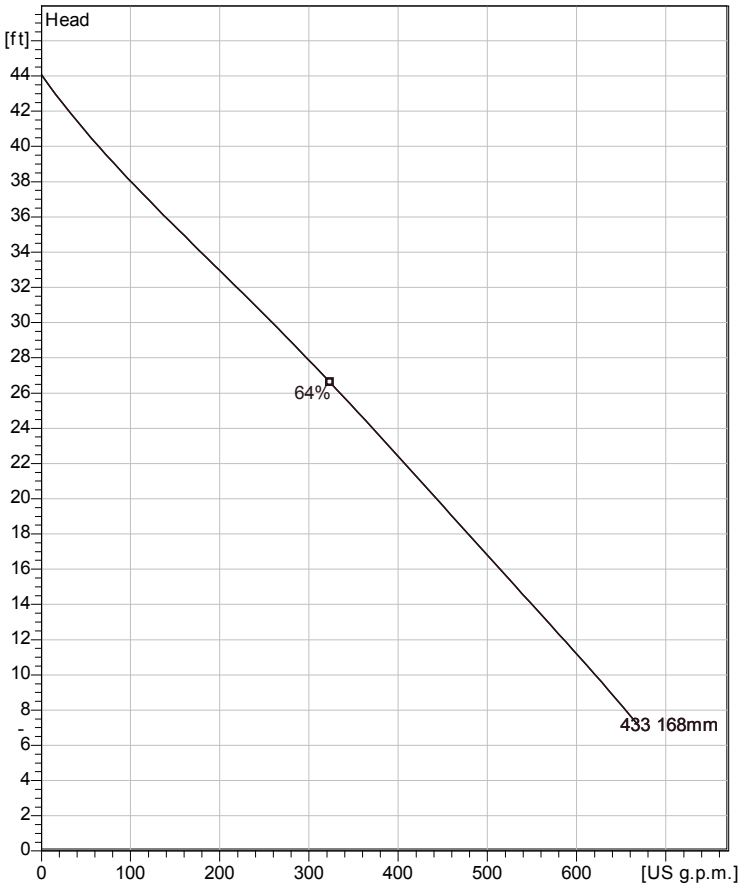


Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
828	1750	85.6	58	30.9	---
690	1750	96	55	28.7	---
552	1750	106	53	26.4	---
414	1750	117	50	24.1	---
276	1750	130	37	24.2	---

CP 3102 MT 3~ 433

Technical specification

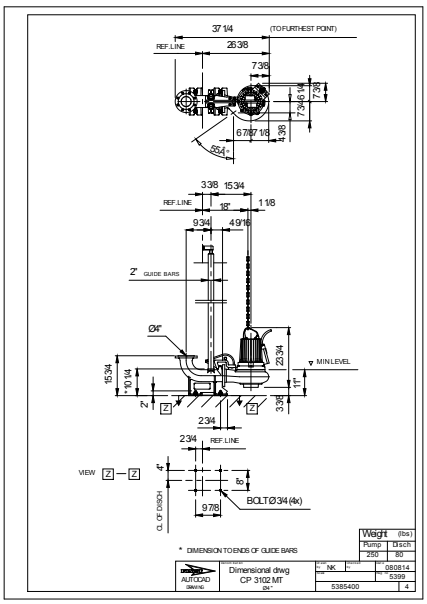


Water, pure

Curve according to: ISO 9906 grade 2 annex 1 or 2

Note: Picture might not correspond to the current configuration.

Installation: P - Semi permanent, Wet



General

Shrouded single or multi-channel impeller pumps with large throughlets and single volute pump casing for liquids containing solids and fibres. Cast iron design with double sealing technology. Some models available as stainless steel versions.

Impeller

Impeller material	Grey cast iron
Discharge Flange Diameter	3 15/16 inch
Suction Flange Diameter	100 mm
Impeller diameter	168 mm
Number of blades	1
Throughlet diameter	3 inch

Motor

Motor #	C3102.090 18-11-4AL-W 5hp
Stator variant	1
Frequency	60 Hz
Rated voltage	460 V
Number of poles	4
Phases	3~
Rated power	5 hp
Rated current	6.8 A
Starting current	42 A
Rated speed	1745 rpm
Power factor	
1/1 Load	0.81
3/4 Load	0.75
1/2 Load	0.63
Efficiency	
1/1 Load	85.0 %
3/4 Load	85.0 %
1/2 Load	83.5 %

Configuration

Project	Project ID	Created by	Created on	Last update
			2015-04-07	

CP 3102 MT 3~ 433

Performance curve

Pump

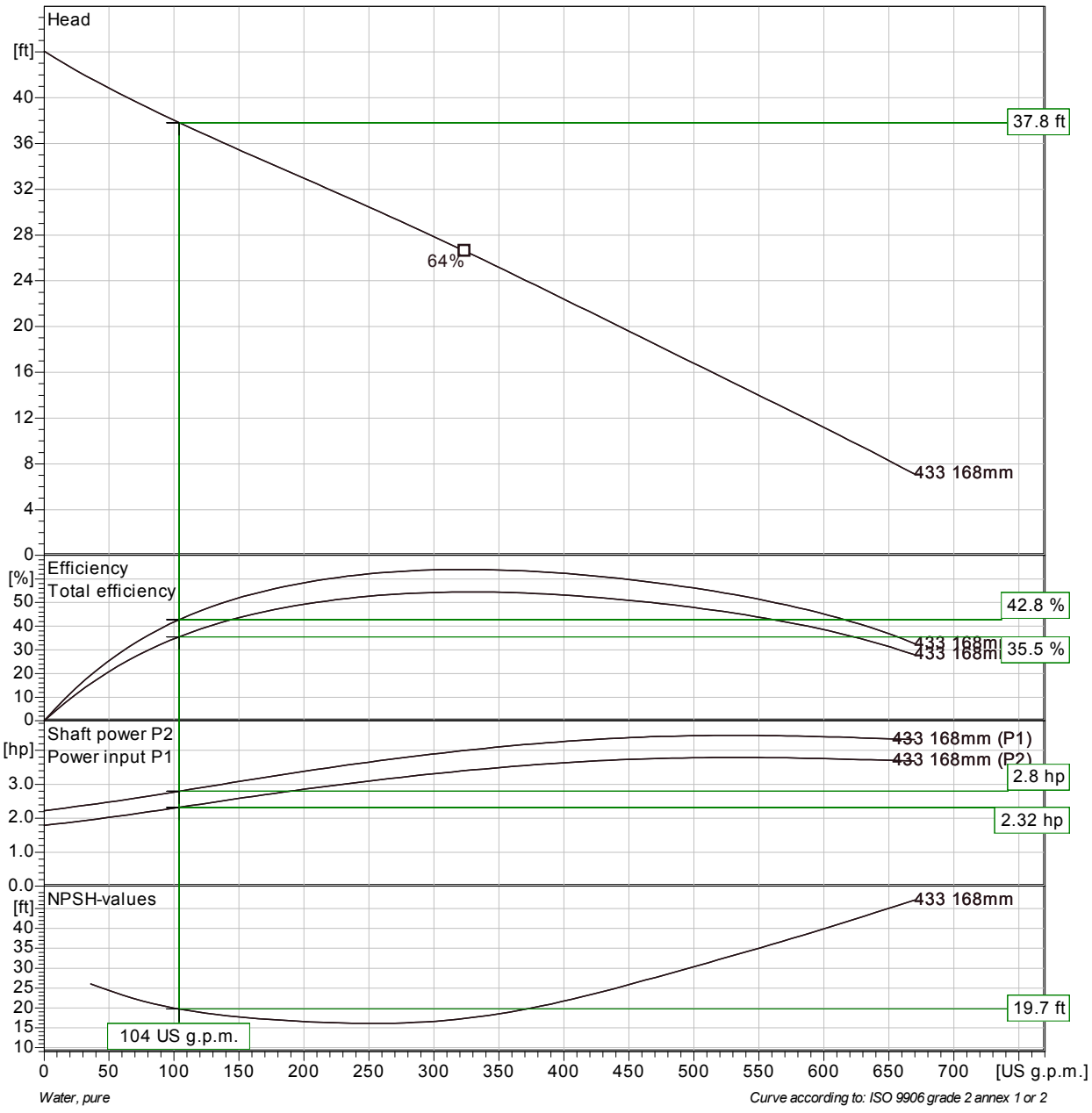
Discharge Flange Diameter	3 15/16 inch
Suction Flange Diameter	100 mm
Impeller diameter	$6^{5}/_{8}$"
Number of blades	1
Throughlet diameter	3 inch

Motor

Motor #	C3102.090 18-11-4AL-W 5hp
Stator variant	1
Frequency	60 Hz
Rated voltage	460 V
Number of poles	4
Phases	3~
Rated power	5 hp
Rated current	6.8 A
Starting current	42 A
Rated speed	1745 rpm

Power factor	
1/1 Load	0.81
3/4 Load	0.75
1/2 Load	0.63

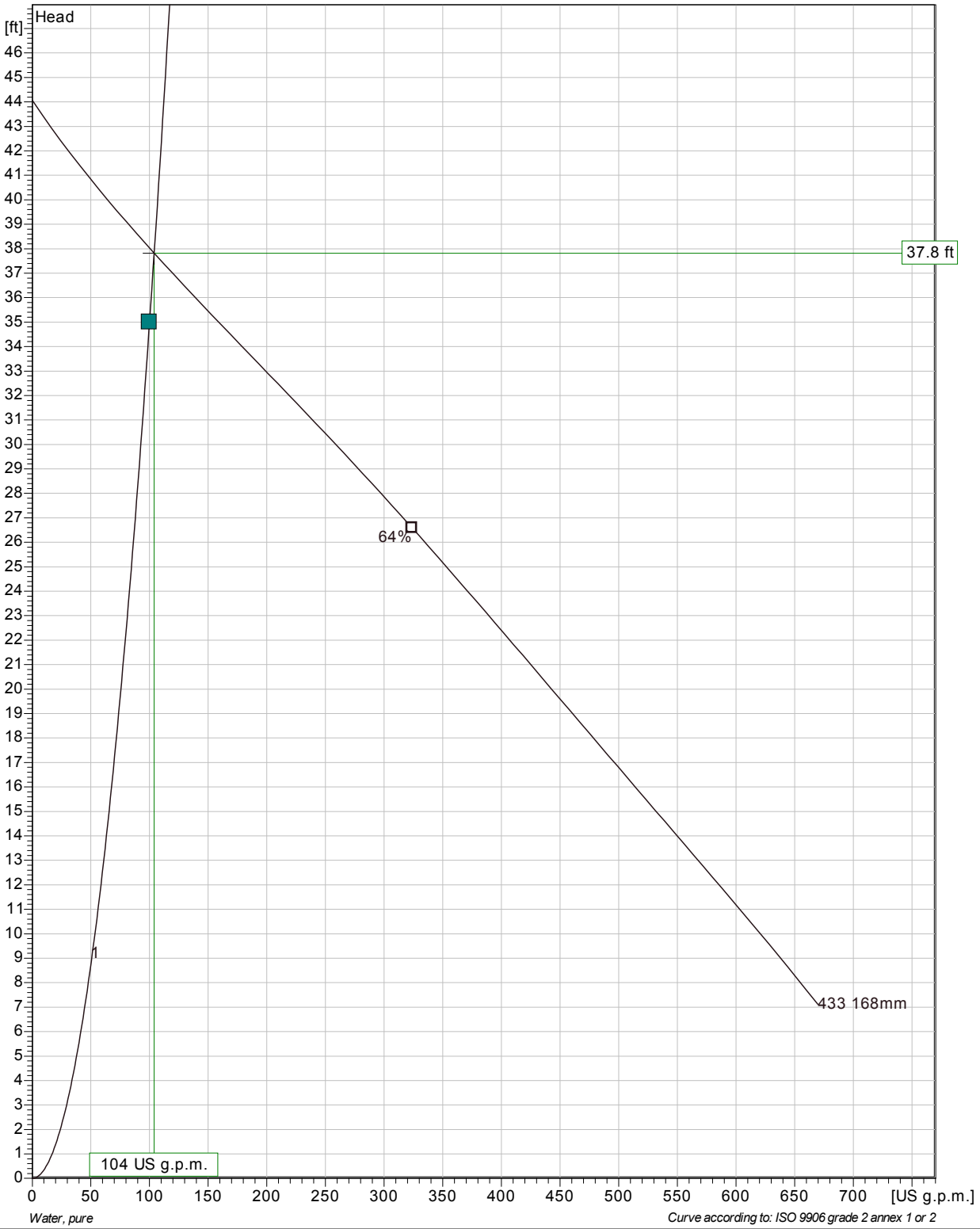
Efficiency	
1/1 Load	85.0 %
3/4 Load	85.0 %
1/2 Load	83.5 %



Project	Project ID	Created by	Created on	Last update
			2015-04-07	

CP 3102 MT 3~ 433

Duty Analysis

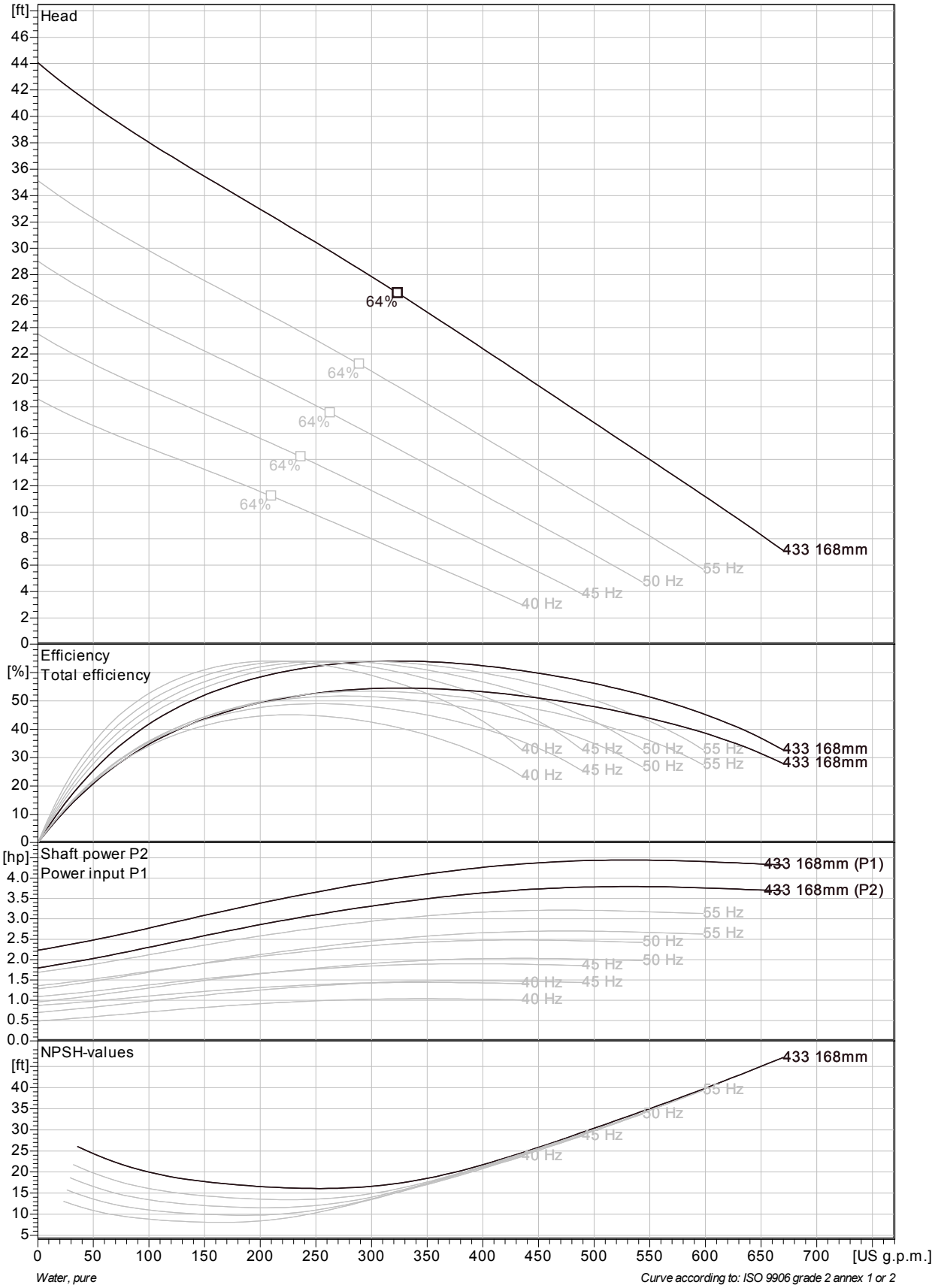


	Individual pump			Total					
Pumps running /System	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHre
1	104 US g.p.m.	37.8 ft	2.32 hp	104 US g.p.m.	37.8 ft	2.32 hp	42.8 %	335 kWh/US MG	19.7 ft

Project	Project ID	Created by	Created on	Last update
			2015-04-07	

CP 3102 MT 3~ 433

VFD Curve



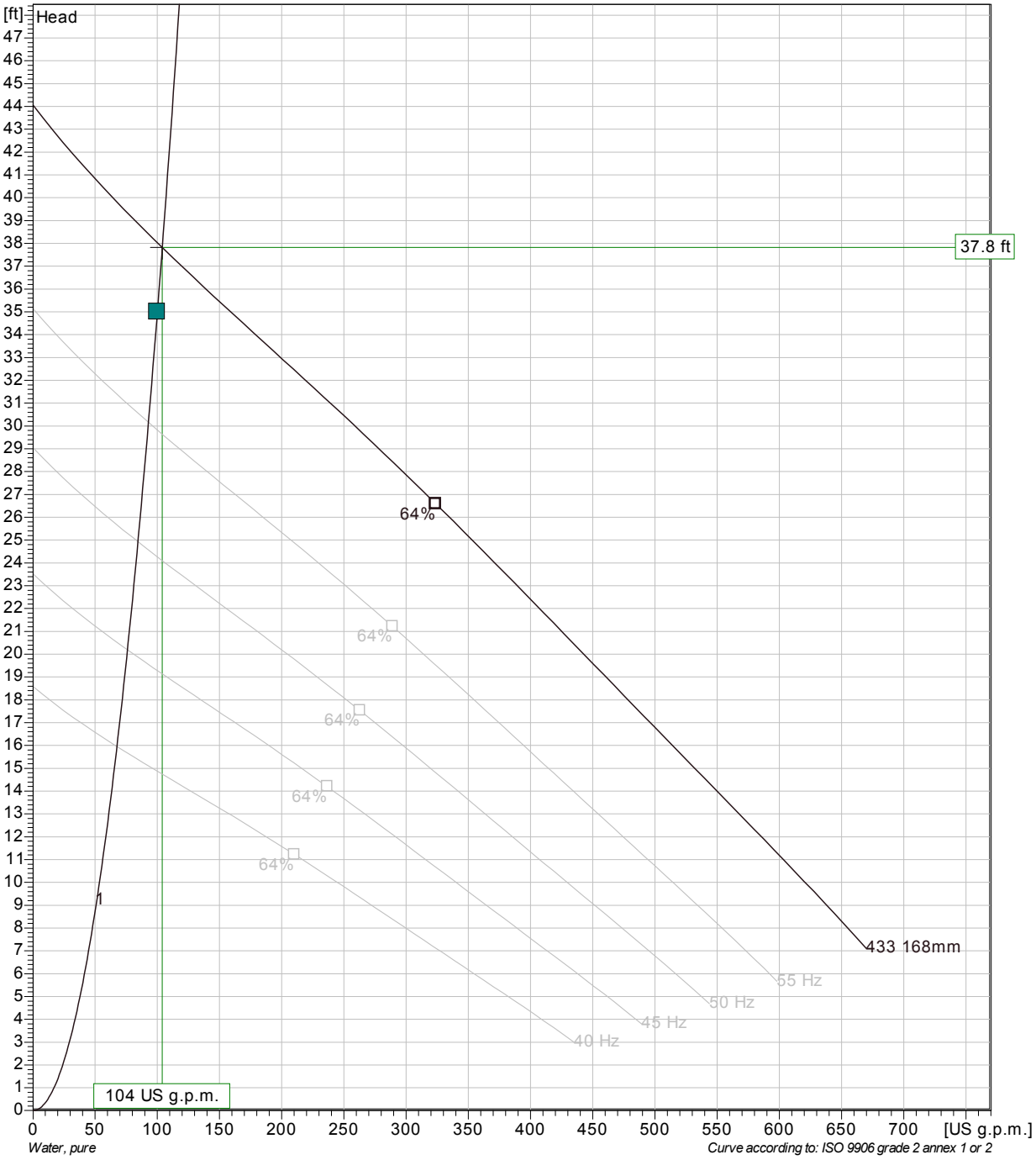
Water, pure

Curve according to: ISO 9906 grade 2 annex 1 or 2

Project	Project ID	Created by	Created on	Last update
			2015-04-07	

CP 3102 MT 3~ 433

VFD Analysis

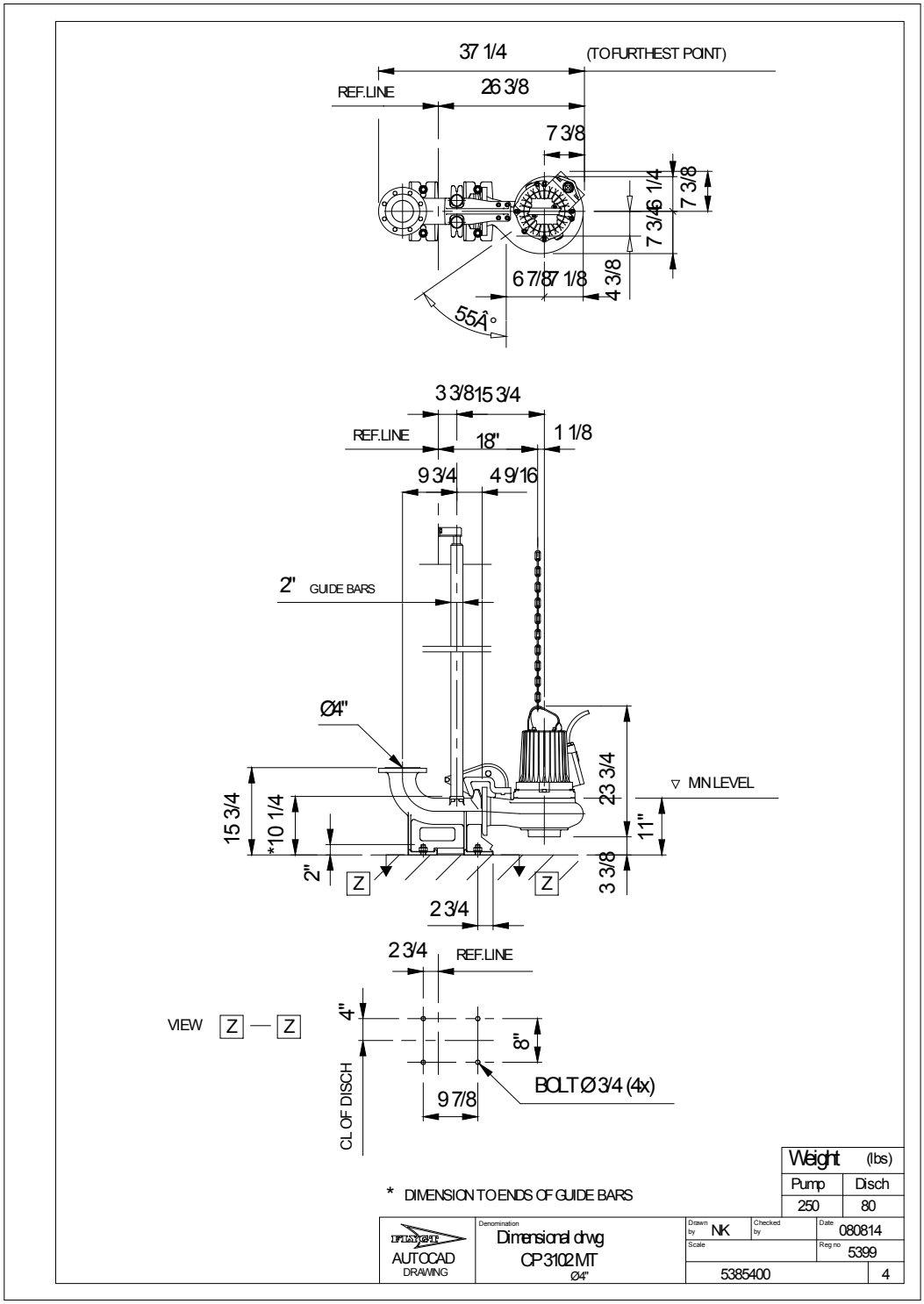


	Individual pump				Total					
Pumps running /System	Frequency	Flow	Head	Shaft power	Flow	Head	Shaft power	Hyd eff.	Specific energy	NPSHre
1	60 Hz	104 US g.p.m.	37.8 ft	2.32 hp	104 US g.p.m.	37.8 ft	2.32 hp	42.8 %	335 kWh/US MG	19.7 ft
1	55 Hz	92.8 US g.p.m.	30.2 ft	1.65 hp	92.8 US g.p.m.	30.2 ft	1.65 hp	42.8 %	279 kWh/US MG	16.5 ft
1	50 Hz	84.4 US g.p.m.	24.9 ft	1.24 hp	84.4 US g.p.m.	24.9 ft	1.24 hp	42.8 %	243 kWh/US MG	14.1 ft
1	45 Hz	76 US g.p.m.	20.2 ft	0.906 hp	76 US g.p.m.	20.2 ft	0.906 hp	42.8 %	213 kWh/US MG	11.9 ft
1	40 Hz	67.5 US g.p.m.	16 ft	0.637 hp	67.5 US g.p.m.	16 ft	0.637 hp	42.8 %	188 kWh/US MG	9.89 ft

Project	Project ID	Created by	Created on	Last update
			2015-04-07	

CP 3102 MT 3~ 433

Dimensional drawing



Project	Project ID	Created by	Created on	Last update
			2015-04-07	

SERVING THE PACIFIC NORTHWEST

PUMP SALES & SERVICE

Factory Performance Test Report

Pottery Road Lift Station City of Port Orchard

-

Vaughan Submersible Chopper Pump, Model # SE6W-107,

Qty -3- Vaughan Chopper Pump, Submersible (2 serve + Spare)
Design Condition: 1,800 GPM at 75 ft TDH
60 HP, 1800 RPM, 460 Volt, 3 Phase rated for Class 1, Div 1, Grp C&D locations (Explosion poof)

-

RH2 Engineers

Reference Plans & Specification, March 7, 2014

--

THE RUSH COMPANIES

HD Fowler Company

-

PumpTech Inc. Reference MAS # 112585

Oct 6, 2014

Municipal

☐ ***PumpTech Inc.***
12020 SE 32nd St, Suite 2
Bellevue, WA 98005
Ph: 425-644-8501
Fax: 425-562-9213
pumptech@pumptechnw.com
WA CONTRACTORS # PUMPTI*945QG

Industrial

☐ ***PumpTech Inc.***
209 S Hamilton Rd
Moses Lake, WA 98837
Ph: 509-766-6330
Fax: 509-766-6331
moseslake@pumptechnw.com
www.pumptechnw.com

Packaged Systems

☐ ***PumpTech Inc.***
321 S. Sequoia Parkway
Canby, OR 97013
Ph: 503-659-6230
Fax: 503-659-8718
inquiries@pumptechnw.com
OR CONTRACTORS # 154997

Vaughan **Chopper Pumps**

Date: Monday, October 06, 2014

TO: PumpTech Inc.
attn: Mr. Erick Merklinghaus
e-mail : emerklinghaus@pumptechnw.com; derek@chopperpumps.com; bryan@chopperpumps.com

FROM : Ian Dorsch

SUBJECT: Pump Performance Test Certificates for POTTERY ROAD STATION, PORT ORCHARD, WA
Spec # none, P.O. # 46086 for Lift Station service
3 each Vaughan model SE6W-107 serial # 123193-A/B/C

Dear : Mr. Erick Merklinghaus

Please find the enclosed pump test certificates as required by the specification. Please forward this information to the Engineer for review and approval.

We request the Engineer's written approval of these test certificates prior to shipment.

If you have any questions, please contact me by phone at 360-249-4042, extension 245 or by e-mail at ian@chopperpumps.com.

Sincerely,

Ian Dorsch
Vaughan Co., Inc.

cc: 123193

attachments:

Vaughan Co., Inc., 364 Monte-Elma Road, Montesano, WA 98563 Phone 360-249-4042 Fax 360-249-6155

PERFORMANCE TEST CERTIFICATE

CERTIFIED PRINT
VAUGHAN CO., INC.

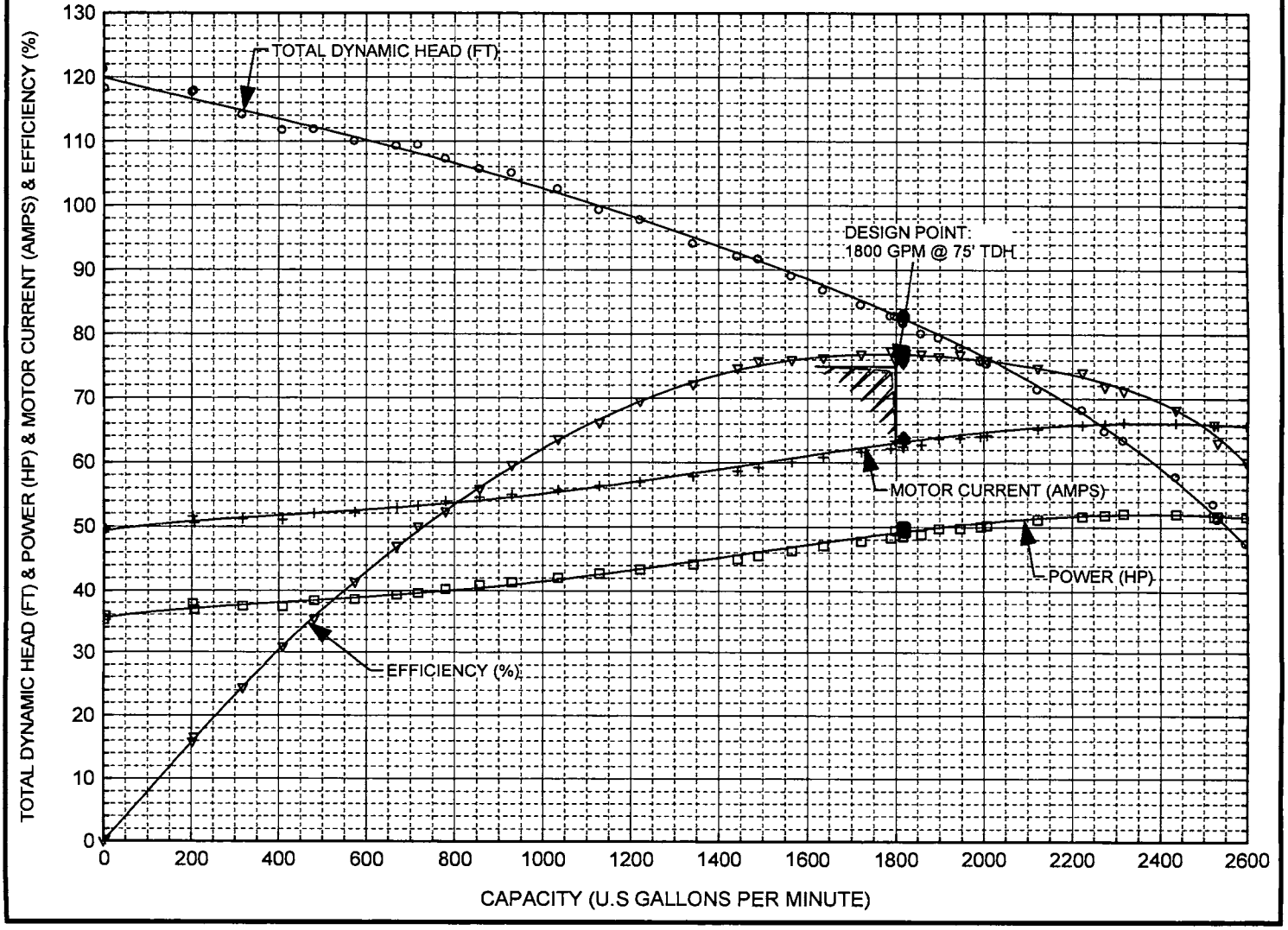
CUSTOMER:	POTTERY ROAD STATION, PORT ORCHARD, WA
MODEL:	SE6W-107
SERIAL #	123193 -A
MOTOR :	60 HP, 74.9 Full Load Amps at 460 Volts
MOTOR SPEED:	1770 RPM
PUMP SPEED:	1770 RPM

October 3, 2014

REQUIRED PERFORMANCE: 1800 GPM @ 75' TDH

ACCEPTABLE OPERATING RANGE: 650 to 2300 gpm

SE6W-107 w/ 60 HP, 1770 RPM JOB MOTOR; SN 123193-A; TEST # 61209



Vaughan Co., Inc., 364 Monte-Elma Road, Montesano, WA 98563 Phone 360-249-4042 Fax 360-249-6155

PERFORMANCE TEST CERTIFICATE

CERTIFIED PRINT
VAUGHAN CO., INC.

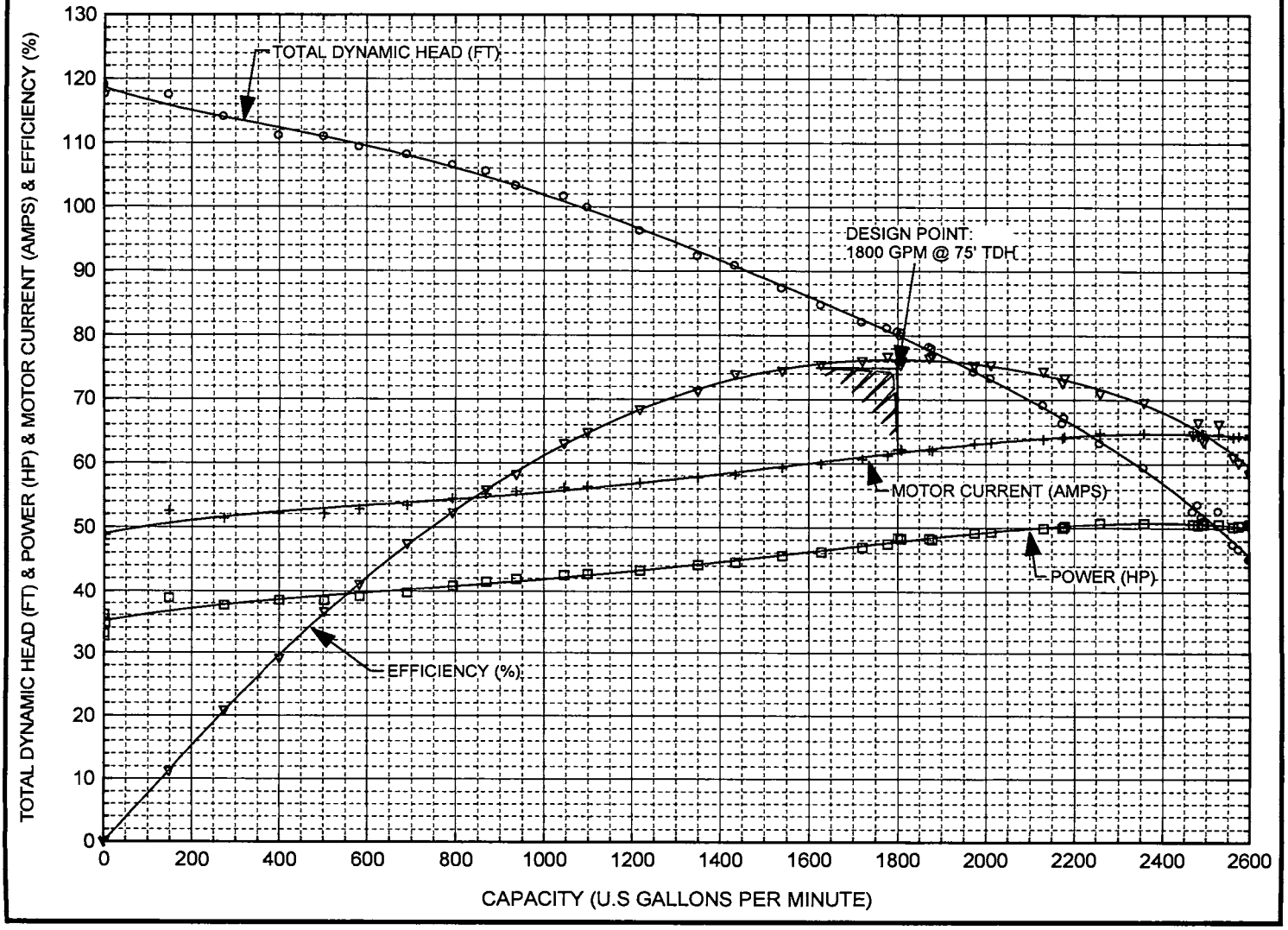
CUSTOMER:	POTTERY ROAD STATION, PORT ORCHARD, WA	
MODEL:	SE6W-107	
SERIAL #	123193 -B	
MOTOR :	60 HP, 74.9 Full Load Amps at 460 Volts	
MOTOR SPEED:	1770	RPM
PUMP SPEED:	1770	RPM

October 3, 2014

REQUIRED PERFORMANCE: 1800 GPM @ 75' TDH

ACCEPTABLE OPERATING RANGE: 650 to 2300 gpm

SE6W-107 w/ 60 HP, 1770 RPM JOB MOTOR; SN 123193-B; TEST # 61210



Vaughan Co., Inc., 364 Monte-Elma Road, Montesano, WA 98563 Phone 360-249-4042 Fax 360-249-6155

PERFORMANCE TEST CERTIFICATE

CERTIFIED PRINT
VAUGHAN CO., INC.

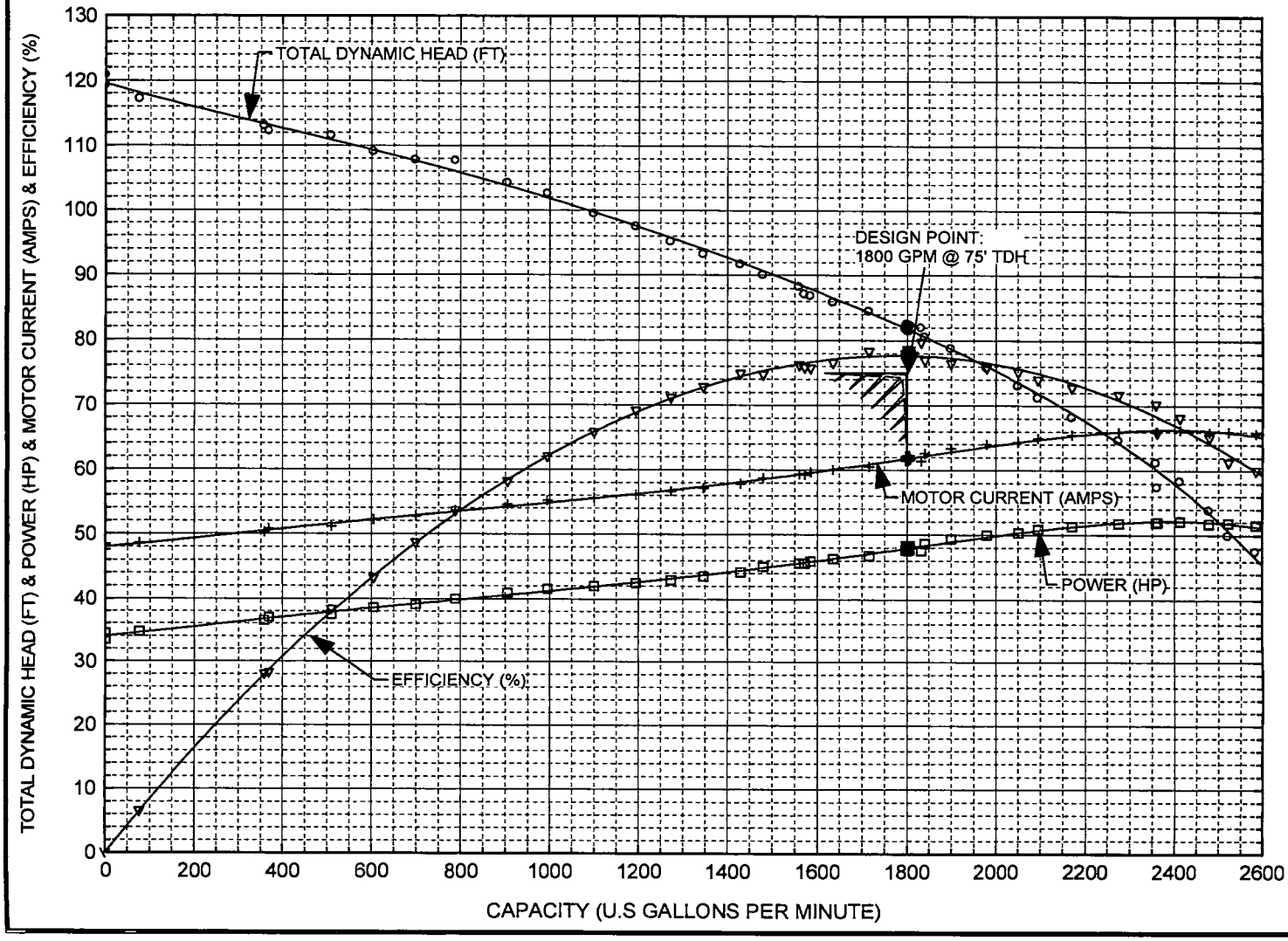
CUSTOMER:	POTTERY ROAD STATION, PORT ORCHARD, WA
MODEL:	SE6W-107
SERIAL #	123193 -C
MOTOR :	60 HP, 74.9 Full Load Amps at 460 Volts
MOTOR SPEED:	1770 RPM
PUMP SPEED:	1770 RPM

October 3, 2014

REQUIRED PERFORMANCE: 1800 GPM @ 75' TDH

ACCEPTABLE OPERATING RANGE: 650 to 2300 gpm

SE6W-107 w/ 60 HP, 1770 RPM JOB MOTOR; SN 123193-C; TEST # 61211



Vaughan Co., Inc., 364 Monte-Elma Road, Montesano, WA 98563 Phone 360-249-4042 Fax 360-249-6155

FACTORY MEGGER TEST

CUSTOMER:
POTTERY ROAD STATION, PORT ORCHARD, WA
Spec # none
Sold by: PumpTech Inc.

PUMP:
MODEL: SE6W-107
SERIAL # 123193
MOTOR VOLTS: 460

DESCRIPTION OF TEST:

	Pump A	Pump B	Pump C
MEGGER TEST BEFORE RUNNING:	✓	✓	✓
CHECK FOR PROPER ROTATION:	✓	✓	✓
PUMP WATER FOR 15 MINUTES:	✓	✓	✓
MEGGER TEST AFTER RUNNING :	✓	✓	✓
OIL CHECKED, NO CONTAMINATION:	✓	✓	✓

DATE: *October 6, 2014*

TESTED BY: *Ian Dorsch*

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: McCormick Woods 1 PS
Date: 3/3/2015

McCormick Woods 1 PS, Hydromatic, model S8LX, 75 hp, 1,000 gpm, 122 ft tdh, 12.13" x 11.13"

Pump:

Size: S8L/S8LX

Type: NCLOG-8
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 12.375 in

Curve: S8L1750

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 8 in

Pump Limits:

Temperature: 140 °F
Pressure: 125 psi g
Sphere size: 4 in

Power: ---
Eye area: ---

Search Criteria:

Flow: 1000 US gpm

Head: 122 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

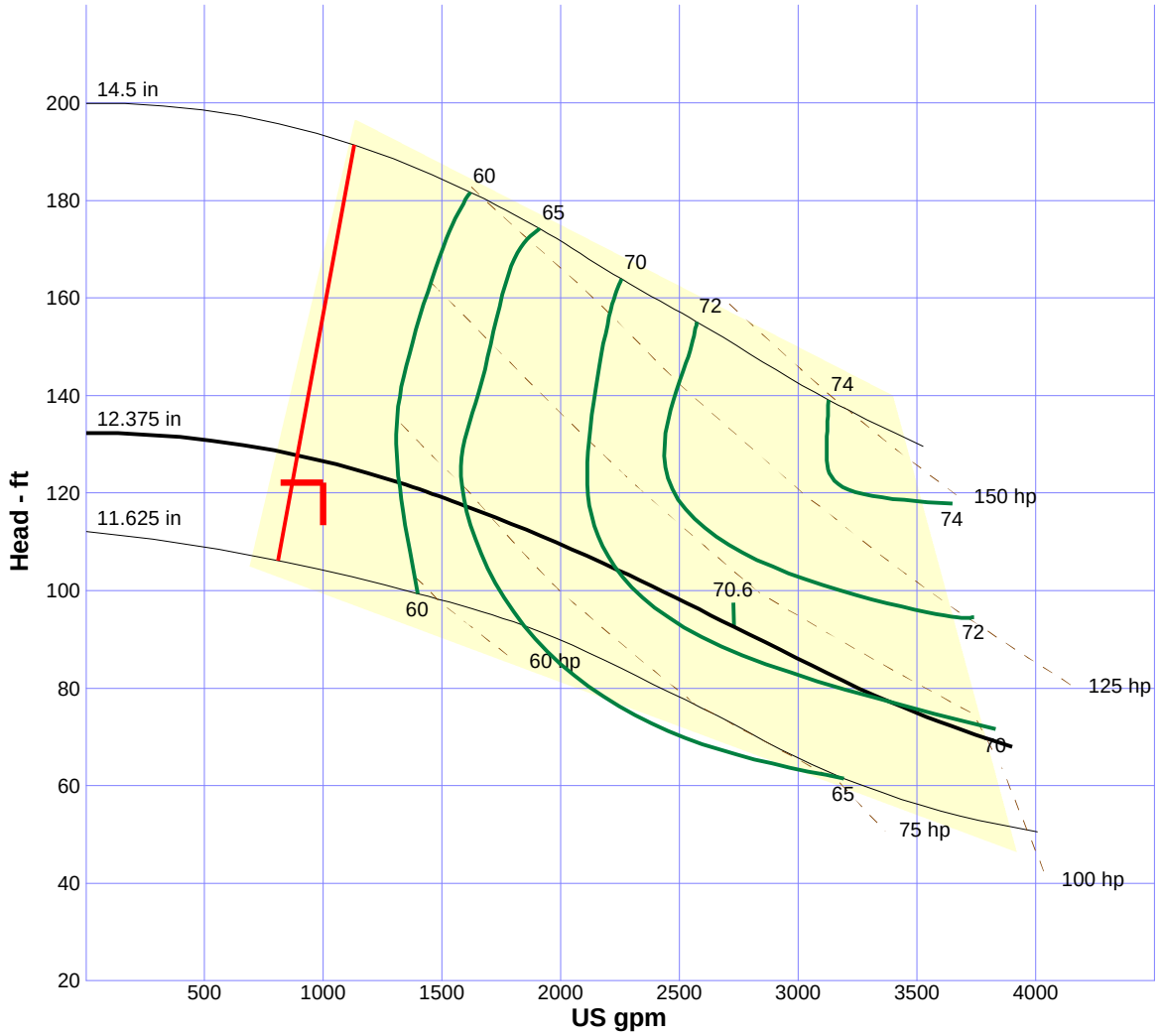
Motor:

Consult HYDROMATIC to select a motor for this pump.

---- Data Point ----	
Flow:	1000 US gpm
Head:	125 ft
Eff:	54%
Power:	62.1 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	132 ft
Shutoff dP:	57.3 psi
Min flow:	873 US gpm
BEP:	71% @ 2727 US gpm
NOL power:	101 hp @ 3900 US gpm

-- Max Curve --	
Max power:	156 hp @ 3526 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
1200	1750	123	58	65.7	---
1000	1750	125	54	62.1	---
800	1750	---	---	---	---
600	1750	---	---	---	---
400	1750	---	---	---	---

Marina Pump Station

Vaughan HP Series Chopper Pumps
PERFORMANCE CURVES

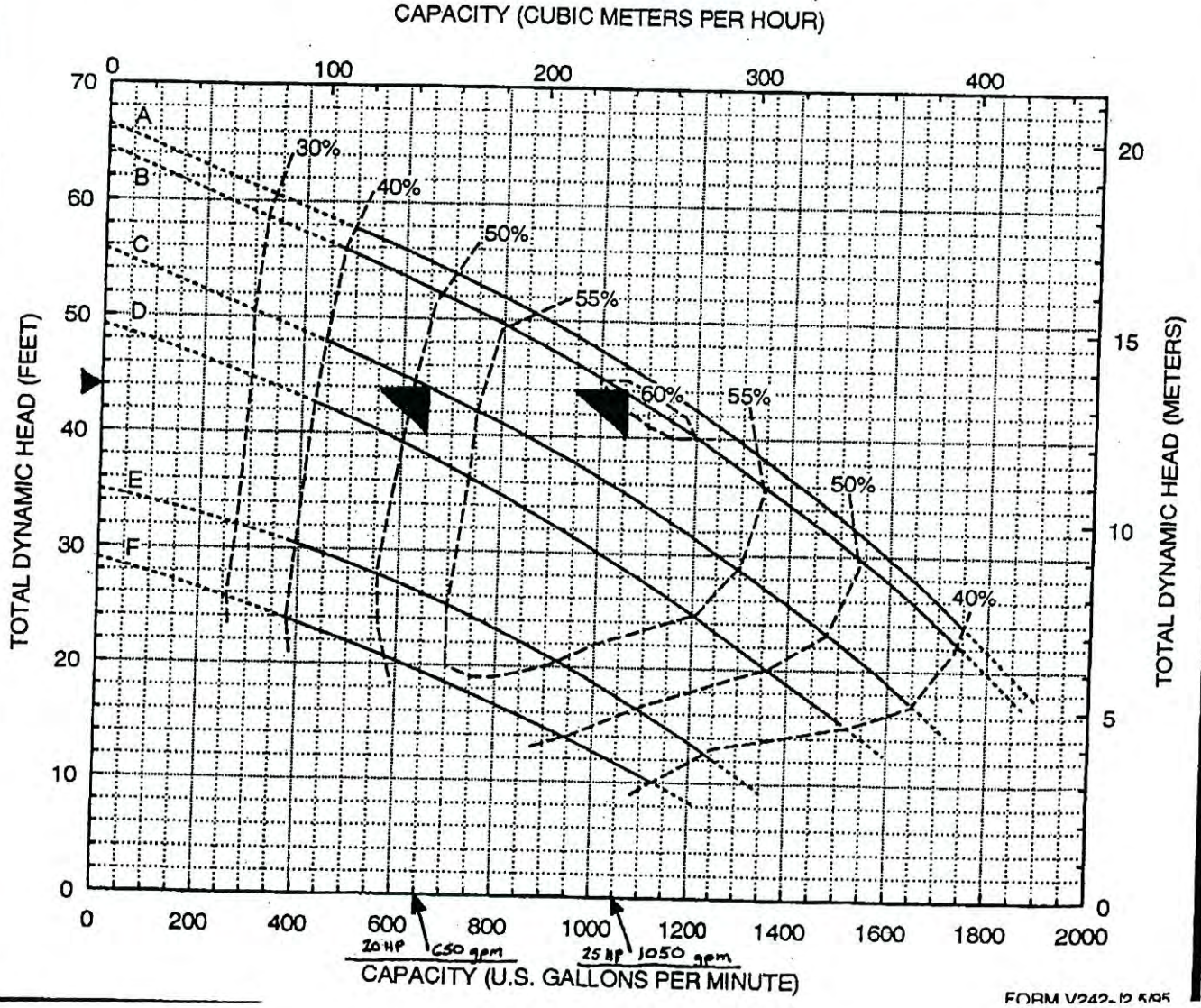
Models:
C6U
S6U
V6U
H6U8
P6U8

6" Discharge
8" Suction
4 Blade Impeller

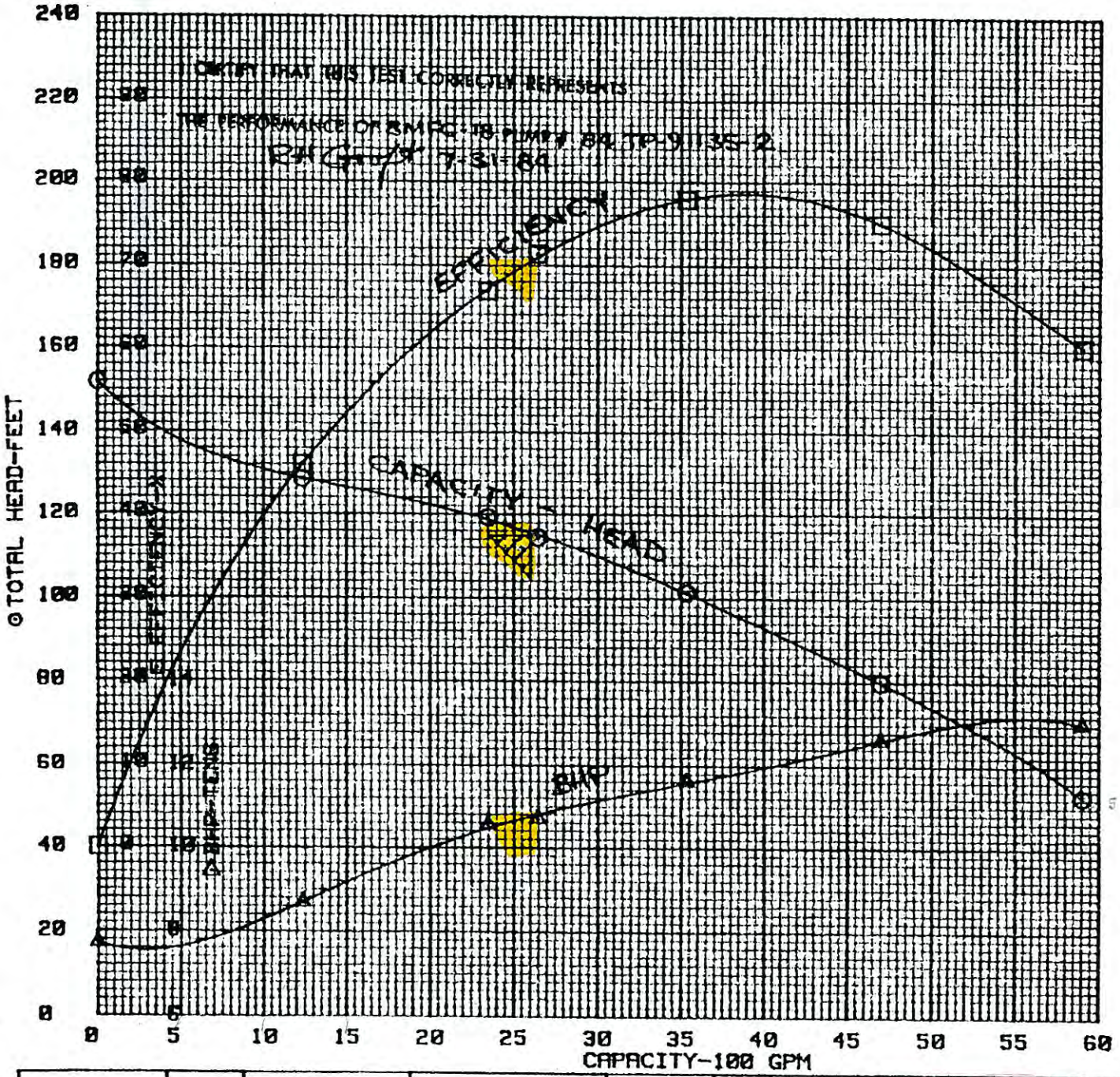
OPTION #3

CURVE	HP	SPEED (RPM)	IMPELLER DIA.
A	30	1170	11.75
B	25	1170	11.50
C	20	1170	10.90
D	15	1170	10.40
E	10	1170	9.40
F	7.5	1170	8.80

DO NOT OPERATE PUMP IN DOTTED PORTION OF CURVE.
CURVES SUBJECT TO CHANGE WITHOUT NOTICE.



Cas. = 2600 G.P.M. @ 115' TDH @ 70% EFF = 107.86 Bhp @ 1185 RPM



WORTHINGTON DIVISION McGRAW EDISON Co. PUMP TEST DATA				
RPM	GPM	HD.	BHP	EFF.
891.0	0	85.8	32.9	0.0
890.0	927	72.5	36.9	46.1
887.0	1758	66.6	44.3	66.9
887.0	1978	64.2	44.9	71.4
885.0	2648	56.6	48.4	77.9
883.0	3499	44.4	52.2	75.1
883.0	4397	28.3	54.8	60.3

SP GR: 1.0

CASING DATA		
M3131 B	-	-
MATERIAL	FINISH	TOUNGE

IMPELLER DATA		
M3131 B	1A	-
MATERIAL	FINISH	DISC. TIPS
UB-5478A	A	17.60
PATT. NO.	COMB. NO.	DIA.

8MRC18	-	TP91135	TP91135-2	7/31/84	STB	RHG	50 H.P. 900 R.P.M. TT TEST MOTOR	12.09 x 9.00	1185	E-217698
PUMP	STAGES	ORDER NO.	SERIAL NO.	DATE TESTED	TEST	APPROVED	TEST DRIVER	VENTURI	PLOTTED RPM	CURVE NO.

City of Port Orchard
PORT ORCHARD, WASHINGTON 98366

FAX COVER SHEET

Date sent: 4-23-09

To: ADAM SCHUYLER **Fax No.:** 206-505-3406

Company: B.H.C. CONSULTANTS

Subject: FLOWER MEADOWS & LOWES LIFT STA. INFO.

Sent by: DAN L.

Remarks: HOPE THIS IS WHAT YOU NEED.

Number of sheets transmitted (including coversheet) 10

PUBLIC WORKS SHOP
360.876.2722
FAX 360.876.4607

PUMP STATION DATA SHEET

PROJECT: LOWES PORT ORCHARD

SERIAL NO. 61871

LOCATION: PORT ORCHARD, WA

ENGINEER: PACLAND
SEATTLE, WA
PH: 206-522-9510

DISTRIBUTOR: L.L. LINDBERG CO
9210 NE 62ND AVE
VANCOUVER, WA 98665
PH: 360-546-3992

STATION TYPE: MODEL 421
SUBMERSIBLE PUMP PACKAGE

STARTUP DATE: _____

CONDITIONS OF SERVICE:

DESIGN DUTY: 380 GPM @ 72 ' TDH @ 1750 RPM

LIQUID: SEWAGE

PUMP DATA:

PUMP MODEL: VAUGHAN CHOPPER PUMP
MODEL SE4L2-460V-089
460 VOLT / 3 PH / 60 HZ
20 HORSEPOWER
1750 RPM
8.90" TRIM
210TY FRAME
S/N: 89453A / 89453B

6" FORCE MAIN

DUPLEX PUMP CONTROLLER PANEL:

L2 SYSTEMS, LLC
2420 38TH STREET, UNIT B
EVERETT, WA 98201
PH: 425-258-2402

NOTES:

_____

_____

_____

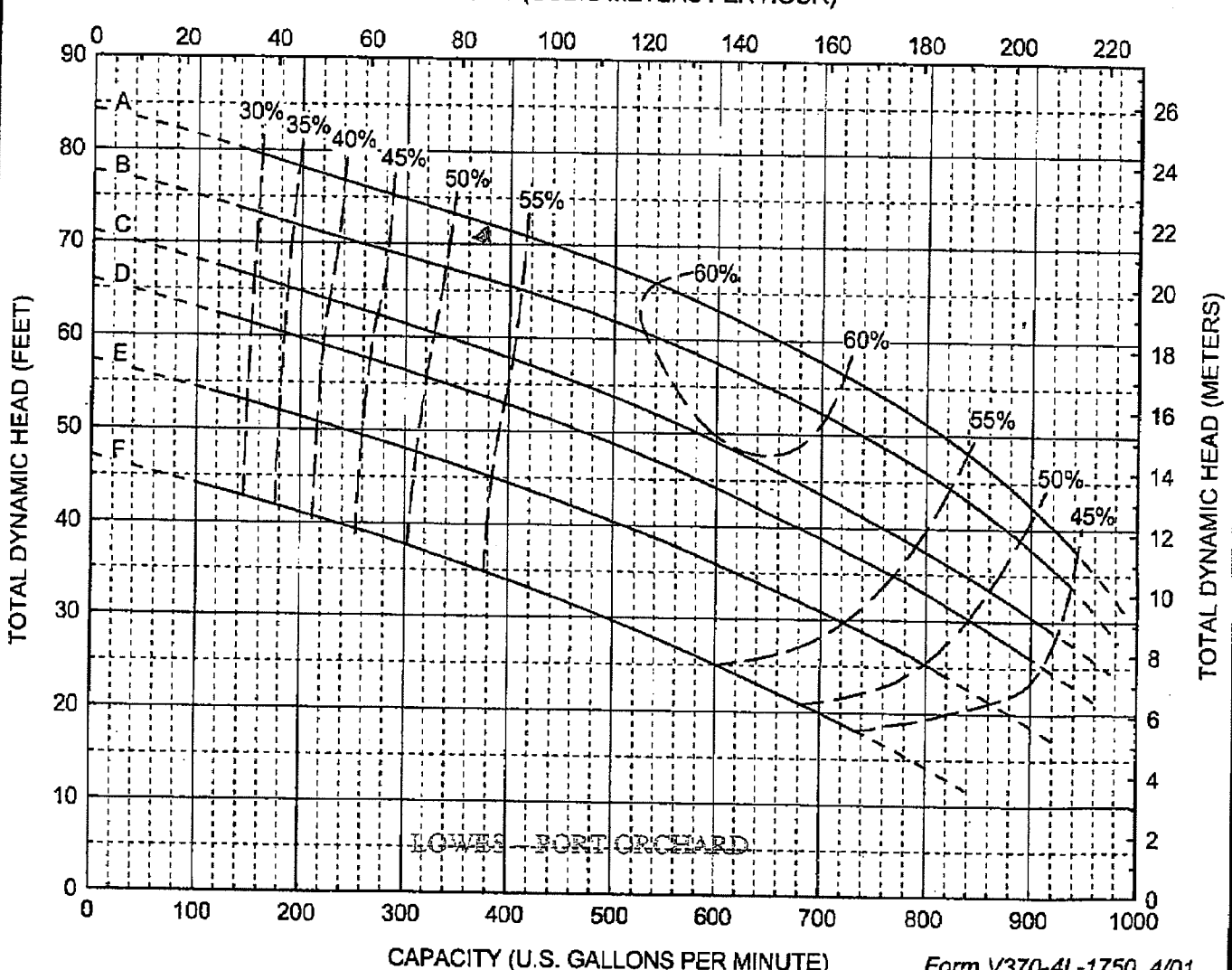
Vaughan E Series Chopper Pump PERFORMANCE CURVE

Models:
HE4L6
PE4L6
SE4L

CURVE	POWER (HP)	SPEED (RPM)	IMPELLER DIAMETER
A	20	1750	8.90" (226 mm)
B	20	1750	8.50" (216 mm)
C	15	1750	8.30" (211 mm)
D	15	1750	8.00" (203 mm)
E	10	1750	7.50" (191 mm)
F	7.5	1750	7.00" (178 mm)

Back-Pull-Out Casing
4 Blade Impeller
4" Discharge
6" Suction

DO NOT OPERATE PUMP IN DOTTED PORTION OF CURVES. CURVES SUBJECT TO CHANGE WITHOUT NOTICE. EFFICIENCIES SHOWN ARE NOMINAL. GUARANTIED MINIMUM EFFICIENCIES PER H.I. LEVEL B.

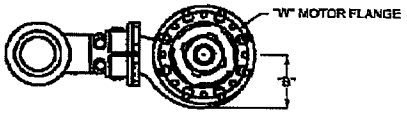


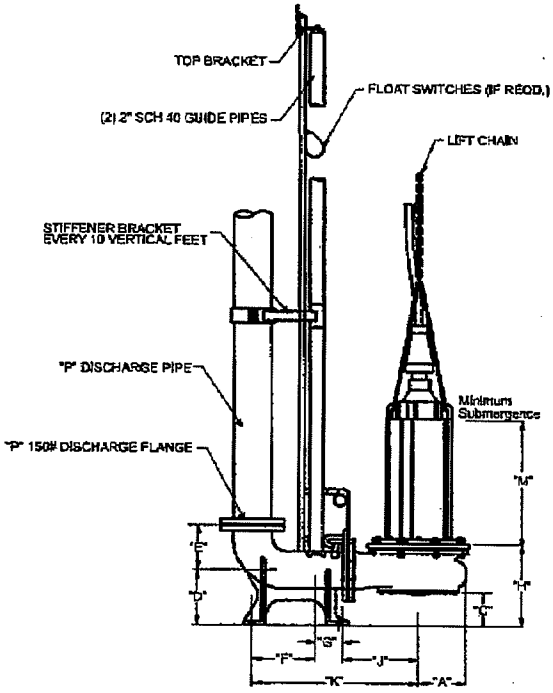
Form V370-4L-1750 4/01

3" - 6" E-Series Submersible Chopper Pumps

Materials of Construction:

Impeller/Upper Cutter/
Cutter Nut: ..... Cast Steel, heat treated to minimum Rockwell C 60.
Cutter Bar: ..... Plate Steel, heat treated to minimum 60 Rockwell C Hardness.
Casing/Back Pull-Out Plate/
Guide Bracket/Elbow: ..... Ductile Cast Iron.
Mechanical Seal: ..... Silicon carbide or tungsten carbide.
Flange: ..... 150 lb. ANSI rated.
Paint: ..... Stainless Epoxy.





DRAWINGS AND DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE.
DO NOT USE FOR CONSTRUCTION PURPOSES.
CONTACT VAUGHAN FOR CERTIFIED CONSTRUCTION PRINTS.

MODEL	A	B	C	D	E	F	G	H	J	K	P
SE3F / SE3G	5	6 3/8	4 7/8	7 7/8	7 7/8	9 7/16	4 9/16	11 5/8	8 5/8	22 3/4	3
SE3L / SE3M	5 1/2	6 3/8	5 7/8	7 7/8	7 7/8	9 7/16	4 9/16	10 7/8	9 5/8	23 3/4	3
SE3V / SE3W	5 1/8	6 3/8	5 11/16	7 7/8	7 7/8	9 7/16	4 9/16	10 7/8	9 5/8	23 3/4	3
SE4K / SE4L	6 5/8	7 3/8	4 1/2	7 7/8	7 7/8	9 13/16	4 9/16	11 5/16	10 1/2	24 7/8	4
SE4P / SE4R	8	9 1/4	4 5/8	7 7/8	7 7/8	9 13/16	4 9/16	12	12 1/2	26 7/8	4
SE6U	8 1/4	9 5/8	6 1/8	9 7/8	7 7/8	11	4 9/16	14 5/8	13 1/4	28 13/16	6

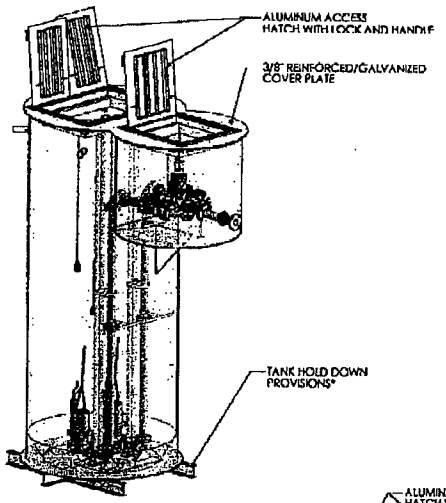
15 MINUTE IN-AIR FRAME SIZES ONLY

HP	SPEED	FRAME SIZE	M	W	HP	SPEED	FRAME SIZE	M	W
5	1170	180TY	17 1/4	12 3/8	25	1170	250TY	25 1/8	17
5	1750				25	1750			
7.5	1750				25	3510			
7.5	1170	210TY	21 7/8	15 1/4	30	1750			
10	1170				30	3510			
10	1750				40	1750			
15	1750				40	3510			
15	3510				30	1170	320TY	25 1/2	18 3/4
20	1750				50	1750			
20	3510				60	1750			
15	1170	250TY	25 1/8	17	75	1750			
20	1170								

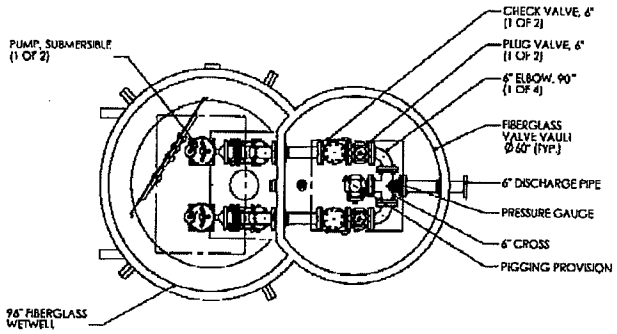
FRAME	FITS PUMP MODELS
180TY	ALL 3" - 6" PUMPS
210TY	ALL 3" - 6" PUMPS
250TY	ALL 3" - 6" PUMPS
320TY	3V/3W/4K/4L/4P/4R/6U

Vaughan Co., Inc.
364 Monte Elma Road
Montesano, WA 98563
Phone: 360-249-4042, FAX: 360-249-6155
e-mail: info@chopperpumps.com

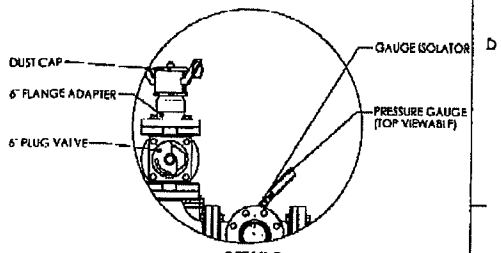
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ELEVATION H WAS 182 EL	10/30/06	
	B	PRELIMINARY CHANGES	10/30/06	
	C	PRELIMINARY CHANGES	8/20/2007	



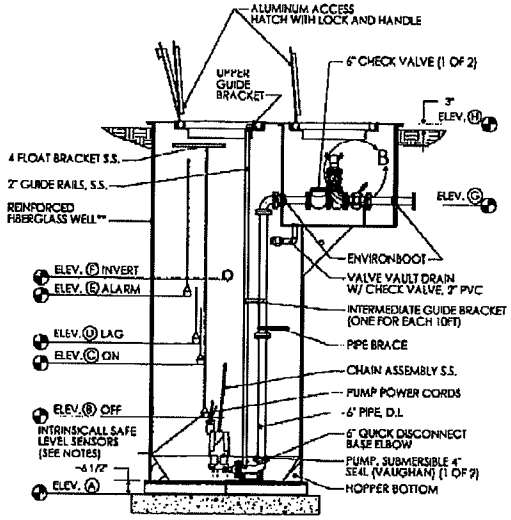
ISO VIEW



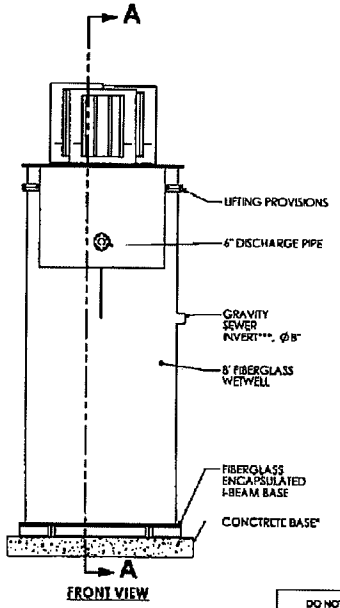
TOP VIEW DETAIL



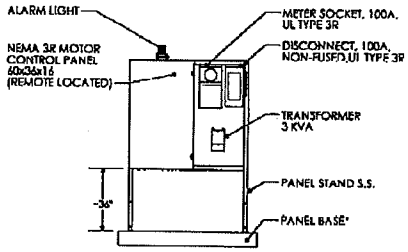
DETAIL B
SCALE 1 : 15



SECTION A-A
SCALE 1 : 55



FRONT VIEW



CONTROL PANEL STAND DETAIL

NOTES:

* BY CONTRACTOR
** Ø.8FT. x 14.0FT TALL
*** INVERT SIDE, SIZE & LOCATION T.B.D. BY CUSTOMER
SOME FIELD ASSEMBLY MAYBE REQUIRED
• REMOTE MOUNTED CONTROL PANEL
- LEVEL SENSOR/ TRANSDUCER WITH TWO FLOAT BACK-UP

SCALES & DIMENSIONS ARE FOR REFERENCE ONLY. DRAWING MUST BE CERTIFIED CORRECT FOR CONSTRUCTION PURPOSES

G.P.M.	T.D.H.	H.P.	R.P.M.	PHASE	VOLTS	ELEVATIONS							
						A	B	C	D	E	F	G	H
380	72	20	1750	3	460	167.98	172.31	175.50	176.50	177.50	177.50	178.50	184.00

	NAME	INIT.	DATE
DRAWN	MAO		10/22/06
CHECKED			
SALES APPR.	C.S.		
PURCH. APPR.			
DO NOT SCALE DRAWING	MFG APPR.		

PumpTech INC.

QUOTE# 5589

TITLE: PACLAND
PORT ORCHARD L.S., LOWES
HYDRONIX MODEL 421 PUMP STATION

SIZE B | DWG. NO. M01082 | REV C

SCALE: 1:55 | WEIGHT: | SHEET 1 OF 1

Team4 Engineering SUITE A, BOX 2 5823 N.E. MINDER RD. POULSBO, WA 98370
Phone (360) 297-5560 FAX (360) 297-7951

RECEIVED
APR 26 2001
CITY OF PORT ORCHARD
PUBLIC WORKS

LETTER OF TRANSMITTAL

Date: APRIL 25, 2001

Re: FLOWER MEADOWS PUMP STATION

To: DEANNA COLE
CITY OF PORT ORCHARD
DEPT. OF PUBLIC WKS
216 PROSPECT ST.
PORT ORCHARD, WA

Remarks:
DEANNA,

PLEASE FIND ENCLOSED A COPY OF THE PUMP STATION CALCULATIONS FOR FLOWER MEADOWS. ALSO ENCLOSED ARE SPECIFICATIONS FOR THE PUMPS. AND I FOUND SOMETHING ELSE IN THE FILE YOU MAY GET A KICK OUT OF..

PLEASE CALL IF YOU HAVE ANY QUESTIONS.

By: Aaron Young

TOTAL HEAD CALCULATIONS 7/28/00

FLOWER MEADOWS ASL

PEAK FLOW = 150 GPM

CAPACITY PUMP STATION ≥ PEAK HOURLY DESIGN FLOW

PUMP STATION

TE = 206.78

IE = 199.32

PUMP DISCHARGE EL = 198.78

EL. DISCHARGE @ SYDNEY & FIREWEED = 281.46

6" FORCE MAIN

STATIC LIFT = 281.46 − 198.78 = 82.7'

DESIGN CALCS.

PUMP STATION

7/28/00
ASL

037 FLOWER MEADOWS

WETWELL DESIGN

GPM (1 PUMP) = 104 @ TDH = 90

PUMP HEIGHT = 25"

PUMP - FLOOR CLEARANCE = 3"

WET WELL Ø = 64"

MIN. VOL BETWEEN PUMP ON & OFF LEVELS:

(C2-1.2.5 CRITERIA FOR SEWAGE WORKS)

$V = tQ/4$

V = MIN VOL (GAL)

t = TIME BETWEEN STARTS

Q = PUMP CAPACITY (GPM) = 104

t @ 10 starts hour = $\frac{60 \text{ min}}{10} = 6$ min.

$V = (6 \text{ min} \times 104 \frac{\text{gal}}{\text{min}}) / 4 = 156$ GAL

FIND OPER. DEPTH:

64" Ø WETWELL:

VOL = AREA x DEPTH

$= \pi r^2 y = \pi \left(\frac{64"}{12 \times 2}\right)^2 \left(\frac{1'}{12}\right) = 1.86$ CF/IN

1.86 CF/IN x 7.48 GAL/CF = 13.9 GAL/IN

OPER. DEPTH = 156 GAL x $\frac{\text{IN}}{13.9 \text{ GAL}} = 11.2$"

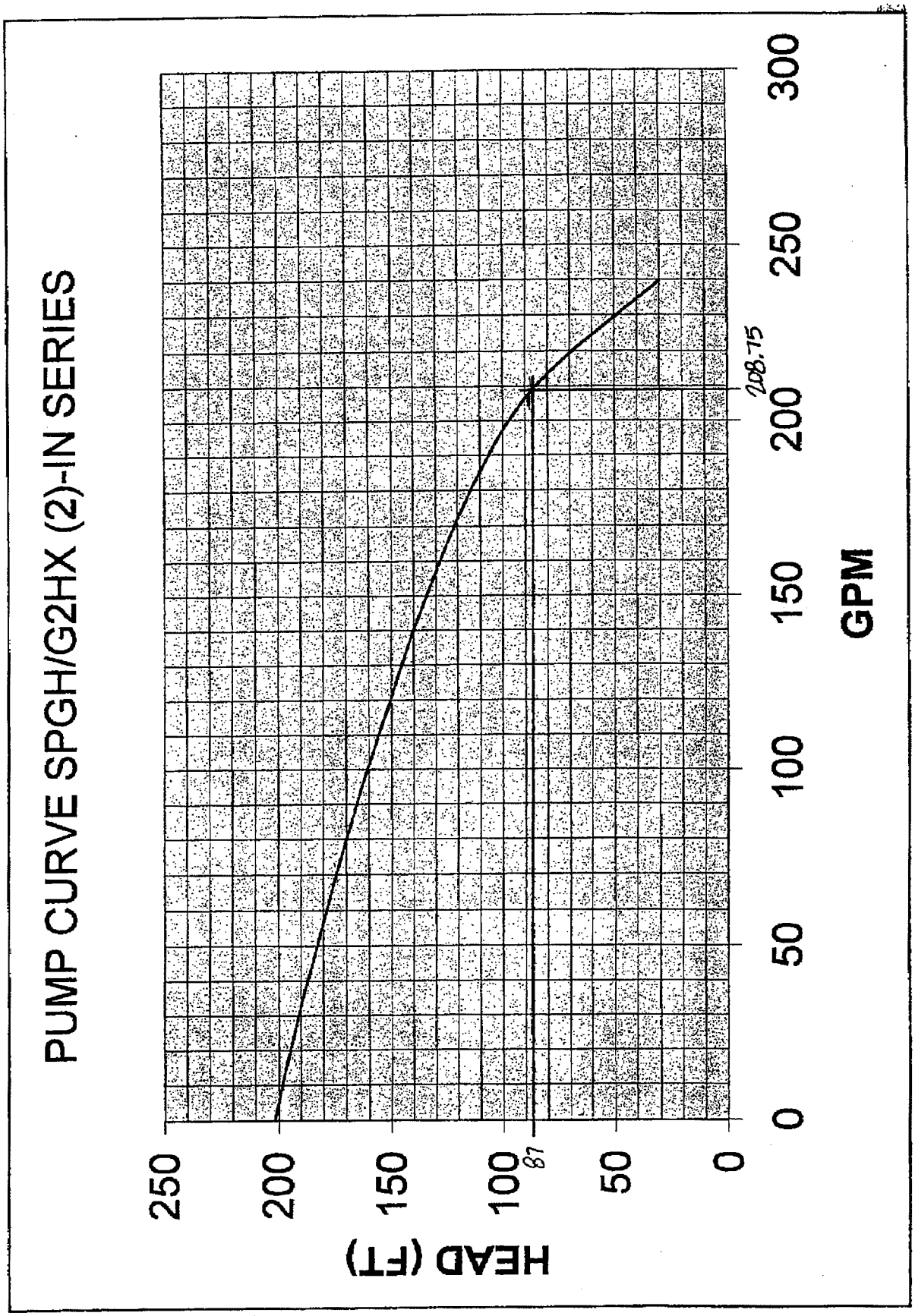
DEPTH FROM INVERT TO WETWELL FLOOR

= PUMP CLEAR. + $\frac{2}{3}$ PUMP HT. + OPER. DEPTH

= 3" + $\frac{2}{3}$(25") + 11.2"

= 30.9"

EX. WETWELL = 30.5", OK FOR WETWELL VOL.


PUMP CURVE SPGH/G2HX (2)-IN SERIES
HEAD (FT)
250
200
150
100
87
50
0
GPM
0
50
100
150
200
208.75
250
300

LOWER MEADOWS

7/28/00 ASL

TOTAL HEAD -

FOR 2-PUMP (PARALLEL)

@ TDH = 87.3'

⇒ GPM = 208.75

$f = 0.2083\,(100/c)^{1.85}\,(Q^{1.85}/d^{4.87})$

$= 0.2083\,(100/150)^{1.85}\,(208.75^{1.85}/6^{4.87})$

$= 0.2083\,(0.47)(19557.3/6160.2)$

$= 0.31$ FT/100 FT

TABLE 40 PVC HANDBOOK

$f = 0.30$ FT/100 FT ⇒ V = 2.31 FPS

V = 2.31 > MIN SELF SCOUR V = 2 FPS

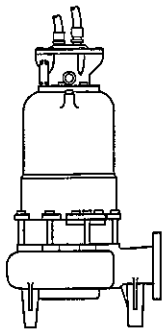
$f_T = (2122\text{ LF})(0.31\text{ FT}/100\text{ FT}) = 6.6$ FT

ADD 20% FOR FITTINGS, AGING ETC.

$(6.6\text{ FT})(1.20) = 7.9$ FT

TOTAL HEAD = STATIC HEAD + HEADLOSS

$= 82.7' + 7.9' = 90.6'$

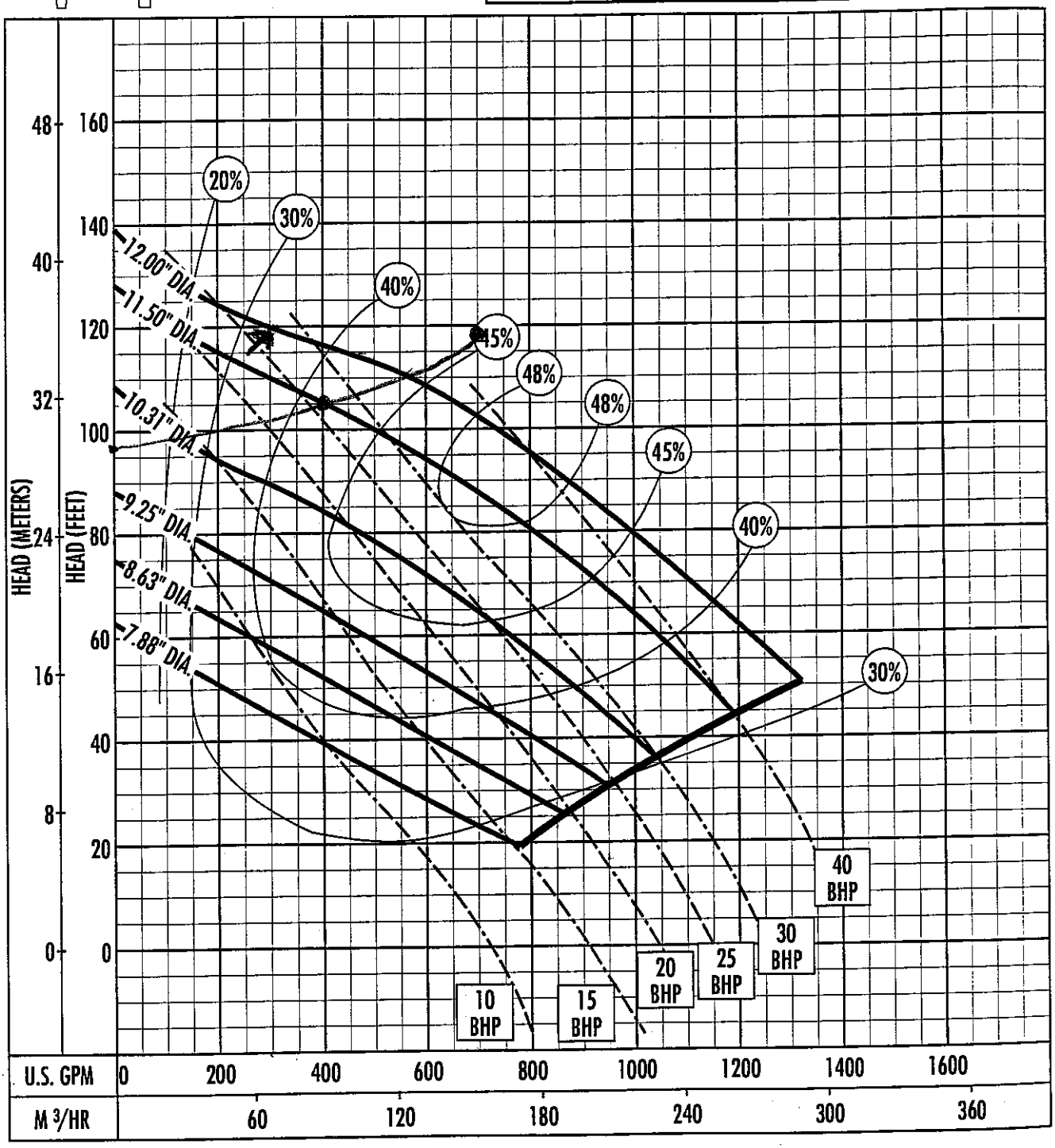


350 @ 118.62

Performance Curve

S4LRC/S4LVX

RPM: **1750** Discharge: **4"** Solids: **3-1/4"**



The curves reflect maximum performance characteristics without exceeding full load (Nameplate) horsepower. All pumps have a service factor of 1.2. Operation is recommended in the bounded area with operational point within the curve limit. Performance curves are based on actual tests with clear water at 70° F. and 1280 feet site elevation.

Conditions of Service:

GPM: _____ TDH: _____

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: Golden Pond PS
Date: 3/3/2015

Golden Pond PS, Hydromatic, model HPGHX750FD, 7.5 hp, 137 gpm, 78 ft tdh, S.O. 5 VANE impeller

HYDROMATIC®

Pump:

Size: HPGF/H/X-750

Type: GRINDER-SUBM
Synch speed: 1800 rpm

Speed: 1750 rpm
Dia: 10.4375 in

Curve:

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: 2 in

Pump Limits:

Temperature: 140 °F
Pressure: ---
Sphere size: ---

Power: ---
Eye area: ---

Search Criteria:

Flow: 137 US gpm

Head: 78 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

Motor:

Consult HYDROMATIC to select a motor for this pump.

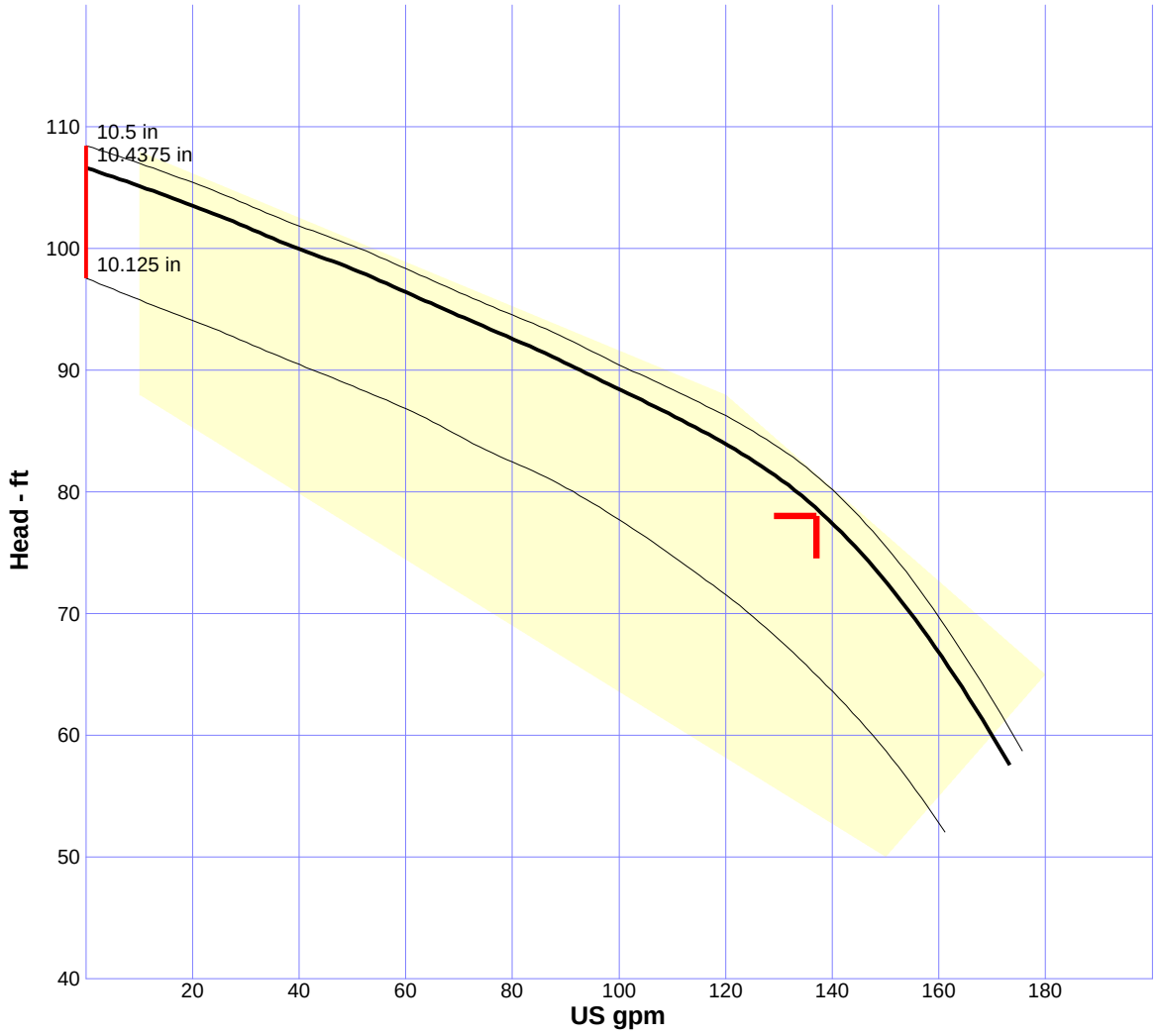
---- Data Point ----	
Flow:	137 US gpm
Head:	78.5 ft
Eff:	--- %
Power:	7.51 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	107 ft
Shutoff dP:	46.2 psi
Min flow:	0 US gpm
BEP:	--- %

NOL power:
7.51 hp @ 10 US gpm

-- Max Curve --

Max power:
7.51 hp @ 10 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
164	1750	64	---	7.51	---
137	1750	78.5	---	7.51	---
110	1750	86.3	---	7.51	---
82.2	1750	92.1	---	7.51	---
54.8	1750	97.4	---	7.51	---

Pump Data Sheet - HYDROMATIC

Company: PumpTech, Inc.
Name: Canyon Court PS,
Date: 3/3/2015

Canyon Court PS, Hydromatic, model HPGHHX750, 7.5 hp, 50 gpm, 150 ft tdh

Pump:

Size: HPGHHX

Type: GRINDER-SUBM
Synch speed: 3600 rpm

Speed: 3450 rpm
Dia: 6.75 in

Curve:

Impeller:

Specific Speeds:

Ns: ---
Nss: ---

Dimensions:

Suction: ---
Discharge: ---

Pump Limits:

Temperature: ---
Pressure: ---
Sphere size: ---

Power: ---
Eye area: ---

Search Criteria:

Flow: 50 US gpm

Head: 150 ft

Fluid:

Water
Density: 62.37 lb/ft³
Viscosity: 1.105 cP

Temperature: 60 °F
Vapor pressure: 0.2563 psi a
Atm pressure: 14.7 psi a

NPSHa: ---

Motor:

Consult HYDROMATIC to select a motor for this pump.

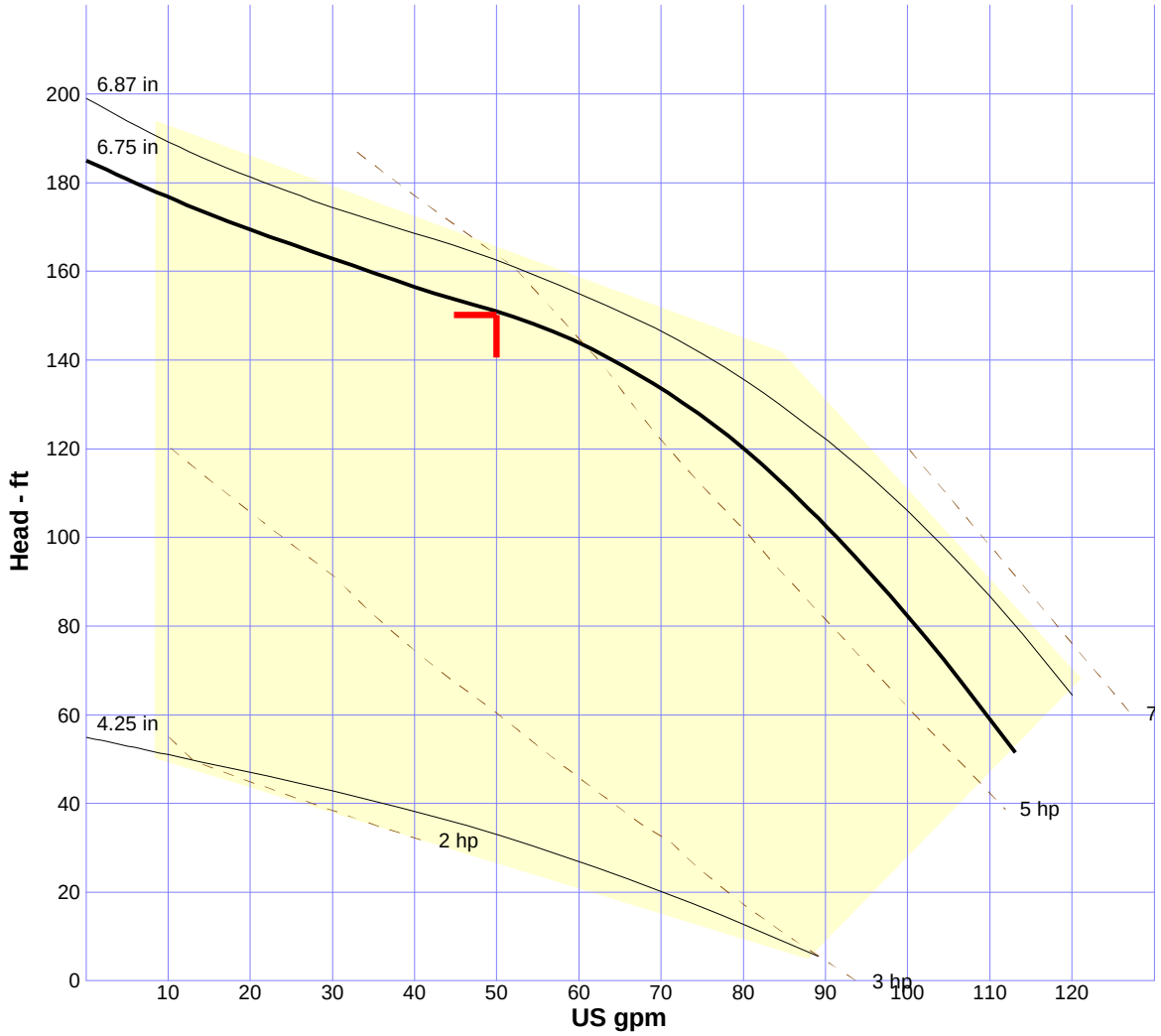
---- Data Point ----	
Flow:	50 US gpm
Head:	150 ft
Eff:	--- %
Power:	4.67 hp
NPSHr:	---

---- Design Curve ----	
Shutoff head:	185 ft
Shutoff dP:	80.1 psi
Min flow:	---
BEP:	--- %

NOL power:
5.75 hp @ 91.3 US gpm

-- Max Curve --

Max power:
6.88 hp @ 120 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
60	3450	143	---	4.95	---
50	3450	150	---	4.67	---
40	3450	156	---	4.39	---
30	3450	163	---	4.19	---
20	3450	170	---	4.01	---

Appendix F

Discharge Permits

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

June 3, 2015

Mr. Philip Perley
Waste Management
Closed Site Management Group
9081 Tujuna Avenue
Sun Valley, WA 91352

Dear Mr. Perley:

Re: State Waste Discharge Permit No. ST0007271

Ecology has completed processing your state waste discharge permit. The draft permit and fact sheet are enclosed for your consideration in evaluating the factual content of each document. Please review your permit and fact sheet and provide comments to this office by July 3, 2015. Comments should address factual and editorial error associated with the fact sheet, permit and logical assumptions expressed. Return your comments to the following address:

Washington Department of Ecology
Northwest Regional Office
Water Quality Permit Coordinator
3190 160th Avenue SE
Bellevue, WA 98008-5452

If you have any further questions, please contact Doug Knutson at (425) 649-7025 or e-mail him at dknu461@ecy.wa.gov

Sincerely,

Tricia Miller
Permit Coordinator
Northwest Regional Office

By Certified Mail 7013 3020 0002 0603 1325

cc: Randy Screws, City of Port Orchard WWTP
Pat Coxon, City of Bremerton WWTP
Bev Poston, Permit Fee Unit
Doug Knutson, Facility Manager
Central Files: Olympic View Sanitary Landfill; ST-7271; WQ 1.3

Issuance Date: XX XX, 20XX
Effective Date: XX XX, 20XX
Expiration Date: XX XX, 20XX

State Waste Discharge Permit Number ST0007271

State of Washington
DEPARTMENT OF ECOLOGY
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

In compliance with the provisions of the
State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington, as amended,

Waste Management of Washington, Inc. - Olympic View Sanitary Landfill
9081 Tujunga Avenue
Sun Valley, CA 91352

is authorized to discharge wastewater in accordance
with the special and general conditions which follow:

Facility Location: Olympic View Sanitary Landfill 10015 SW Barney White Road Bremerton, WA 98312-4935 POTWs Receiving Discharge: • City of Bremerton Wastewater Treatment Facility (West Plant) – NPDES Permit Number WA0029289 • City of Port Orchard/West Sound Utility District Wastewater Treatment Facility (South Kitsap Water Reclamation Facility (SKWRF)) – NPDES Permit Number WA0020346	Industry Type: Landfill SIC Code: 4953 NAICS: 56212 Industrial User Classification: Non-Categorical Significant Industrial User

Kevin C. Fitzpatrick
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

TABLE OF CONTENTS

Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	First Submittal Date
S3.A.	Monthly Discharge Monitoring Report	Monthly	XX XX, 20XX
S3.A.	Annual Priority Pollutant Organic Compound Scan Laboratory Report	Annually	XX XX, 20XX
S3.E.a.	Reporting Permit Violations	As necessary	Immediately for violations which may endanger health or environment
S3.E.b.	Reporting Permit Violations	As necessary	Within 24 hours of becoming aware of overflows, violations of permit standards, overflows prior to treatment works
S3.E.c.	Reporting Permit Violations	As necessary	Within five days of becoming aware of violations reportable under S3.E.a. and S3.E.b.
S3.F.a.	Other Reporting- Spills of Hazardous Waste and Oil	As necessary	In accordance with deadlines established under WAC 173-303
S3.F.b.	Other Reporting-Submittals to Remedy Failure to Submit Material Information	As necessary	Promptly
S4.B.	Reporting Bypasses	As necessary	See provisions of S.4.B.3
S8.	Application for Permit Renewal	1/permit cycle	XX XX, 20XX
G1.3.	Signatory Requirements (Notification of Change of Signatory Authority)	As necessary	No later than simultaneous with submittal of first document submittal under new signatory authority
G4.	Permit Application for Substantive Changes to the Discharge	As necessary	No later than 60 days prior to adoption of substantive change
G5.	Engineering Report for Construction or Modification Activities	As necessary	60 days prior to the planned start of construction
G7.	Notice of Permit Transfer	As necessary	No later than date of transfer
G10.	Duty to Provide Information	As necessary	Within a reasonable time

Special Conditions

S1. Discharge limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a concentration in excess of, that authorized by this permit violates the terms and conditions of this permit.

A discharge of a pollutant in excess of local limits set by City of Bremerton, for those discharges which are made to the City of Bremerton POTW, violates the terms and conditions of this permit.

A discharge of a pollutant in excess of local limits set by City of Port Orchard, or the West Sound Utility District, for those discharges which are made to the City of Port Orchard POTW violates the terms and conditions of this permit.

Beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge wastewater consisting of landfill leachate, sample well purge water, and related stormwater, to the City of Bremerton POTW (West Plant) from Outfall 001, and the City of Port Orchard (West Sound Utility District POTW – South Kitsap Reclamation Facility) sanitary sewer system from Outfall 002, subject to the following limits:

Effluent Limits: Outfall # 001 [a] – Discharge to City of Bremerton POTW Latitude: 47.4997 degrees North Longitude: 122.7905 degrees West	
Parameter	**Maximum Daily [b]**
Flow, gpd	200,000
BOD_5, mg/L [f]	400
TSS, mg/L [e]	425
Copper, T, mg/L [c]	0.75
Nickel, T, mg/L [c]	0.60
Zinc, T, mg/L [c]	2.0
Priority Pollutant Volatile Organic Compound Scan [d]	Monitor Only

Parameter	**Minimum**	**Maximum**
pH (standard pH units)	6.0	10.0

[a] The monitoring point for outfall number 001 is the wastewater in the pond at the point of withdrawal for transfer to the truck immediately prior to removal from the pond, or from the truck immediately prior to haulage to the City Bremerton POTW. The grab sample must consist of leachate collected from the pond or truck which is representative of the wastewater being shipped to the POTW. The coordinates refer to the truck load-out point SW of the pond. Sample Points 001 and 002 are both the same location, but have been assigned different numbers to identify the POTW to which the load is being hauled.

[b] The term *maximum daily effluent limit* means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass or volume, the daily discharge is the total mass or volume of the pollutant discharged over the day. For limits with concentration-based units of measurement (such as mg/L), the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

[c] The term *T* following the name of a metal indicates the total form of the metal as opposed to the dissolved form of the metal.

[d] The priority pollutant volatile organic compound scan must consist of an assay of purgeable priority pollutant compounds using USEPA Method 624. (The Permittee is authorized to utilize analytical methods which are equivalent to USEPA Methods 624, with respect to detection limits.) The Permittee is not required to report the results of the organic chemical priority pollutant scan on the Discharge Monitoring Report forms, but is instead required to submit the laboratory report with the Discharge Monitoring Report forms for the applicable monitoring period. The laboratory report must contain a list of the analytical results for each individual purgeable chemical compound amenable to quantification using the above-referenced analytical method.

[e] The term *TSS* indicates total suspended solids.

[f] The term *BOD_5* indicates five-day biochemical oxygen demand. The Permittee must comply with any request by the City of Bremerton POTW that the BOD or flow loading be reduced.

Effluent Limits: Outfall # 002 [a] **Discharge to South Kitsap Water Reclamation Facility POTW** Latitude: 47.4997 degrees North Longitude: 122.7905 degrees West	
Parameter	**Maximum Daily [b]**
Flow, gpd [f]	125,000
BOD_5, mg/L [f]	300
TSS, mg/L [e]	350
Copper, T, mg/L [c]	2.6
Nickel, T, mg/L [c]	1.6
Zinc, T, mg/L [c]	3.4
Priority Pollutant Volatile Organic Compound Scan [d]	Monitor Only

Parameter	**Minimum**	**Maximum**
pH (standard pH units)	5.5	9.0

[a] The monitoring point for outfall number 002 is the wastewater in the pond at the point of withdrawal for transfer to the truck immediately prior to removal from the pond, or from the truck immediately prior to haulage to the City of City of Port Orchard/West Sound Utility District POTW. The grab sample must consist of leachate collected from the pond or truck which is representative of the wastewater being shipped to the POTW. The coordinates refer to the truck load-out point SW of the pond. Sample Points 001 and 002 are both the same location, but have been assigned different numbers to identify the POTW to which the load is being hauled.

[b] The term *maximum daily effluent limit* means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass or volume, the daily discharge is the total mass or volume of the pollutant discharged over the day. For limits with concentration-based units of measurement (such as mg/L), the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

[c] The term *T* following the name of a metal indicates the total form of the metal as opposed to the dissolved form of the metal.

[d] The priority pollutant volatile organic compound scan must consist of an assay of purgeable priority pollutant compounds using USEPA Method 624 (The Permittee is authorized to utilize analytical methods which are equivalent to USEPA Methods 624, with respect to detection limits.). The Permittee is not required to report the results of the organic chemical priority pollutant scan on the Discharge Monitoring Report forms, but is instead required to submit the laboratory report with the Discharge Monitoring Report forms for the applicable monitoring period. The laboratory report must contain a list of the analytical results for each individual purgeable chemical compound amenable to quantification using the above-referenced analytical method.

[e] The term *TSS* indicates total suspended solids.

[f] The term *BOD_5* indicates five-day biochemical oxygen demand. The Permittee must comply with any request by the South Kitsap Water Reclamation Facility POTW that the BOD or flow loading be reduced.

S2. Monitoring requirements

S2.A. Monitoring requirements

The Permittee must monitor its wastewater discharge in accordance with the following schedule and the requirements specified in Appendix A.

Monitoring Requirements – Discharge to City of Bremerton POTW – Sample Point 001 [a] Latitude: 48.1708 degrees North Longitude: 122.1482 degrees West		
Pollutant Parameter	**Sampling Frequency**	**Sample Type**
Flow, gpd	Daily	Estimate [c]
BOD_5, mg/L [l]	Monthly	Grab [e, g]
TSS, mg/L [h]	Monthly	Grab [g]
Copper, T, mg/L [b, f]	Monthly	Grab [g]
Nickel, T, mg/L [b, f]	Monthly	Grab [g]
Zinc, T, mg/L [b, f]	Monthly	Grab [g]
Priority Pollutant Volatile Organic Compound Scan [d]	Annually	Grab [g]
pH (standard pH units) [g]	Monthly	Grab [g]
[a] The monitoring point for outfall number 001 is the wastewater in the pond at the point of withdrawal for transfer to the truck immediately prior to removal from the pond, or from the truck immediately prior to haulage to the City Bremerton POTW. The grab sample must consist of leachate collected from the pond or truck which is representative of the wastewater being shipped to the POTW.		
[b] The term *T* following the name of a metal indicates the total form of the metal as opposed to the dissolved form of the metal.		
[c] The volume hauled must be recorded in a log which lists each load hauled, and the volume contained in each load. The Permittee must report the flow which occurred on the day during which the maximum flow for the monthly reporting occurred.		
[d] The priority pollutant volatile organic compound scan must consist of an assay of purgeable priority pollutant compounds using USEPA Method 624 (The Permittee is authorized to utilize analytical methods which are equivalent to USEPA Methods 624, with respect to detection limits.). The Permittee is not required to report the results of the organic chemical priority pollutant scan on the Discharge Monitoring Report forms, but is instead required to submit the laboratory report with the Discharge Monitoring Report forms for the applicable monitoring period. The laboratory report must contain a list of the analytical results for each individual purgeable chemical compound amenable to quantification using the above-referenced analytical method.		
[e] The Permittee must use Method 5210B (reference: Standard Methods for the Examination of Water and Wastewater, 20th Edition) or equivalent (with respect to method detection limit) for analysis of BOD_5.		
[f] The Permittee must use Method 200.8 for analysis of copper, nickel, and zinc.		
[g] The term *Grab* means an individual sample collected over a fifteen (15)-minute, or less, period.		
[h] The term *TSS* indicates total suspended solids.		
[l] The term *BOD_5* indicates five-day biochemical oxygen demand. The Permittee must comply with any request by the City of Bremerton POTW that the BOD or flow loading be reduced.		

Monitoring Requirements – Discharge to South Kitsap Water Reclamation Facility POTW Sample Point 002 [a]		
Latitude: 48.1708 degrees North	Longitude: 122.1482 degrees West	
Pollutant Parameter	**Sampling Frequency**	**Sample Type**
Flow, gpd [I,J]	Daily	Estimate [c]
BOD_5, mg/L [f]	Monthly	Grab [e]
TSS, mg/L [h]	Monthly	Grab [g]
Copper, T, mg/L [b, f]	Monthly	Grab [d,g]
Nickel, T, mg/L [b, f]	Monthly	Grab [d,g]
Zinc, T, mg/L [b, f]	Monthly	Grab [d,g]
Priority Pollutant Volatile Organic Compound Scan [d]	Annually	Grab [d,g]
pH (standard pH units)	Monthly	Grab [g]
[a] The monitoring point for outfall number 002 is the wastewater in the pond at the point of withdrawal for transfer to the truck immediately prior to removal from the pond, or from the truck immediately prior to haulage to the South Kitsap Water Reclamation Facility (City of Port Orchard/West Sound Utility District POTW). The grab sample must consist of leachate collected from the pond or truck which is representative of the wastewater being shipped to the POTW.		
[b] The term *T* following the name of a metal indicates the total form of the metal as opposed to the dissolved form of the metal.		
[c] The volume hauled must be recorded in a log which lists each load hauled, and the volume contained in each load. The Permittee must report the flow which occurred on the day during which the maximum flow for the monthly reporting occurred.		
[d] The priority pollutant volatile organic compound scan must consist of an assay of purgeable priority pollutant compounds using USEPA Method 624 (The Permittee is authorized to utilize analytical methods which are equivalent to USEPA Methods 624, with respect to detection limits.). The Permittee is not required to report the results of the organic chemical priority pollutant scan on the Discharge Monitoring Report forms, but is instead required to submit the laboratory report with the Discharge Monitoring Report forms for the applicable monitoring period. The laboratory report must contain a list of the analytical results for each individual purgeable chemical compound amenable to quantification using the above-referenced analytical method.		
[e] The Permittee must use Method 5210B (reference: Standard Methods for the Examination of Water and Wastewater, 20th Edition) or equivalent (with respect to method detection limit) for analysis of BOD_5.		
[f] The Permittee must use Method 200.8 for analysis of copper, nickel, and zinc.		
[g] The term *Grab* means an individual sample collected over a fifteen (15)-minute, or less, period.		
[h] The term *TSS* indicates total suspended solids.		
[I] The term *BOD_5* indicates five-day biochemical oxygen demand. The Permittee must comply with any request by the South Kitsap Water Reclamation Facility POTW that the BOD or flow loading be reduced.		
[J] The Permittee must record the volume hauled in a log which lists each load hauled, and the volume contained in each load.		

S2.B. Sampling and analytical procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the water and wastewater monitoring requirements specified in this permit must conform to the latest revision of the following rules and documents unless otherwise specified in this permit or approved in writing by Ecology.

- Guidelines Establishing Test Procedures for the Analysis of Pollutants contained in 40 CFR Part 136.
- Standard Methods for the Examination of Water and Wastewater (APHA).

S2.C. Flow measurement and meters

The Permittee must:

1. Select and use appropriate flow measurement, and continuous monitoring devices and methods consistent with accepted scientific practices.
2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.
3. Use field measurement devices as directed by the manufacturer and do not use reagents beyond their expiration dates.
4. Calibrate these devices at the frequency recommended by the manufacturer.
5. Maintain calibration records for at least three years.

S2.D. Laboratory accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit-specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, pH, and internal process control parameters are exempt from this requirement.

S3. Reporting and recording requirements

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Reporting

The first monthly monitoring period comprises the period consisting of XX XX, 20XX, through XX XX, 20XX. The Permittee must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form. Report a value for each day sampling occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.
   To find out more information and to sign up for WAWebDMR go to:
   http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

If the Permittee is unable to submit electronically (for example, if you do not have an internet connection), the Permittee must contact Ecology to request a waiver and obtain instructions on how to obtain a paper copy DMR.

2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.
3. Report single analytical values below the detection level as less than the detection level (DL) by entering "<" followed by the numeric value of the detection level (e.g. "< 2.0") on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments or in the location provided.
4. Calculate average values (unless otherwise specified in the permit) using:
   a. The reported numeric value for all parameters measured between the agency-required detection level and the agency-required quantitation value.
   b. One-half the detection level (for values reported below the detection level) if the laboratory detected the parameter in another sample for the reporting period.
   c. Zero (for values reported below the detection limit) if the laboratory did not detect the parameter in another sample for the reporting period.
5. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A of this permit.
6. Ensure that DMRs are electronically submitted no later than the dates specified below, unless otherwise specified in this permit.
7. Submit DMRs for parameters with the monitoring frequencies specified in S2 (e.g. monthly, quarterly, annual, etc.) at the reporting schedule identified below. The Permittee must:
   a. Submit **monthly** DMRs by the 28th day of the following month. The first monthly DMR is due April 28, 2015. The Permittee must also send a copy of Discharge Monitoring Report submittals to the City of Bremerton Public Works Department (for DMR reporting periods when discharges are routed to the City of Bremerton POTW), and to the South Kitsap Water Reclamation Facility (for reporting periods when discharges are routed to the South Kitsap Water Reclamation Facility POTW).
   b. The results of **1/year** sampling for organic priority pollutants must be reported by submitting the laboratory analytical report no later than January 28 of each year. The Permittee is not required to submit a DMR for the organic priority pollutant scan, but must instead submit an electronic pdf facsimile of the organic priority pollutant scan as an attachment to the January DMR.

8. Submit reports to Ecology online using Ecology's electronic WAWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:

   Water Quality Permit Coordinator
   Department of Ecology
   Northwest Regional Office
   3190 - 160th Avenue SE
   Bellevue, WA 98008-5452

S3.B. Records retention

The Permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

S3.C. Recording of results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

S3.D. Additional monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR unless otherwise specified by Condition S2.

S3.E. Reporting permit violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

1. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

a. Immediate reporting

The Permittee must report any noncompliance that may endanger health or the environment immediately to the Department of Ecology's Regional Office 24-hour number listed below, as well as to the POTW receiving the non-compliant discharge.

- Department of Ecology Northwest Regional Office at 425-649-7000.
- City of Bremerton Public Works Department – for discharge to this plant.
- West Sound Utility District – for discharge to the South Kitsap Water Reclamation Facility.
- Department of Health, Shellfish Program: 360-236-3330 (business hours) or 360-786-8962 (after business hours).
- Kitsap County Health District: 360-337-5235 (business hours) or 360-415-2005 (after hours pager).

b. Twenty-four-hour reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at the telephone number listed above, and to the City of Bremerton or West Sound Utility District, within 24 hours from the time the Permittee becomes aware of any of the following circumstances. The Permittee must report:

1. Any noncompliance that may endanger health or the environment, unless previously reported under immediate reporting requirements.
2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (See Part S4.A., "Bypass Procedures").
3. Any upset that causes an exceedance of an effluent limit in the permit. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
4. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.
5. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.

c. Report within five days

The Permittee must also submit a written report within five days of the time that the Permittee becomes aware of any reportable event under subparts a or b, above. The report must contain:

1. A description of the noncompliance and its cause.
2. The period of noncompliance, including exact dates and times.
3. The estimated time the Permittee expects the noncompliance to continue if not yet corrected.
4. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
5. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

d. Waiver of written reports

Ecology may waive the written report required in subpart c, above, on a case-by-case basis upon request if the Permittee has submitted a timely oral report.

e. All other permit violation reporting

The Permittee must report all permit violations, which do not require immediate or within 24 hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in subpart c, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

f. Report submittal

The Permittee must submit reports to:

Water Quality Program
Department of Ecology
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

S3.F. Other reporting

a. Spills of oil or hazardous materials

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

b. Failure to submit relevant or correct facts

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

S3.G. Maintaining a copy of this permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S3.H. Dangerous waste discharge notification

The Permittee must notify the publicly owned treatment works (POTW) and Ecology in writing of the intent to discharge into the POTW any substance designated as a dangerous waste in accordance with the provisions of WAC 173-303-070. It must make this notification at least 90 days prior to the date that it proposes to initiate the discharge. The Permittee must not discharge this substance until authorized by Ecology and the POTW. It must also comply with the notification requirements of Special Condition S8 and General Condition G4.

S3.I. Spill notification

The Permittee must notify the POTW immediately (as soon as discovered) of all discharges that could cause problems to the POTW, such as process spills and unauthorized discharges (including slug discharges).

S4. Operation and maintenance

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

S4.A. Bypass procedures

This permit prohibits a bypass, which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

   This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least 10 days before the date of the bypass.

2. Bypass is unavoidable, unanticipated, and results in noncompliance of this permit.

   This permit authorizes such a bypass only if:

a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

b. No feasible alternatives to the bypass exist, such as:

- The use of auxiliary treatment facilities.
- Retention of untreated wastes.
- Stopping production.
- Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
- Transport of untreated wastes to another treatment facility.

c. The Permittee has properly notified Ecology of the bypass as required in Condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:

- A description of the bypass and its cause.
- An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
- A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
- The minimum and maximum duration of bypass under each alternative.
- A recommendation as to the preferred alternative for conducting the bypass.
- The projected date of bypass initiation.
- A statement of compliance with SEPA.
- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee

determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

S4.B. Best management practices/pollution prevention program

The Permittee must:

1. Dispose of sludge and scale from dip tanks, spray tanks, settling tanks, sumps and solids from grease traps in an approved manner other than to the sanitary sewer or storm sewer system, and other than to waters of the state.
2. Store all barrels or similar containers containing toxic or deleterious materials, including but not limited to petroleum products, chlorinated organic compounds, cyanide and heavy metals in a bermed (or otherwise over a collection sump or spill containment pallet) and covered area, to prevent discharge into the sanitary or storm sewer system or into ground or surface waters in the event of leakage or rupture.
3. Store empty barrels with all openings plugged, in an upright position, and at least ten feet from a storm drain.
4. **Not** discharge concentrated organic compounds to the sanitary sewer system.
5. Store waste chemicals awaiting disposal in such a manner as to not enter waters of the state.
6. Close the spill control valve (when so-equipped) if a spill occurs within the process area, to prevent the entry of concentrated wastes or chemicals into the sanitary sewer system.
7. Exclude stormwater from the sanitary sewer system except as specifically authorized in this permit.

8. Maintain a pH log for all batch discharges of wastewater.
9. Segregate and store non-compatible chemicals securely in separate containment areas that prevent mixing of incompatible or reactive materials.
10. Locate process tanks in a bermed, roofed, secured area, capable of containing a minimum of 110% of the volume capacity of the largest tank within the bermed enclosure.
11. Maintain a sealed floor within the bermed area of all wet metal finishing areas, as well as areas which serve as storage areas for wet process chemicals and baths.
12. Maintain the pretreatment system in good operating order.
13. **Not** discharge motor oil, brake fluid, gear oil, and automatic transmission fluid drained from vehicles in motor vehicle or equipment maintenance areas to the sanitary sewer or storm sewer.
14. Maintain all grease traps and oil/water separators which discharge to the POTW, in good working order. Inspect such traps on at least a monthly basis and clean as necessary. Maintain a log of each such inspection and cleaning performed and make the log available, upon request, to Ecology during any inspection of the facility it conducts.
15. **Not** discharge particles or paint chips resulting from grinding, sanding, shotpeening, abrasive blasting, cutting, and any other abrasive operations to the sanitary sewer.
16. **Not** discharge fire retardant foaming agents such as AFFF to the sanitary sewer system in quantities sufficient to cause excessive foaming in the POTW effluent or to otherwise cause interference at the POTW. Maintain a plan for preventing the discharge of AFFF to the sanitary sewer. Existing contingency and preparedness plans may be used in fulfillment of this requirement to the extent that such documents meet the intent of this requirement. Excessive foaming is foaming resulting in interference, pass-through, or upset at the POTW, or which otherwise impedes the normal and efficient operation of the POTW.
17. **Not** discharge surfactant materials such as soaps and detergents to the sanitary sewer in quantities sufficient to cause excessive foaming in the POTW effluent or to otherwise cause interference in the POTW. Excessive foaming is foaming resulting in interference, pass-through, or upset at the POTW, or which otherwise impedes the normal and efficient operation of the POTW.
18. **Not** discharge colored materials or other low-transmittance material to the sanitary sewer in such quantities or concentrations as to interfere with the disinfection process at the POTW, or in such amounts as to cause pass-through resulting in impairment of the aesthetic character or designated uses of the receiving water.

S5. Prohibited discharges

The Permittee must comply with these General and Specific Prohibitions.

S5.A. General prohibitions

The Permittee must not introduce into the POTW pollutant(s), which cause Pass Through or Interference.

S5.B. Specific prohibitions

In addition, the Permittee must not introduce the following into the POTW:

1. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 60 degrees C (140 degrees F) using the test methods specified in 40 CFR 261.21.
2. Solid or viscous pollutants in amounts, which will cause obstruction to the flow in the POTW resulting in interference.
3. Any pollutant (including oxygen-demanding pollutants (BOD_5, etc.), released in a discharge at a flow rate and/or pollutant concentration that will cause interference with the POTW.
4. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 40 degrees C (104 degrees F) unless the approval authority, upon request of the POTW, approves alternative temperature limits.
5. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.
6. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.
7. Any trucked or hauled pollutants, except at discharge points designated by the POTW.
8. Pollutants that will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 or greater than 11.0, unless the collection and treatment system is specifically designed to accommodate such discharges, unless otherwise specified in this permit.

S5.C. Prohibited Unless Approved

Any of the following discharges are prohibited unless approved by Ecology under extraordinary circumstances (such as a lack of direct discharge alternatives due to combined sewer service or a need to augment sewage flows due to septic conditions):

1. Noncontact cooling water in significant volumes.
2. Storm water and other direct inflow sources.

3. Wastewaters significantly affecting system hydraulic loading, which do not require treatment or would not be afforded a significant degree of treatment by the system.
4. The discharge of dangerous wastes as defined in Chapter 173-303 WAC (unless specifically authorized in this permit).

S6. Dilution prohibited

The Permittee must not dilute the wastewater discharge with stormwater or increase the use of potable water, process water, noncontact cooling water, or, in any way, attempt to dilute an effluent as a partial or complete substitute for adequate treatment to achieve compliance with the limits contained in this permit.

S7. Solid waste disposal

S7.A. Solid waste handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

S7.B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S8. Application for permit renewal or modification for facility changes

The Permittee must submit an application for renewal of this permit no later than XX XX, 20XX. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

The Permittee must also submit a new application or supplement at least 60 days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

S9. Non-routine and unanticipated discharges

1. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis to the sanitary sewer if approved by Ecology and the POTW. Prior to any such discharge, the Permittee must contact Ecology and, **at a minimum,** provide the following information:
   a. The proposed discharge location.

b. The nature of the activity that will generate the discharge.

c. Any alternatives to the discharge, such as reuse, storage, or recycling of the water.

d. The total volume of water it expects to discharge.

e. The results of the chemical analysis of the water.

f. The date of proposed discharge.

g. The expected rate of discharge discharged, in gallons per day.

2. The expected rate of discharge in gallons per minute for discharges greater than 20,000 gallons.

3. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by subpart 1.e above. The analysis must also include any parameter deemed necessary by Ecology. All discharges must comply with the effluent limits as established in Condition S1 of this permit and any other limits imposed by Ecology.

4. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order.

S10. Slug discharge control plan

S10.A. Slug discharge control plan requirements

The Permittee must:

1. Prepare and maintain a plan to minimize the potential of slug discharges from the facility covered by this permit.

2. Keep the current slug discharge control plan on the plant site and make it readily available to facility personnel, and Department of Ecology inspectors upon request.

3. Follow the plan and any supplements throughout the term of the permit.

4. Periodically review, the slug discharge control plan, and update it as necessary to maintain its effectiveness with respect to maintaining compliance with the provisions of this permit.

S10.B. Slug discharge control plan components

The slug discharge control plan must include the following information and procedures relating to the prevention of unauthorized slug discharges; it must include:

1. A description of a reporting system the Permittee will use to immediately notify facility management, the POTW operator, and appropriate state, federal, and local authorities of any slug discharges, and provisions to provide a written follow-up report within five days.

2. A description of operator training, equipment, and facilities (including overall facility plan) for preventing, containing, or treating slug discharges.
3. Procedures to prevent adverse impact from accidental spills including:
   a. Inspection and maintenance of storage areas.
   b. Handling and transfer of materials.
   c. Loading and unloading operations.
   d. Control of plant site run-off.
   e. Worker training.
   f. Building of containment structures or equipment.
   g. Measures for containing toxic organic pollutants (including solvents).
   h. Measures and equipment for emergency response.
4. A list of all raw materials, products, chemicals, and hazardous materials used, processed, or stored at the facility; the normal quantity maintained on the premises for each listed material; and a map showing where they are located.
5. A description of discharge practices for batch and continuous processes under normal and non-routine circumstances.
6. A brief description of any unauthorized discharges which occurred during the 36-month period preceding the effective date of this permit and subsequent measures taken by Permittee to prevent or to reduce the possibility of further unauthorized discharges.
7. An implementation schedule including additional operator training and procurement and installation of equipment or facilities required to properly implement the plan.

General Conditions

G1. Signatory requirements

All applications, reports, or information submitted to Ecology must be signed as follows:

1. All permit applications must be signed by either a principal executive officer or ranking elected official.
2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   a. The authorization is made in writing by the person described above and is submitted to Ecology at the time of authorization, and
   b. The authorization specifies either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under paragraph G1.2, above, is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section must make the following certification:

   "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G2. Right of entry

Representatives of Ecology have the right to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state. Reasonable times include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection. Representatives of Ecology must be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit; to inspect any monitoring equipment or method required in the permit; and to sample the discharge, waste treatment processes, or internal waste streams.

G3. Permit actions

This permit is subject to modification, suspension, or termination, in whole or in part by Ecology for any of the following causes:

1. Violation of any permit term or condition;
2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts;
3. A material change in quantity or type of waste disposal;
4. A material change in the condition of the waters of the state; or
5. Nonpayment of fees assessed pursuant to RCW 90.48.465.

Ecology may also modify this permit, including the schedule of compliance or other conditions, if it determines good and valid cause exists, including promulgation or revisions of regulations or new information.

G4. Reporting a cause for modification

The Permittee must submit a new application, or a supplement to the previous application, along with required engineering plans and reports, whenever a new or

increased discharge or change in the nature of the discharge is anticipated which is not specifically authorized by this permit. This application must be submitted at least 60 days prior to any proposed changes. Submission of this application does not relieve the Permittee of the duty to comply with the existing permit until it is modified or reissued.

G5. Plan review required

Prior to constructing or modifying any wastewater control facilities, an engineering report and detailed plans and specifications must be submitted to Ecology for approval in accordance with Chapter 173-240 WAC. Engineering reports, plans, and specifications should be submitted at least 60 days prior to the planned start of construction. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with other laws and statutes

Nothing in the permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this permit

This permit is automatically transferred to a new owner or operator if:

1. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology;
2. A copy of the permit is provided to the new owner and;
3. Ecology does not notify the Permittee of the need to modify the permit.

Unless this permit is automatically transferred according to Section 1, above, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G8. Reduced production for compliance

The Permittee must control production or discharge to the extent necessary to maintain compliance with the terms and conditions of this permit upon reduction of efficiency, loss, or failure of its treatment facility until the treatment capacity is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power for the treatment facility is reduced, lost, or fails.

G9. Removed substances

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must not be resuspended or reintroduced to the effluent stream for discharge.

G10. Payment of fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under Chapter 173-224 WAC are not paid.

G11. Penalties for violating permit conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars and costs of prosecution, or by imprisonment in the discretion of the court. Each day upon which a willful violation occurs is a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is a separate and distinct violation.

G12. Duty to provide information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G13. Duty to comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of chapter 90.48 RCW and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

Appendix A

LIST OF POLLUTANTS WITH ANALYTICAL METHODS, DETECTION LIMITS AND QUANTITATION LEVELS

The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for permit and application required monitoring unless:

- Another permit condition specifies other methods, detection levels, or quantitation levels.
- The method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136.

If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a quantitation limit (QL) to Ecology with appropriate laboratory documentation.

Ecology added this appendix to the permit in order to reduce the number of analytical "non-detects" in permit-required monitoring and to measure effluent concentrations near or below criteria values where possible at a reasonable cost.

LIST OF POLLUTANTS WITH ANALYTICAL METHODS, DETECTION LIMITS AND QUANTITATION LEVELS			
Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
Flow	Calibrated device		
Biochemical Oxygen Demand	SM5210-B		2 mg/L
pH	SM4500-H+ B	N/A	N/A
Total Suspended Solids	SM2540-D		5 mg/L
Copper, Total (7440-50-8)	200.8	0.4	2.0
Nickel, Total (7440-02-0)	200.8	0.1	0.5
Zinc, Total (7440-66-6)	200.8	0.5	2.5

PRIORITY POLLUTANTS (continued)

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
VOLATILE COMPOUNDS			
Acrolein (107-02-8)	624	5	10
Acrylonitrile (107-13-1)	624	1.0	2.0
Benzene (71-43-2)	624	1.0	2.0
Bromoform (75-25-2)	624	1.0	2.0
Carbon tetrachloride (56-23-5)	624/601 or SM6230B	1.0	2.0
Chlorobenzene (108-90-7)	624	1.0	2.0
Chloroethane (75-00-3)	624/601	1.0	2.0
2-Chloroethylvinyl Ether (110-75-8)	624	1.0	2.0
Chloroform (67-66-3)	624 or SM6210B	1.0	2.0
Dibromochloromethane (124-48-1)	624	1.0	2.0
1,2-Dichlorobenzene (95-50-1)	624	1.9	7.6
1,3-Dichlorobenzene (541-73-1)	624	1.9	7.6
1,4-Dichlorobenzene (106-46-7)	624	4.4	17.6
Dichlorobromomethane (75-27-4)	624	1.0	2.0
1,1-Dichloroethane (75-34-3)	624	1.0	2.0
1,2-Dichloroethane (107-06-2)	624	1.0	2.0
1,1-Dichloroethylene (75-35-4)	624	1.0	2.0
1,2-Dichloropropane (78-87-5)	624	1.0	2.0
1,3-dichloropropene (mixed isomers) (1,2-dichloropropylene) (542-75-6)	624	1.0	2.0
Ethylbenzene (100-41-4)	624	1.0	2.0
Methyl bromide (74-83-9) (Bromomethane)	624/601	5.0	10.0
Methyl chloride (74-87-3) (Chloromethane)	624	1.0	2.0
Methylene chloride (75-09-2)	624	5.0	10.0
1,1,2,2-Tetrachloroethane (79-34-5)	624	1.9	2.0
Tetrachloroethylene (127-18-4)	624	1.0	2.0
Toluene (108-88-3)	624	1.0	2.0
1,2-Trans-Dichloroethylene (156-60-5) (Ethylene dichloride)	624	1.0	2.0
1,1,1-Trichloroethane (71-55-6)	624	1.0	2.0
1,1,2-Trichloroethane (79-00-5)	624	1.0	2.0
Trichloroethylene (79-01-6)	624	1.0	2.0
Vinyl chloride (75-01-4)	624/SM6200B	1.0	2.0

1. Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

2. Quantitation Level (QL) also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10n, where n is an integer (64 FR 30417).
   Also Given As:
   The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs).

Fact Sheet for State Waste Discharge Permit ST0007271

Waste Management of Washington, Inc. – Olympic View Sanitary Landfill

June 1, 2015

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed State Waste Discharge Permit for Waste Management of Washington, Inc. – Olympic View Sanitary Landfill, that will allow the discharge of wastewater to the City of City of Bremerton (West Plant) sanitary sewer system, and the City of Port Orchard – West Sound Utility District (aka South Kitsap Water Reclamation Facility) sanitary sewer system.

State law requires any commercial or industrial facility to obtain a permit before discharging waste or chemicals to municipal sanitary sewer collection and treatment systems.

Waste Management of Washington, Inc. has reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions about the facility's location, history, product type, production rate, or discharges prior to publishing this draft fact sheet for public notice.

Summary

Waste Management of Washington, Inc. operates a closed landfill located in Kitsap County. The proposed State Waste Discharge Permit is intended to authorize the discharge of landfill leachate, transfer station leachate, related stormwater, and sample well purge water, to the City of Bremerton POTW and to the City of Port Orchard – West Sound Utility District (aka South Kitsap Water Reclamation Facility) sanitary sewer system.

Table of Contents

I. Introduction

The legislature defined Ecology's authority and obligations for the Wastewater Discharge Permit Program in the Water Pollution Control law, chapter 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how it exercises its authority:

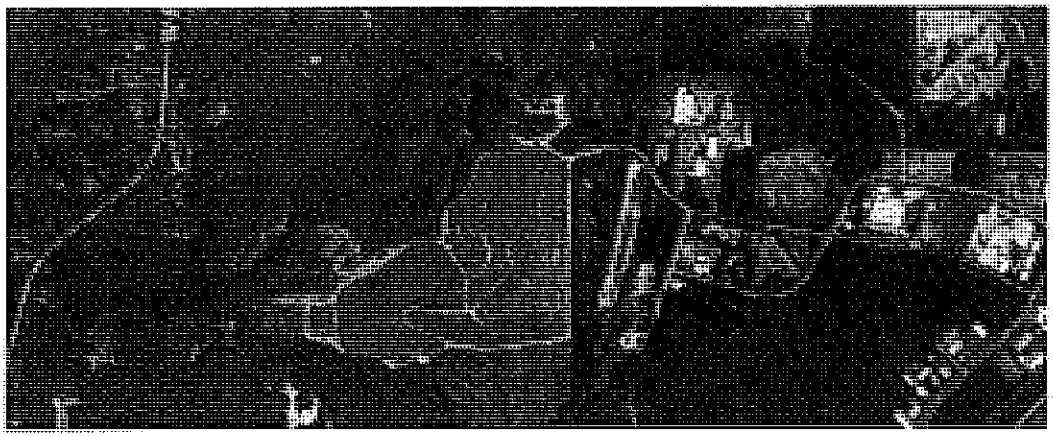
- State waste discharge program (chapter 173-216 WAC).
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC).

These rules require any industrial facility owner/operator to obtain a State Waste Discharge Permit before discharging wastewater to state waters. This rule includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities which discharge into public waters of the state. They also help define the basis for limits on each discharge and for other performance requirements imposed by the permit.

Under the State Waste Discharge Permit Program and in response to a complete and accepted permit application, Ecology generally prepares a draft permit and accompanying fact sheet, and makes it available for public review before final issuance. If the volume of the discharge has not changed or if the characteristics of the discharge have not changed, Ecology may choose not to issue a public notice. When Ecology publishes an announcement (public notice), it tells people where they can read the draft permit, and where to send their comments, during a period of thirty days. (See *Appendix A – Public Involvement Information* for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft State Waste Discharge Permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in *Appendix D.*

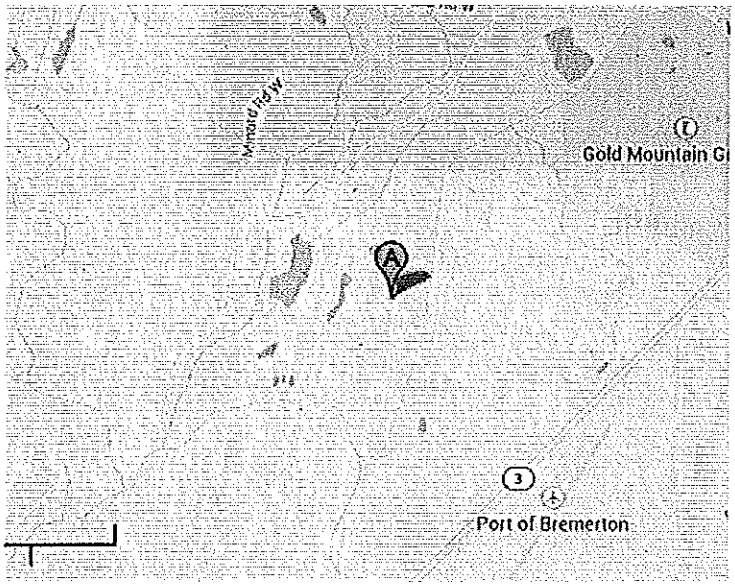
Facility Information	
Applicant Name and Address	Waste Management of Washington, Inc. 9081 Tujunga Avenue Sun Valley, CA 91352
Facility Name and Location	Olympic View Sanitary Landfill 10015 SW Barney White Road Bremerton, WA 98312-4935
Contact at Facility	Charles Lucie Landfill Supervisor
Contact at Corporate Headquarters	Phil Perley Waste Management of Washington, Inc. 9081 Tujunga Avenue Sun Valley, CA 91352
Responsible Official	Steven D. Richtel Group Director Waste Management of Washington, Inc. 9081 Tujunga Avenue Sun Valley, CA 91352 (303) 914-1434
Industrial User Type	Significant Industrial User
Industry Type	Landfill, Closed
Type of Treatment by Industry	Flow equalization, Aeration
SIC Codes	4953
NAIC Codes	56212

Facility Information	
Olympic View Sanitary Landfill Facility Location (NAD83/WGS84 reference datum) (coordinates refer to truck loadout point SW of leachate pond)	Latitude: 47.4997 degrees North Longitude: 122.7905 degrees West
Treatment Plant (POTW) Receiving Discharge	City of Bremerton Wastewater Treatment Plant (West Plant) NPDES Permit WA0029289
City of Bremerton WWTP Discharge-Activated Sludge Plant (aka West Plant) (discharge to Sinclair Inlet) Location (NAD83/WGS84 reference datum)	Latitude: 47.5447 degrees North Longitude: 122.6699 degrees West
Treatment Plant (POTW) Receiving Discharge	South Kitsap Water Reclamation Facility (aka City of Port Orchard/West Sound Utility District WWTP) WA020346
South Kitsap Water Reclamation Facility Discharge Location (NAD83/WGS84 reference datum)	Latitude: 47.5527 degrees North Longitude: 122.6111 degrees West



Aerial View of Olympic View Sanitary Landfill

Olympic View Sanitary Landfill – Base of red balloon symbol indicates location of truck load-out point.



Map indicating location of Olympic View Sanitary Landfill

II. Facility description and permitting information

A. Operations at the closed landfill

The Olympic View Sanitary Landfill is a closed Subtitle D sanitary landfill under post-closure operation and maintenance. The landfill was operated since 1963 under various private ownerships. The closed landfill is owned and operated by Olympic View Sanitary Landfill, Inc. (OVSL), a subsidiary of Waste Management, Inc. The facility stopped receiving solid wastes in 2003 and was capped (received an impervious cover) and closed in 2004. The landfill site is located ten miles southwest of Bremerton (between Gorst and Belfair) off State Route 3, just west of the Bremerton National Airport, and adjacent to Port of Bremerton's Olympic View Industrial Park.

Operations at the site currently consist of post-closure operation and maintenance, including the collection, pretreatment, and off-site disposal (at either of two municipal POTWs) of landfill leachate. Leachate, which forms when liquids pass-through or are generated in a landfill, are collected using a series of collection lines, a gravity transmission line, a pump station and force main, a pretreatment storage lagoon, an evaporator unit, and a truck load-out station. Leachate is also generated from solid waste at the solid waste transfer station located opposite the site, across SW Barney White Road.

Pretreatment of the collected leachate occurs within a lined lagoon with a capacity of approximately 3.12 million gallons. The pretreatment train primarily consists of aeration and evaporation. The evaporator unit receives leachate influent from the lagoon. Landfill-generated methane is burned in the unit to turn the aqueous portion to steam. The generated steam is then discharged into a flare to polish the emissions to the atmosphere. Leachate evaporator unit residual liquid generated during pretreatment is returned to the lagoon.

Under post-closure operations, most of the generated leachate is evaporated. However, occasionally, excess pretreated wastewater from the lagoon is transferred into 6000-gallon hauling trucks for off-site discharge at the City of Bremerton POTW. These transfers typically occur during the latter half of the wet season (January to March) and consist of batch deliveries to the POTW that can accrue from 50,000 to over 400,000 gallons over a delivery period of several days.

B. Historical operations at landfill

In the early 1960s solid waste disposal operations began at the facility, then known as the Old Barney White Landfill. The facility accepted US Navy, industrial, putrescible, and self-hauled municipal waste, and was operated as an open burning dump. When Brem Air Disposal, Inc. acquired the landfill in 1970, the name was changed to "Brem Air Northwest Disposal Facility." Brem Air Disposal discontinued burning of waste by 1972. By 1975, the company had developed the new landfill operations to comply with state regulations, the Minimal Functional Standards for Solid Waste Handling, and permit requirements imposed by Bremerton-Kitsap County Health District. At that time it began spreading, compacting, and applying cover to the solid waste. In 1975, Brem Air Disposal, Inc. shareholders formed a new corporation, Kitsap County Sanitary Landfill, Inc. (KCSL). KCSL continued to operate the landfill, although its name was changed in 1995 to Olympic View Sanitary

Landfill, Inc. (OVSL). OVSL was purchased by Envirofil, Inc., on November 5, 1993. In 1994, Envirofil merged with USA Waste Services. Subsequently, in 1997, USA Waste Services merged with Waste Management, Inc., which now owns OVSL. The facility stopped receiving solid wastes in 2003, and was capped and closed in 2004.

Olympic View Sanitary Landfill site occupies 65 acres of a 500-acre parcel. The municipal solid waste landfill consists of three sections: an old unlined portion (the Old Barney White Landfill), the Phase I expansion, and the Phase II expansion.

The Old Barney White Landfill was closed in 1985 under the standards of Chapter 173-301 WAC. This portion of the landfill is unlined and has no internal leachate collection system. The final cover, constructed in 1985, consisted of a one-foot layer of sand and gravel, a 1.5-foot layer of low permeability soil, 2.5 feet of sludge-amended soil, and six inches of topsoil. A perimeter leachate interceptor (toe seep collector) and a passive gas collection system were also installed in 1985. The total volume of waste disposed of in this 25-acre area is estimated to be approximately 2.2 million cubic yards [907,000 metric tons of municipal solid waste (MSW)].

The old landfill closure was improved in 1991 and 1992. The improved closure consists of the original layer of low permeability soil overlain by a 50-mil geo-membrane [textured very low density polyethylene (VLDPE)] layer, a geo-net composite drainage layer, 1.5 feet of cover soil, and six inches of top soil. An active gas extraction system was also added at that time.

Phase I constitutes 20 acres and had an original estimated capacity of one million cubic yards. Phase I is divided into three stages. Stage A abuts the old disposal area, is lined, and is equipped with a leachate collection system.

The Stage A liner, which was constructed in 1985, consists of two feet of compacted soil on the bottom and a 36-mil Hypalon liner on the side slopes. This liner does not satisfy the design requirements of Chapter 173-304 WAC (the minimal functional standards). A portion of Stage 1A was closed in 1992/1993 with the improvement of the old landfill closure.

The Stage B liner, constructed in 1988, consists of two feet of compacted soil with a permeability of 10^{-6} cm/sec overlain by a 60-mil high density polyethylene geo-membrane.

The 20-acre Phase II expansion area is located directly north of Phase I. Its originally proposed capacity was 1.2 million cubic yards. A vertical expansion was approved for the Phase I and Phase II areas in 1991, which increased the combined capacity of Phase I and Phase II from 2.1 million cubic yards to 4.0 million cubic yards. Development of Phase II by stages began in the summer of 1996.

The following sequence has been utilized with respect to filling of each of the landfill cells:

- 1997 Phase II a1
- 1998 Phase II b1
- 1999 Phase II b2
- 2000 Phase II b3

Phase II b3 was the last of the active cells, prior to the cessation of receipt of solid wastes in 2003. Following closure of the landfill, a solid waste transfer station was constructed. Generation of leachate from the landfill continues after closure of the landfill, although at a reduced rate with respect to the time the landfill was in operation.

C. Leachate collection system

Leachate is formed when liquids pass through a landfill, removing contaminants and their degradation products from the solid waste. Decay and fermentation produce gases (for example, carbon dioxide and methane) and organic acids, resulting in the dissolution of chemical constituents such as iron and manganese from the waste. Landfills in western Washington may become partially or totally saturated by winter precipitation and, in unlined landfills, horizontal or upward flow of ground water. The rate or degree of saturation and the subsequent leachate production is based on site-specific conditions and landfill operations. The amount of leachate produced and the rate of production is a function of the bulk chemical composition, particle size and hydraulic conductivity of the refuse, and the capacity of the cover and liner material to restrict infiltration of incident precipitation.

The leachate management system at Olympic View Sanitary Landfill includes leachate collection lines, a gravity transmission line, a pump station and force main, pretreatment/storage lagoons, and a truck load-out station.

The leachate collection system includes the toe seep collection system around the base of the old landfill and the drainage layer/leachate collection lines installed above the liner in the Phase I and Phase II expansion areas. Pumps with a capacity of 35-65 gpm have been lowered to the bottom of the risers. The leachate is pumped to an HDPE force main.

A gravity transmission line conveys the leachate from the leachate collection system to the leachate treatment/storage lagoons. This line is located along the north shoulder of the north perimeter road. There is a series of five manholes along this transmission line. A cutoff valve is provided at Manhole #1 to stop the flow from the Phase I expansion area.

Condensate is a wastewater which forms in the collection pipes of active gas extraction systems. Condensate from the active gas collection system at Olympic View Landfill is discharged into the leachate treatment/storage system at Olympic View.

D. Leachate treatment ponds

The leachate recovered is directed to the leachate treatment/collection lagoon, which is equipped with two aerators. The capacity of the pond is approximately 3.12 million gallons. The treatment/storage lagoon has a double composite liner system utilizing a 60-mil and 80-mil HDPE geo-membrane liner. Recent practice has been to operate the aerators during approximately May through September five days per week, typically Monday through Friday from morning through the afternoon. During October through May, one aerator is typically operated three days per week. If inspections indicate excessive color, odor or algae, aeration is increased. A leachate polishing pond, located nearby the leachate treatment pond, has been abandoned.

The leachate truck load-out station is located adjacent to the lagoon. Prior to 1997, treated leachate from the treatment and storage system was in-hauled and discharged at the Port Orchard/Kitsap County Sewer District No. 5 Wastewater Treatment Plant. In 1997, the landfill began hauling leachate to the City of Bremerton POTW.

A leachate irrigation system, permitted in the permit issued in 1988, has been abandoned. The system consisted of a pump station, force main, system controller, and the irrigation

sites. The pipe to the irrigation system has been capped at the pump station. The pump flow line was converted to a recirculating line, and all leachate discharges into lagoon #1.

Under post-closure conditions, most of the generated leachate is evaporated. However, occasionally, excess pretreated wastewater from the lagoon is transferred into 6000-gallon hauling trucks for off-site discharge at the City of Bremerton's POTW. These transfers typically occur during the latter half of the wet season (January to March), and consist of batch deliveries to the POTW that can accrue to between 50,000 to over 400,000 gallons over a delivery period of several days.

E. Leachate evaporation operations

Methane generated at the landfill is used to evaporate up to approximately 20,000 gallons of leachate per day. The evaporated leachate is passed through the flare prior to being vented to the atmosphere. The landfill receives a tax credit for utilization of the methane. The shutting down and capping of the landfill is expected to result in the reduced production of leachate, with respect to that experienced at the time the landfill was in operation. It is expected that, at some point, evaporation of the entirety of the leachate generated will be possible.

F. Support facilities

Support facilities for the general operations of the landfill include:

- **Equipment maintenance shop:** The maintenance shop is located near the general office and is equipped with facilities to overhaul landfill machinery. Landfill equipment includes refuse compactors, tracked dozers and loader, dump truck, a road grader, and waste transfer roll-off truck (for on-site containers). The equipment is used for both placing waste and moving materials.
- **Employee offices:** Former employee facilities are located adjacent to the equipment maintenance shop. There are no employees regularly situated at Olympic View Sanitary Landfill now that the landfill is in post-closure status.
- **Weigh station**: A weigh station consisting of two truck scales and a scale house is used occasionally to check the tare weights of company vehicles.
- **Transfer station**: Waste water from the drainage system at the newly constructed transfer station is discharged to the leachate storage and pretreatment lagoon. The transfer station drainage system accepts contact waste water from the tipping floor and compactor. The contact wastewater is collected in a 1,150-gallon below-ground reinforced concrete vault located below the compactor. The vault includes a two-chambered oil-water separator. When the level of liquid in the vault reaches 675 gallons, a pump is automatically activated, and the liquid is pumped to an above-ground storage tank located near the special waste/recyclables loading area. The pump is equipped with an alarm system that alerts the operator if the pump is not working. The above-ground storage tank is equipped with a mechanical level indicator. The above-ground tank is pumped on a periodic basis and transferred to the leachate storage and treatment system. The volume of this water is expected to be relatively insignificant, with an average rate of generation expected to be less than 100 gallons per day.

- **Landfill gas flare station**: The landfill gas flare station is located west of the southwest corner of the Old Barney White Landfill. The station consists of the landfill gas flare, a leachate evaporation unit, ancillary equipment, and a contractor office trailer. Sanitary waste from the office trailer is stored in a tank for pickup by vacuum truck and is disposed of off-site.

G. Stormwater management

The existing stormwater control system is described in the *Olympic View Sanitary Landfill Surface Water Management Plan*. The system consists of a ditch and culvert conveyance system, detention ponds, and infiltration system, erosion control measures and grass-lined swales for water quality control. The discharge of stormwater is authorized and regulated under Stormwater Baseline General Permit for Industrial Activity No. SO3-002538.

Stormwater incident to covered landfill areas is directed to settling ponds which are separate from the leachate lagoon. The storm water from the stormwater pond is monitored under a MTCA agreement (agreed order). The storm water is discharged under the authorization of a General Stormwater Permit. The General Industrial Stormwater Permit requires preparation of both a Stormwater Pollution Prevention Plan and a Spill Prevention Plan.

H. South Kitsap Water Reclamation Facility

The City of Port Orchard (PO) and West Sound Utility District (WSUD) jointly own the South Kitsap Water Reclamation Facility (SKWRF). The facility was formerly known as the City of Port Orchard/West Sound Utility District Joint Wastewater Treatment Plant. WSUD operates the facility. SKWRF provides wastewater treatment with two separate treatment trains using different treatment processes: (i) complete mix activated sludge process, and (ii) Membrane Bioreactor (MBR) process. In addition, a ballasted sand clarifier at the facility can provide advanced primary treatment to peak flows that exceed the facility's secondary treatment capacity.

Design Criteria for South Kitsap Water Reclamation Facility	
Maximum Month Design Flow (MMDF)	4.2 MGD
BOD_5 Loading for Maximum Month	6,340 lbs/day
TSS Loading for Maximum Month	6,910 lbs/day

I. City of Bremerton Wastewater Treatment Plant

The City of Bremerton has owned, operated, and maintained a secondary wastewater treatment plant (West Plant) in west Bremerton since June 1985. Approximately 60% of Bremerton's sewer system consists of a combined sewage system that conveys a mixture of sanitary sewage and stormwater to the West Plant for treatment. The City of Bremerton upgraded the West Plant in 2009 to increase the amount of combined sewage it can treat and, in turn, further reduce the potential for CSO discharges. The West Plant operates as a conventional activated sludge secondary treatment system. The liquid stream treatment components include three mechanical bar screens, two aerated grit chambers, two Parshall flumes for flow measurement, two primary clarifiers, two aeration basins with fine bubble diffusers, two secondary clarifiers, two chlorine contact basins for disinfection with sodium hypochlorite solution, and a sodium bisulfite solution dechlorination system. The plant also

has a roughing biofilter available, but not currently used for treatment. The solids stream treatment system includes two rotating drum thickeners (RDTs), two anaerobic digesters, and a centrifuge. The plant also has a gravity thickener that is currently not in use. Pumps transfer primary sludge from the primary clarifiers directly to the anaerobic digesters for stabilization. Waste activated sludge pumps direct secondary sludge to the RDTs for thickening. The thickened secondary sludge is then pumped to the anaerobic digesters. The centrifuge dewaters the digested sludge before it is shipped out as a Class B biosolids to city-owned forest lands for silviculture purposes. Water removed from solids by the RDT and the centrifuge, along with supernatant decanted from the digesters, return to the head of the plant for treatment.

Design Criteria – City of Bremerton West Plant: Ecology originally approved design criteria for the City of Bremerton West Plant in the plans and specifications dated April 1983, prepared by CH2M Hill. Subsequently, Ecology approved higher flow design criteria for this plant in the Westside Wastewater Treatment Plant Rerating Study dated December 2009, prepared by Richwine Environmental. The table below includes design criteria from the referenced reports.

Design Criteria for City of Bremerton West Plant	
Maximum Month Design Flow (MMDF)	15.5 MGD
Maximum Month Design Flow (MMDF) (May through September)	11.0 MGD
BOD_5 Loading for Maximum Month	18,100 lb/day
TSS Loading for Maximum Month	22,600 lb/day

J. State Environmental Policy Act (SEPA) Compliance

State law exempts the issuance, reissuance, or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges. Olympic View Sanitary Landfill is an existing discharger with an existing state waste discharge permit.

K. Activities of Washington State Department of Ecology Waste 2 Resources Program

The Department of Ecology's Waste 2 Resources (formerly Solid Waste Program) Draft Cleanup and Remedial Action Plan and a State Environmental Policy Act (SEPA) determination for public review in 2010. The remedial action activities are intended to address groundwater concentrations which exceed criteria for a number of chlorinated organic compounds. The site exceeds state groundwater quality standards for volatile organic compounds and metals. The groundwater contamination prompted investigation and improvements to operations at the landfill. Improvements included replacing old leachate lagoons with a new double-lined leachate lagoon, improvements to the gas collection system, and site closure. The investigations led to an Agreed Order in 2001 to conduct a Remedial Investigation and Feasibility Study. Results of the Remedial Investigation and Feasibility Study were documented in reports that were made available to the public for review and comment in November 2010. Ecology prepared a draft Cleanup Action Plan which was also available for public review at that time. After reviewing the comments received, Ecology finalized the Cleanup Action Plan.

The selected cleanup action for the OVSL Site is described in the Cleanup Action Plan and includes:

- Operate and maintain the existing source control and containment systems.
- Repair, modify, and upgrade the landfill systems.
- Install additional landfill gas extraction wells.
- Monitor groundwater and soil gas.
- Monitor the natural attenuation of contaminants.
- Continue institutional controls.

In June 2011, Ecology and WMW signed an Agreed Order for implementing the Cleanup Action Plan. The Order requires WMW to implement the elements of the Cleanup Action Plan and includes a schedule for submitting specific documents related to the actions. The Order also specifies ongoing reporting requirements. Attachments to the Order include the Cleanup Action Plan and an Environmental (Restrictive) Covenant that establishes limitations on the use of the landfill property.

III. Proposed permit limits

State regulations require that Ecology base limits in a State Waste Discharge Permit on the:

- Technology and treatment methods available to treat specific pollutants (technology-based). Technology-based limits are set by the EPA and published as a regulation (40 CFR 400 - 471), or Ecology develops limits on a case-by-case basis (40 CFR 125.3, and RCW 90.48). Dischargers must treat wastewater using all known, available, reasonable methods of prevention, control, and treatment (AKART).
- Effects of the pollutants on the publicly owned treatment works (POTW). Wastewater must not interfere with the operation of the POTW. Ecology considers local limits in developing permit limits.
- Applicable requirements of other local, state and federal laws.

Ecology applies the most stringent of these limits to each parameter of concern and further describes the proposed limits below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, monitoring, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, and are not listed in regulation.

Ecology does not usually develop permit limits for pollutants not reported in the permit application but which may be present in the discharge. The permit does not authorize the discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Technology-based effluent limitations

All waste discharge permits issued by the Department of Ecology must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110).

As Waste Management only seeks authorization to discharge process wastewater (leachate) from municipal solid waste to the City of Bremerton and City of Port Orchard POTWs, the landfill categorical limitations (which are only applicable to direct discharge) are not applicable to this site. In addition, the categorical limitations for Centralized Waste Treaters (40 CFR Part 437) which became effective on January 22, 2001, contain a specific exemption for landfills and transfer stations engaged in municipal solid waste-only operations. The Department of Ecology considers aeration to be consistent with AKART requirements, with respect to removal of BOD.

B. Effluent limitations based on local limits – City of Bremerton

In order to protect the City of Bremerton POTW from pass-through, interference, concentrations of toxic chemicals that would impair beneficial or designated uses of sludge, or potentially hazardous exposure levels, effluent limitations for certain parameters are necessary. Data indicates that the only metals which appear to have a potential for exceeding the permit limitations are copper, nickel, and zinc. Therefore, monitoring limitations for those three metals are included in the proposed permit. The limitations in the permit applicable to discharges to the City of Bremerton POTW are based on the City of Bremerton Municipal Code as cited in the table below, for metals and pH.

The existing permit and proposed permit contain a BOD_5 limitation of 400 mg/L and a TSS limitation of 425 mg/L. Waste Management requested in its letter of May 11, 2001, that Olympic View Sanitary Landfill's BOD_5 limitation be increased to 400 mg/L and its TSS limitation be increased to 425 mg/L. Olympic View Sanitary Landfill staff members discussed the proposed increase in BOD_5 limitations with City of Bremerton staff members. Mr. Pat Coxon, of the City of Bremerton, sent a letter on May 10, 2001, agreeing that the BOD_5/TSS limitations could be increased to 400 mg/L and 425 mg/L, respectively. The permit issued September 16, 2002, contained those limitations.

Local Discharge Limitations - City of Bremerton POTW (City of Bremerton Municipal Code Chapter 15.03.110, 210 revised 2014)	
Pollutant Parameter	**Local Limitation**
Cadmium, T (mg/L)	0.10
Chromium, T (mg/L)	1.0
Copper, T (mg/L)	0.75
Lead, T (mg/L)	0.25
Nickel, T (mg/L)	0.60
Silver, T (mg/L)	0.20
Zinc, T (mg/L)	2.0
pH (standard pH units)	6.0-10.0

C. Effluent limitations based on local limits – South Kitsap Water Reclamation Facility

In order to protect the South Kitsap Water Reclamation Facility from pass-through, interference, concentrations of toxic chemicals that would impair beneficial or designated uses of sludge, or potentially hazardous exposure levels, effluent limitations for certain parameters are necessary for discharges to the City of Port Orchard POTW. The limitations for BOD_5 and TSS are based on the City of Port Orchard Municipal Code as cited in the table below. The metals limits are retained from the existing permit.

City of Port Orchard Local Discharge Limitations City of Port Orchard Municipal Code Chapter 13.04.130 (current May 2015)	
Pollutant Parameter	**Local Limitation**
BOD_5 (mg/L)	300
TSS (mg/L)	350
pH (standard pH units)	5.5-9.0

State regulations require that limitations set forth in a waste discharge permit must be based on the technology available to treat the pollutants (technology-based) or be based on the effects of the pollutants to the POTW (local limits). Waste water must be treated using all known, available, and reasonable treatment (AKART) and not interfere with the operation of the POTW. Aeration and settling, as conducted in the waste storage pond, together with the secondary treatment provided at the POTW are anticipated by the Department of Ecology to result in compliance with AKART requirements.

The South Kitsap Water Reclamation Facility has a relatively small design capacity (4.4 million gallons per day). Based on this fact, and the fact that landfill leachate BOD_5 values may approach 400 mg/L, the Department of Ecology proposes a flow limitation for landfill leachate the South Kitsap Water Reclamation Facility of 125,000 gallons per day. This flow limitation is intended to minimize the potential of upsets or other system perturbations at the South Kitsap Water Reclamation Facility.

D. Effluent limitations and monitoring for priority pollutant organic compounds

The proposed permit contains monitoring requirements for only the volatile (i.e. purgeable) moiety of priority pollutant organic compounds. The decision was made to require monitoring of this subset due to the fact that groundwater remediation at the site for organic compounds is required on the basis of the concentration of certain volatile organic compounds.

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment process functions correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in

certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

A. Laboratory accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters).

B. Wastewater monitoring

Ecology details the proposed monitoring schedule under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

V. Other permit conditions

A. Reporting and record keeping

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges [WAC 173-216-110 and CFR 403.12 (e),(g), and (h)].

B. Operations and maintenance

Ecology requires dischargers to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state regulations (WAC 173-240-080 and WAC 173-216-110).

C. Prohibited discharges

Ecology prohibits certain pollutants from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (chapter 173-216 WAC) and the discharge of designated dangerous wastes not authorized by this permit (chapter 173-303 WAC).

D. Dilution prohibited

Ecology prohibits the facility from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limits.

E. Non-routine and unanticipated discharges

Occasionally, this facility may generate wastewater not characterized in the permit application because it is not a routine discharge and the facility did not anticipate it at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes non-routine and unanticipated discharges under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the water.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

F. Slug discharge plan

Ecology determined that the Permittee has the potential for a batch discharge or a spill that could adversely affect the treatment plant, therefore the proposed permit requires a slug discharge control plan [(40 CFR 403.8 (f)(l) (iii)(B)(6) and (f) (2)(vi)].

G. General conditions

Ecology bases the standardized general conditions on state law and regulations. They are included in all state waste discharge permits issued by Ecology.

VI. Public notification of noncompliance

Ecology may annually publish a list of all industrial users in significant noncompliance with Pretreatment Standards or Requirements during any of the previous four quarters in a local newspaper. Accordingly, this permit Special Condition informs the facility that noncompliance with this permit may result in publication of the noncompliance.

VII. Permit issuance procedures

A. Permit modifications

Ecology may modify this permit to impose or change the numerical limits, if necessary, to comply with changes in the pretreatment requirements, conditions in local sewer ordinances, or based on new information from sources such as inspections and effluent monitoring. It may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed permit issuance

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limits and conditions believed necessary to control toxics. Ecology proposes that the permit be issued for a period of five years.

Appendix A – Public Involvement Information

Ecology proposes to reissue a permit to Waste Management of Washington, Inc. – Olympic View Sanitary Landfill. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on XX XX, 20XX in the *Kitsap Sun* to inform the public and to invite comment on the proposed draft State Waste Discharge permit and fact sheet.

The notice:

- Tells where copies of the draft permit and fact sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing of comments about the proposed State Waste Discharge Permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled Frequently Asked Questions about Effective Public Commenting, which is available on our website at https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html.

You may obtain further information from Ecology by telephone, (425) 649-7025, or by writing to the address listed below.

Department of Ecology
Northwest Regional Office
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

Appendix B – Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Appendix C – Glossary

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Average monthly discharge limit -- The average of the measured values obtained over a calendar month's time.

Best management practices (BMPs) -- Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5 -- Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD_5 is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass -- The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Clean water act (CWA) -- The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Composite sample -- A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Continuous monitoring -- Uninterrupted, unless otherwise noted in the permit.

Date of receipt -- This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit -- The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Engineering report -- A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab sample -- A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial user -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater -- Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Maximum daily discharge limit -- The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method detection level (MDL) -- See Method Detection Level.

Mixing zone -- An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) -- The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable

waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH -- The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Potential significant industrial user (PSIU) --A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency, December 2007).

Reasonable potential -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Significant industrial user (SIU) --

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and

2) Any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

State waters -- Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater -- That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit -- A permit limit based on the ability of a treatment method to reduce the pollutant.

Total dissolved solids -- That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) -- A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation.

Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit -- A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix G

Model Results

City of Port Orchard
General Sewer Plan Update
Existing Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
9/18/2015

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 00:08 hrs	29.448	0 - 22:32 hrs	172.829	31,400.02	557.663	38.726	129	0	0.093	32.172	0
PUMP-ALBERTSON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-BAY1	1,000.00	0 - 00:03 hrs	186.78	0 - 01:58 hrs	708.468	137,192.23	594.356	41.275	226	0	0.9	30.808	0
PUMP-BAY2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	80.599	0 - 21:44 hrs	51.666	0 - 16:28 hrs	68.796	23,032.17	1,027.57	71.359	40	0	0	29.66	0
PUMP-CANYONPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CEDAR1	150	0 - 02:47 hrs	60.648	0 - 23:28 hrs	142.614	4,563.76	98.22	6.821	54	0	0.051	0.793	0
PUMP-CEDAR2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:02 hrs	52.95	0 - 23:32 hrs	181.669	35,660.61	602.474	41.838	966	0	1.06	11.572	1
PUMP-EAGLECREST2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-FLOWERPUMP1	234.059	0 - 07:54 hrs	46.034	0 - 23:27 hrs	204.159	67,355.84	1,012.62	70.321	81	0	0	58.671	0
PUMP-FLOWERPUMP2	234.059	0 - 07:54 hrs	100.23	0 - 07:01 hrs	180.403	1,365.08	23.225	1.613	3	0	0	1.438	0
PUMP-GOLDENPUMP1	96.076	0 - 07:13 hrs	11.517	0 - 23:30 hrs	91.242	16,715.55	562.295	39.048	85	0	0	14.423	0
PUMP-GOLDENPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	327.206	0 - 07:11 hrs	16.468	0 - 06:31 hrs	299.313	26,025.40	266.87	18.533	27	0	0	27.581	0
PUMP-HARRISON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:01 hrs	39.301	0 - 05:15 hrs	423.08	13,737.28	99.686	6.923	78	0	0.957	9.177	0
PUMP-LOWES2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	3,877.71	0 - 08:29 hrs	1,940.25	0 - 10:00 hrs	3,778.18	787,616.50	639.842	44.433	59	0	0	732.316	0
PUMP-MARINA2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA3	1,721.43	0 - 09:56 hrs	421.33	0 - 19:09 hrs	923.115	227,657.94	756.897	52.562	59	0	0	101.512	0
PUMP-MARINA4	862.41	0 - 19:30 hrs	579.827	0 - 09:57 hrs	835.262	148,006.45	543.85	37.767	62	0	0	69.327	0
PUMP-MCCORMICKMEADOWS1	299.307	0 - 00:07 hrs	28.191	0 - 00:07 hrs	171.577	18,272.81	326.876	22.7	67	0	0	12.082	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 00:28 hrs	957.321	0 - 23:52 hrs	1,316.79	388,611.78	905.8	62.903	80	0	0.037	438.213	0
PUMP-MCCORMICKW1-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW2-PUMP1	1,367.86	0 - 23:55 hrs	570.624	0 - 23:55 hrs	1,259.11	242,446.17	591.008	41.042	120	0	0	118.347	0
PUMP-MCCORMICKW2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-POTTERY-1	2,681.94	0 - 06:52 hrs	528.3	0 - 23:07 hrs	1,862.24	178,654.41	294.451	20.448	509	0	0	131.446	0
PUMP-POTTERY-2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	266.633	0 - 11:37 hrs	100	0 - 00:45 hrs	242.589	25,462.69	322.163	22.372	14	0	0.057	17.592	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 00:00 hrs	71.872	0 - 00:00 hrs	252.142	20,956.67	255.093	17.715	490	0	0.003	26.545	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	1,196.52	0 - 23:29 hrs	21.366	0 - 23:29 hrs	275.484	28,645.30	319.141	22.162	23	0	0	44.146	0
PUMP-SEDGWICK2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:12 hrs	122.056	0 - 23:13 hrs	139.57	31,578.33	694.445	48.225	85	0	0.126	7.937	0
PUMP-TREMONTPLACEPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0

City of Port Orchard
General Sewer Plan Update
2022 Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
9/18/2015

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 00:09 hrs	25.144	0 - 14:19 hrs	140.974	41,442.98	895.764	62.206	103	0	0.047	42.595	0
PUMP-ALBERTSON2	99.465	0 - 12:04 hrs	70.277	0 - 11:02 hrs	85.314	6,836.31	245.45	17.045	1	0	0	7.214	0
PUMP-BAY1	1,000.00	0 - 00:05 hrs	186.815	0 - 06:15 hrs	709.78	141,512.41	612.096	42.507	220	0	0.839	31.631	0
PUMP-BAY2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	87.964	0 - 12:07 hrs	18.373	0 - 17:45 hrs	66.875	22,071.34	1,011.42	70.238	36	0	0	28.675	0
PUMP-CANYONPUMP2	64.108	0 - 10:48 hrs	36.371	0 - 10:37 hrs	49.224	1,434.49	89.388	6.207	1	0	0	2.079	0
PUMP-CEDAR1	150	0 - 07:22 hrs	45.965	0 - 13:56 hrs	142.498	4,689.96	101.012	7.015	55	0	0.066	0.826	0
PUMP-CEDAR2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:03 hrs	7.945	0 - 14:41 hrs	186.55	41,325.30	680.859	47.282	954	0	0.965	13.363	1
PUMP-EAGLECREST2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-FLOWERPUMP1	240	0 - 11:45 hrs	44.683	0 - 02:59 hrs	202.996	67,408.14	1,019.21	70.778	79	0	0.001	59.185	0
PUMP-FLOWERPUMP2	234.467	0 - 12:15 hrs	100.402	0 - 10:00 hrs	183.012	6,228.97	104.474	7.255	11	0	0	6.439	0
PUMP-GOLDENPUMP1	170	0 - 13:47 hrs	7.455	0 - 03:09 hrs	91.668	17,068.10	571.893	39.715	87	0	0.02	14.716	0
PUMP-GOLDENPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	328.248	0 - 11:19 hrs	15.382	0 - 13:52 hrs	301.355	27,087.13	275.918	19.161	28	0	0	28.675	0
PUMP-HARRISON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:18 hrs	39.263	0 - 04:37 hrs	430.774	17,082.96	121.766	8.456	153	0	2.057	11.361	0
PUMP-LOWES2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	4,557.45	0 - 15:03 hrs	1,895.57	0 - 10:49 hrs	3,286.01	833,679.75	772.235	53.627	48	0	0	816.385	0
PUMP-MARINA2	2,377.30	0 - 12:15 hrs	1,895.57	0 - 10:49 hrs	2,362.88	195,440.81	253.862	17.629	1	0	0	223.076	0
PUMP-MARINA3	1,721.48	0 - 08:45 hrs	421.341	0 - 04:35 hrs	939.497	193,579.34	632.391	43.916	49	0	0	85.615	0
PUMP-MARINA4	862.257	0 - 04:28 hrs	575.064	0 - 02:33 hrs	831.062	110,496.27	408.066	28.338	52	0	0	51.862	0
PUMP-MCCORMICKMEADOWS1	800	0 - 01:36 hrs	21.724	0 - 11:25 hrs	181.119	21,935.09	371.845	25.823	77	0	0.009	14.297	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 00:06 hrs	736.114	0 - 13:34 hrs	1,273.35	411,195.59	989.932	68.745	70	0	0.041	465.937	0
PUMP-MCCORMICKW1-PUMP2	3,500.00	0 - 10:40 hrs	736.114	0 - 13:34 hrs	996.647	52,896.81	163.114	11.327	5	0	0.072	62.724	0
PUMP-MCCORMICKW2-PUMP1	1,367.85	0 - 02:31 hrs	513.972	0 - 14:52 hrs	1,258.49	310,638.09	757.599	52.611	109	0	0	151.795	0
PUMP-MCCORMICKW2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-POTTERY-1	2,681.97	0 - 11:48 hrs	65.37	0 - 13:37 hrs	1,895.03	217,498.59	352.591	24.485	565	0	0	158.027	0
PUMP-POTTERY-2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	266.848	0 - 12:10 hrs	100	0 - 02:15 hrs	242.529	24,222.81	306.525	21.286	13	0	0.055	16.736	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 01:21 hrs	5.208	0 - 13:18 hrs	257.013	21,061.00	252.326	17.523	568	0	0.573	26.823	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	1,196.32	0 - 23:51 hrs	16.121	0 - 13:21 hrs	279.79	34,774.13	381.862	26.518	28	0	0	53.513	0
PUMP-SEDGWICK2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:01 hrs	117.795	0 - 14:07 hrs	139.406	32,424.61	713.804	49.57	80	0	0.12	8.262	0
PUMP-TREMONTPLACEPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0

City of Port Orchard
General Sewer Plan Update
2026 Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
9/18/2015

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 00:16 hrs	28.955	0 - 05:01 hrs	130.37	44,602.16	1,040.26	72.24	82	0	0.031	45.945	0
PUMP-ALBERTSON2	115.33	0 - 15:00 hrs	64.347	0 - 10:00 hrs	90.917	12,909.28	435.936	30.273	1	0	0	13.58	0
PUMP-BAY1	1,000.00	0 - 00:05 hrs	187.077	0 - 06:16 hrs	709.977	143,537.45	620.677	43.102	221	0	0.829	32.05	0
PUMP-BAY2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	110	0 - 15:45 hrs	34.778	0 - 15:45 hrs	66.857	22,449.15	1,027.72	71.369	37	0	0.007	29.166	0
PUMP-CANYONPUMP2	63.358	0 - 12:07 hrs	36.089	0 - 11:07 hrs	49.736	1,311.04	81.112	5.633	1	0	0	1.897	0
PUMP-CEDAR1	150	0 - 06:03 hrs	54.649	0 - 15:12 hrs	142.473	4,778.47	102.941	7.149	56	0	0.081	0.847	0
PUMP-CEDAR2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:00 hrs	24.522	0 - 15:36 hrs	189.075	44,362.38	721.167	50.081	955	0	1.022	14.36	1
PUMP-EAGLECREST2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-FLOWERPUMP1	240	0 - 11:51 hrs	23.825	0 - 13:37 hrs	202.64	68,279.66	1,033.71	71.785	80	0	0.012	60.055	0
PUMP-FLOWERPUMP2	234.45	0 - 13:53 hrs	97.614	0 - 11:15 hrs	183.853	7,977.05	133.185	9.249	14	0	0	8.195	0
PUMP-GOLDENPUMP1	170	0 - 15:18 hrs	9.529	0 - 11:15 hrs	91.697	17,300.76	579.437	40.239	88	0	0.02	14.916	0
PUMP-GOLDENPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	328.466	0 - 13:37 hrs	15.533	0 - 13:37 hrs	302.467	26,438.03	268.348	18.635	27	0	0	27.971	0
PUMP-HARRISON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:28 hrs	6.457	0 - 14:15 hrs	427.319	18,529.93	133.074	9.241	121	0	1.277	12.39	0
PUMP-LOWES2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	4,558.75	0 - 16:00 hrs	1,895.53	0 - 10:22 hrs	3,179.75	888,765.00	849.327	58.981	49	0	0	881.91	0
PUMP-MARINA2	2,377.40	0 - 12:37 hrs	1,895.53	0 - 10:22 hrs	2,361.65	259,682.56	337.512	23.438	1	0	0	296.437	0
PUMP-MARINA3	1,721.40	0 - 08:03 hrs	421.362	0 - 00:56 hrs	946.728	171,673.64	556.503	38.646	48	0	0	75.641	0
PUMP-MARINA4	862.195	0 - 00:49 hrs	575.313	0 - 02:29 hrs	829.871	94,103.71	348.019	24.168	51	0	0	44.19	0
PUMP-MCCORMICKMEADOWS1	298.287	0 - 00:08 hrs	32.439	0 - 00:08 hrs	184.397	24,121.37	401.606	27.889	80	0	0	15.648	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 00:20 hrs	742.418	0 - 10:27 hrs	1,243.87	432,603.13	1,064.26	73.907	60	0	0.033	491.226	0
PUMP-MCCORMICKW1-PUMP2	3,500.00	0 - 10:02 hrs	742.418	0 - 10:27 hrs	963.866	76,222.85	242.581	16.846	4	0	0.041	90.326	0
PUMP-MCCORMICKW2-PUMP1	1,800.00	0 - 15:03 hrs	482.972	0 - 15:51 hrs	1,263.16	349,514.88	849.579	58.998	102	0	0.006	170.045	0
PUMP-MCCORMICKW2-PUMP2	0.00	0 - 00:00 hrs	0	0 - 00:00 hrs	0.00	0.00	0	0	0	0	0	0	0
PUMP-POTTERY-1	2,681.96	0 - 11:49 hrs	35.884	0 - 15:52 hrs	1,908.03	239,845.44	386.175	26.818	592	0	0	174.286	0
PUMP-POTTERY-2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	267.001	0 - 11:22 hrs	100	0 - 00:16 hrs	242.494	26,056.21	329.689	22.895	14	0	0.054	18.002	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 10:26 hrs	53.911	0 - 11:48 hrs	257.936	21,042.60	251.276	17.45	596	0	0.724	26.737	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	1,196.94	0 - 03:03 hrs	20.706	0 - 03:03 hrs	281.217	38,605.00	421.788	29.291	30	0	0	59.378	0
PUMP-SEDGWICK2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:16 hrs	114.762	0 - 15:53 hrs	139.394	32,735.85	720.718	50.05	80	0	0.118	8.352	0
PUMP-TREMONTPLACEPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0

City of Port Orchard
General Sewer Plan Update
2036 Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
9/18/2015

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 00:13 hrs	27.894	0 - 03:11 hrs	109.861	46,274.57	1,289.55	89.552	29	0	0.006	47.919	0
PUMP-ALBERTSON2	112.018	0 - 15:15 hrs	60.841	0 - 11:41 hrs	84.928	22,492.06	814.306	56.549	1	0	0	23.728	0
PUMP-BAY1	1,000.00	0 - 00:01 hrs	186.986	0 - 15:26 hrs	710.506	148,994.53	643.672	44.699	223	0	0.81	33.22	0
PUMP-BAY2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	96.437	0 - 12:33 hrs	36.128	0 - 10:59 hrs	66.827	22,917.04	1,052.76	73.108	34	0	0	29.815	0
PUMP-CANYONPUMP2	64.18	0 - 11:18 hrs	36.128	0 - 10:59 hrs	49.664	1,535.29	94.87	6.588	1	0	0	2.221	0
PUMP-CEDAR1	150	0 - 06:11 hrs	64.997	0 - 20:59 hrs	142.406	4,883.30	105.251	7.309	57	0	0.079	0.874	0
PUMP-CEDAR2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:00 hrs	25.23	0 - 10:00 hrs	193.335	52,059.00	826.766	57.414	909	0	0.869	16.741	1
PUMP-EAGLECREST2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-FLOWERPUMP1	234.441	0 - 13:26 hrs	37.43	0 - 16:16 hrs	201.711	70,594.88	1,074.22	74.599	78	0	0	62.593	0
PUMP-FLOWERPUMP2	234.441	0 - 13:26 hrs	84.957	0 - 10:59 hrs	184.16	12,074.31	201.212	13.973	19	0	0	12.372	0
PUMP-GOLDENPUMP1	170	0 - 10:42 hrs	7.479	0 - 03:09 hrs	91.764	17,862.34	597.536	41.495	83	0	0.002	15.398	0
PUMP-GOLDENPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	329.311	0 - 10:37 hrs	13.953	0 - 16:00 hrs	303.64	27,163.80	274.559	19.067	28	0	0	28.719	0
PUMP-HARRISON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:18 hrs	22.251	0 - 16:30 hrs	427.058	23,457.94	168.616	11.709	117	0	0.791	15.733	0
PUMP-LOWES2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	4,558.04	0 - 16:39 hrs	1,895.61	0 - 09:14 hrs	3,143.45	1,023,083.00	994.014	69.029	46	0	0	1,023.50	0
PUMP-MARINA2	2,443.97	0 - 11:56 hrs	1,895.61	0 - 09:14 hrs	2,392.78	347,908.56	446.009	30.973	1	0	0	396.036	0
PUMP-MARINA3	1,721.47	0 - 07:22 hrs	421.362	0 - 01:58 hrs	939.797	127,258.48	415.588	28.86	45	0	0	56.251	0
PUMP-MARINA4	862.256	0 - 01:52 hrs	578.043	0 - 02:46 hrs	832.59	74,537.56	274.76	19.081	48	0	0	34.946	0
PUMP-MCCORMICKMEADOWS1	800	0 - 10:49 hrs	22.96	0 - 10:49 hrs	190.155	29,437.73	475.18	32.999	90	0	0.001	18.935	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 00:36 hrs	760.295	0 - 07:37 hrs	1,222.06	476,202.09	1,196.59	83.096	44	0	0.022	542.099	0
PUMP-MCCORMICKW1-PUMP2	3,500.00	0 - 07:37 hrs	760.295	0 - 07:37 hrs	999.213	136,520.97	419.503	29.132	3	0	0.018	160.595	0
PUMP-MCCORMICKW2-PUMP1	1,800.00	0 - 10:30 hrs	383.663	0 - 16:01 hrs	1,271.90	409,059.19	986.96	68.539	102	0	0.008	196.729	0
PUMP-MCCORMICKW2-PUMP2	1,281.47	0 - 10:18 hrs	613.171	0 - 10:33 hrs	1,216.85	34,933.49	88.087	6.117	10	0	0	17.731	0
PUMP-POTTERY-1	2,681.96	0 - 11:45 hrs	42.895	0 - 15:56 hrs	1,929.11	282,042.31	448.938	31.176	667	0	0	203.398	1
PUMP-POTTERY-2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	266.996	0 - 11:10 hrs	100	0 - 02:47 hrs	242.466	25,631.53	324.456	22.532	13	0	0.05	17.711	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 00:01 hrs	24.732	0 - 10:56 hrs	256.378	21,062.05	252.611	17.542	556	0	0.445	26.762	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	1,196.42	0 - 02:16 hrs	19.63	0 - 10:32 hrs	283.602	48,858.01	528.83	36.724	37	0	0	75.08	0
PUMP-SEDGWICK2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:06 hrs	116.667	0 - 09:42 hrs	139.356	33,645.08	741.015	51.459	79	0	0.116	8.626	0
PUMP-TREMONTPLACEPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0

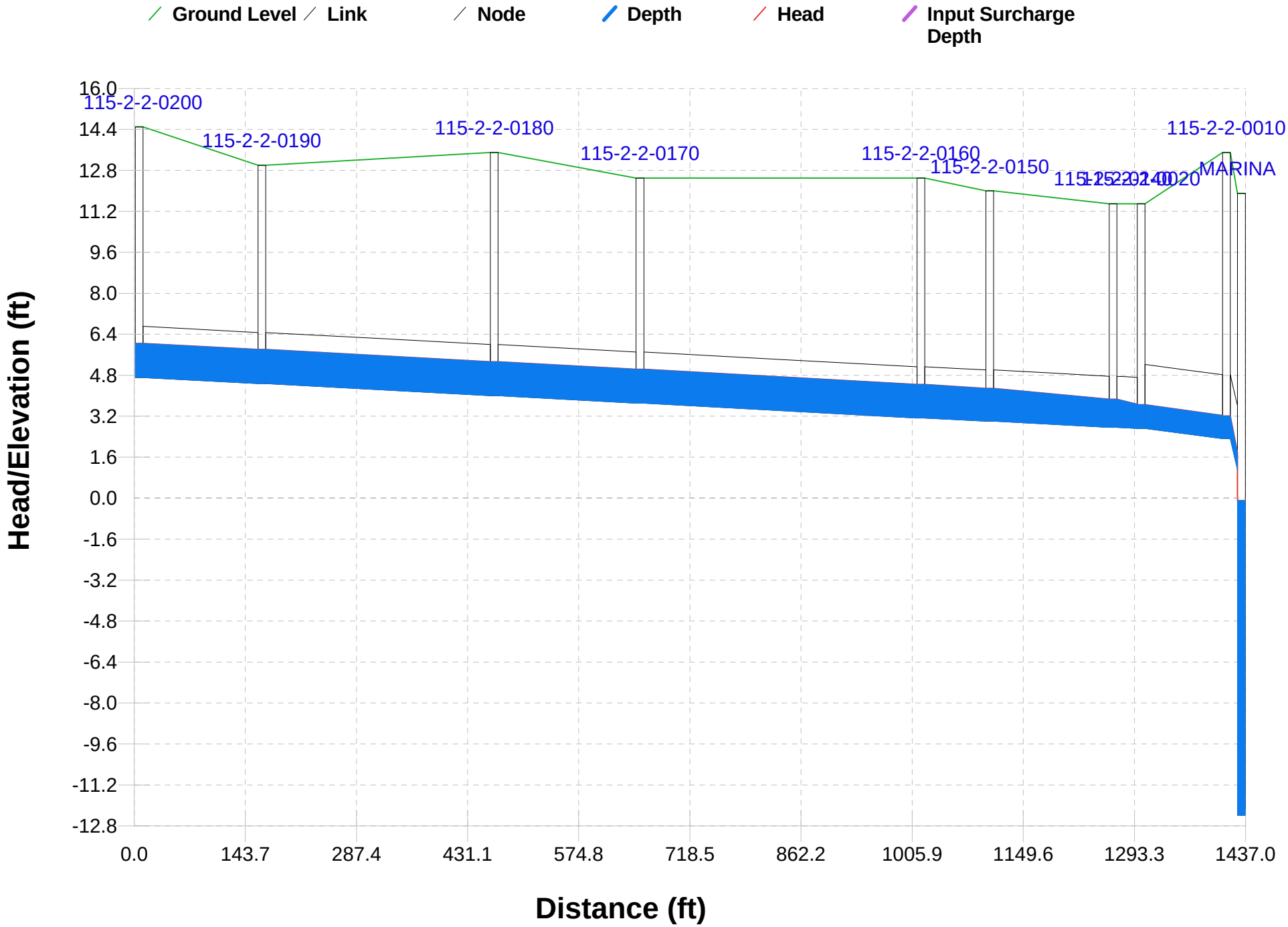
City of Port Orchard
General Sewer Plan Update
Build-Out Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
9/18/2015

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 02:24 hrs	25.694	0 - 11:00 hrs	79.089	36,539.45	1,419.03	98.543	5	0	0.001	38.551	0
PUMP-ALBERTSON2	115.429	1 - 00:00 hrs	25.694	0 - 11:00 hrs	77.161	34,744.32	1,383.60	96.083	1	0	0	36.714	0
PUMP-BAY1	1,000.00	0 - 00:02 hrs	182.974	0 - 18:02 hrs	713.449	175,626.30	755.544	52.468	219	0	0.742	38.91	0
PUMP-BAY2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	96.421	0 - 13:18 hrs	36.042	0 - 11:32 hrs	65.116	23,337.73	1,101.14	76.468	32	0	0	30.617	0
PUMP-CANYONPUMP2	64.239	0 - 09:26 hrs	36.042	0 - 11:32 hrs	49.278	3,246.10	202.184	14.041	2	0	0	4.704	0
PUMP-CEDAR1	150	0 - 00:20 hrs	63.062	0 - 17:25 hrs	142.35	5,280.67	113.86	7.907	61	0	0.029	0.953	0
PUMP-CEDAR2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:02 hrs	26.468	0 - 17:45 hrs	175.681	62,633.75	1,094.93	76.036	651	0	0.482	20.506	1
PUMP-EAGLECREST2	144.039	0 - 11:26 hrs	108.524	0 - 08:45 hrs	129.575	15,399.51	364.52	25.314	6	0	0	5.418	0
PUMP-FLOWERPUMP1	234.51	0 - 14:04 hrs	37.196	0 - 16:52 hrs	199.972	82,663.48	1,269.17	88.136	44	0	0	74.374	0
PUMP-FLOWERPUMP2	234.51	0 - 14:04 hrs	100.107	0 - 07:30 hrs	189.011	30,969.27	502.85	34.92	19	0	0	30.559	0
PUMP-GOLDENPUMP1	170	0 - 08:38 hrs	7.391	0 - 03:03 hrs	92.163	19,405.99	646.29	44.881	89	0	0.012	16.716	0
PUMP-GOLDENPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	329.673	0 - 12:17 hrs	6.998	0 - 16:52 hrs	304.576	32,893.67	331.205	23	32	0	0	34.757	0
PUMP-HARRISON2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:10 hrs	39.884	0 - 03:15 hrs	431.773	31,309.90	222.633	15.461	173	0	1.027	20.899	0
PUMP-LOWES2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	4,557.63	0 - 18:45 hrs	1,895.63	0 - 07:03 hrs	2,997.27	1,218,161.63	1,242.59	86.291	27	0	0	1,245.61	0
PUMP-MARINA2	2,443.89	0 - 10:14 hrs	1,895.63	0 - 07:03 hrs	2,403.93	550,113.25	701.99	48.749	1	0	0	625.621	0
PUMP-MARINA3	1,721.48	0 - 22:00 hrs	421.407	0 - 03:18 hrs	939.615	55,308.31	180.661	12.546	27	0	0	24.446	0
PUMP-MARINA4	862.082	0 - 03:13 hrs	579.63	0 - 22:00 hrs	832.743	33,071.36	121.894	8.465	27	0	0	15.5	0
PUMP-MCCORMICKMEADOWS1	800	0 - 17:02 hrs	25.015	0 - 18:22 hrs	196.824	27,140.60	423.156	29.386	90	0	0.002	17.283	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 01:10 hrs	744.537	0 - 16:20 hrs	1,240.30	542,100.94	1,338.53	92.953	20	0	0.016	615.59	0
PUMP-MCCORMICKW1-PUMP2	3,500.00	0 - 06:28 hrs	744.537	0 - 16:20 hrs	1,122.09	273,062.19	744.911	51.73	5	0	0.017	315.575	0
PUMP-MCCORMICKW2-PUMP1	1,800.00	0 - 06:58 hrs	481.411	0 - 08:48 hrs	1,257.03	486,508.16	1,188.47	82.532	90	0	0.02	237.577	0
PUMP-MCCORMICKW2-PUMP2	1,282.93	0 - 11:48 hrs	643.84	0 - 08:32 hrs	1,215.21	147,426.23	372.361	25.858	27	0	0	74.976	0
PUMP-POTTERY-1	2,681.96	0 - 11:59 hrs	34.927	0 - 08:38 hrs	1,971.33	358,204.88	558.447	38.781	747	0	0	258.018	1
PUMP-POTTERY-2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	266.996	0 - 11:51 hrs	100	0 - 01:28 hrs	242.685	24,755.94	313.124	21.745	14	0	0.059	17.102	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 00:00 hrs	1.126	0 - 17:49 hrs	255.299	21,053.04	253.33	17.592	518	0	0.256	26.697	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	1,196.09	0 - 02:24 hrs	15.941	0 - 18:30 hrs	292.709	65,423.36	685.947	47.635	47	0	0	100.217	0
PUMP-SEDGWICK2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:09 hrs	110.321	0 - 16:52 hrs	139.174	36,603.42	807.268	56.06	76	0	0.101	9.551	0
PUMP-TREMONTPLACEPUMP2	0	0 - 00:00 hrs	0	0 - 00:00 hrs	0	0	0	0	0	0	0	0	0

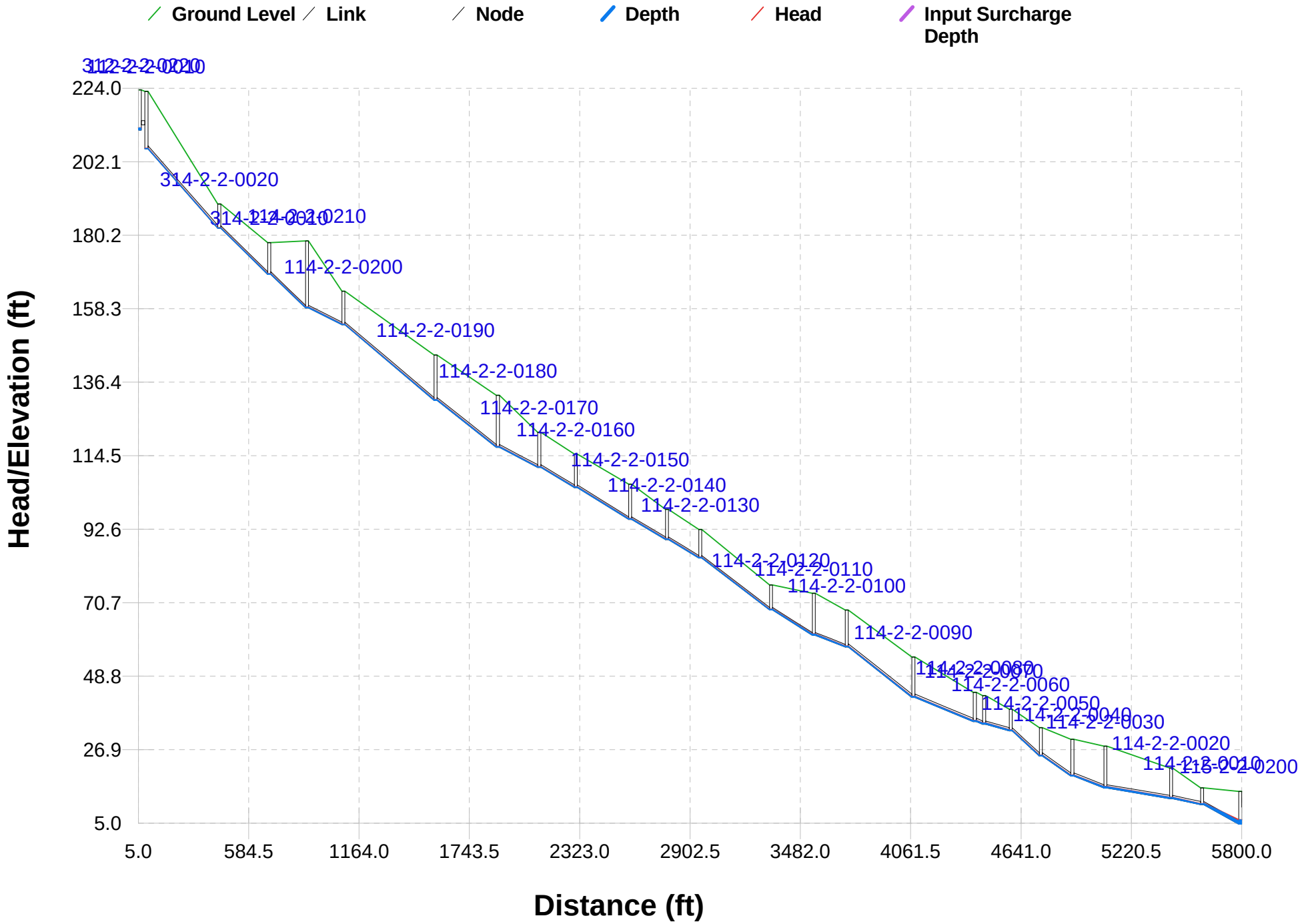
City of Port Orchard
General Sewer Plan Update
Sedgwick Subarea Alternative - Build-Out Peak Day Pump Summary Sheet
Prepared By: Peter Cunningham
Reviewed By: Adam Schuyler
2/9/2016

ID	Maximum Flow (gpm)	Max.Flow Day-Time (day-time)	Minimum Flow (gpm)	Min.Flow Day-Time (day-time)	Average Flow (gpm)	Total Volume (Gallon)	Total Surcharge Time (Minutes)	Percent Utilized (%)	Start-Up Count	Time Off Low Curve (%)	Time Off High Curve (%)	Power Usage (KW-Hr)	Instability Index
PUMP-ALBERTSON1	800	0 - 02:25:00 hrs	25.729	0 - 11:00:00 hrs	84.501	39,226.65	1,424.82	98.946	4	0	0	41.25	0
PUMP-ALBERTSON2	115.238	0 - 00:00:00 hrs	25.729	0 - 11:00:00 hrs	81.175	35,779.49	1,352.85	93.948	1	0	0	37.732	0
PUMP-BAY1	749.06	0 - 11:47:00 hrs	104.194	0 - 02:57:00 hrs	701.963	175,137.86	765.783	53.179	225	0	0	37.681	0
PUMP-BAY2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-CANYONPUMP1	96.508	0 - 13:07:00 hrs	9.31	0 - 03:54:00 hrs	65.363	23,621.34	1,109.21	77.028	15	0	0	30.926	0
PUMP-CANYONPUMP2	64.171	0 - 10:19:59 hrs	36.097	0 - 10:03:00 hrs	49.124	2,942.93	183.875	12.769	1	0	0	4.266	0
PUMP-CEDAR1	150	0 - 00:36:00 hrs	64.535	0 - 04:37:59 hrs	142.337	5,376.32	115.933	8.051	62	0	0	0.97	0
PUMP-CEDAR2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-EAGLECREST1	670	0 - 00:02:00 hrs	20.272	0 - 02:41:00 hrs	174.792	62,947.72	1,105.35	76.76	320	0	0.241	20.406	0
PUMP-EAGLECREST2	144.314	0 - 11:27:59 hrs	109.131	0 - 14:37:59 hrs	130.133	15,068.72	355.408	24.681	5	0	0	5.298	0
PUMP-FLOWERPUMP1	234.569	0 - 09:30:59 hrs	32.906	0 - 02:14:00 hrs	200.254	82,831.73	1,269.57	88.164	44	0	0	74.275	0
PUMP-FLOWERPUMP2	234.569	0 - 09:30:59 hrs	100.415	0 - 05:37:59 hrs	189.331	30,843.16	500.008	34.723	19	0	0	30.365	0
PUMP-GOLDENPUMP1	99.039	0 - 11:19:59 hrs	11.419	0 - 02:26:00 hrs	92.702	19,401.34	642.367	44.609	84	0	0	16.692	0
PUMP-GOLDENPUMP2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-HARRISON1	328.837	0 - 12:48:00 hrs	16.24	0 - 15:17:00 hrs	304.967	32,234.11	324.417	22.529	31	0	0	34.057	0
PUMP-HARRISON2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-LOWES1	990	0 - 00:04:00 hrs	40.622	0 - 00:38:59 hrs	434.491	31,868.69	225.125	15.634	119	0	0	21.475	0
PUMP-LOWES2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MARINA1	4,564.91	0 - 17:44:00 hrs	1,493.45	0 - 04:31:59 hrs	3,059.74	1,227,686.13	1,231.53	85.523	27	0	0	1,245.65	0
PUMP-MARINA2	2,445.40	0 - 10:15:00 hrs	1,898.25	0 - 07:22:59 hrs	2,405.83	513,757.56	655.442	45.517	2	0	0	584.238	0
PUMP-MARINA3	1,722.03	0 - 21:17:59 hrs	96.641	0 - 05:18:59 hrs	946.246	59,058.66	191.567	13.303	44	0	0	24.596	0
PUMP-MARINA4	864.676	0 - 03:11:00 hrs	569.495	0 - 21:19:00 hrs	833.078	34,952.38	128.775	8.943	26	0	0	16.373	0
PUMP-MCCORMICKMEADOWS1	214.092	0 - 11:49:59 hrs	10.265	0 - 00:16:00 hrs	196.748	27,241.14	424.967	29.512	89	0	0	17.323	0
PUMP-MCCORMICKMEADOWS2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-MCCORMICKW1-PUMP1	3,500.00	0 - 00:00:00 hrs	193.115	0 - 16:02:59 hrs	1,282.06	554,153.94	1,326.67	92.13	19	0	0.194	622.387	0
PUMP-MCCORMICKW1-PUMP2	3,500.00	0 - 05:56:00 hrs	722.144	0 - 07:22:00 hrs	1,145.21	264,618.03	709.208	49.251	5	0	0.006	304.532	0
PUMP-MCCORMICKW2-PUMP1	1,800.00	0 - 06:58:59 hrs	116.892	0 - 02:39:00 hrs	1,260.08	489,994.09	1,193.53	82.884	44	0	0.018	238.124	0
PUMP-MCCORMICKW2-PUMP2	1,283.71	0 - 11:42:59 hrs	673.602	0 - 11:41:59 hrs	1,218.11	144,800.28	364.858	25.337	26	0	0	73.475	0
PUMP-POTTERY-1	2,681.97	0 - 11:37:59 hrs	404.023	0 - 13:25:00 hrs	1,978.54	366,907.91	569.183	39.527	744	0	0	266.347	1
PUMP-POTTERY-2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE1&2-PUMP1	265.794	0 - 11:44:00 hrs	100	0 - 01:08:59 hrs	242.559	25,693.04	325.117	22.578	14	0	0.054	17.752	0
PUMP-RIDGE1&2-PUMP2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-RIDGE3-PUMP1	850	0 - 00:00:00 hrs	69.301	0 - 02:46:59 hrs	253.069	21,073.93	255.592	17.749	487	0	0	26.672	0
PUMP-RIDGE3-PUMP2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-SEDGWICK1	317.37	0 - 12:02:00 hrs	7.87	0 - 02:14:00 hrs	294.305	71,183.83	742.375	51.554	45	0	0	108.946	0
PUMP-SEDGWICK2	0	0 - 00:00:00 hrs	0	0 - 00:00:00 hrs	0	0	0	0	0	0	0	0	0
PUMP-TREMONTPLACEPUMP1	150	0 - 00:18:00 hrs	121.876	0 - 02:55:00 hrs	139.129	36,265.13	800.042	55.558	79	0	0	9.495	0
PUMP-TREMONTPLACEPUMP2	134.932	0 - 11:11:00 hrs	123.437	0 - 11:52:00 hrs	132.748	497.738	11.508	0.799	3	0	0	0.207	0

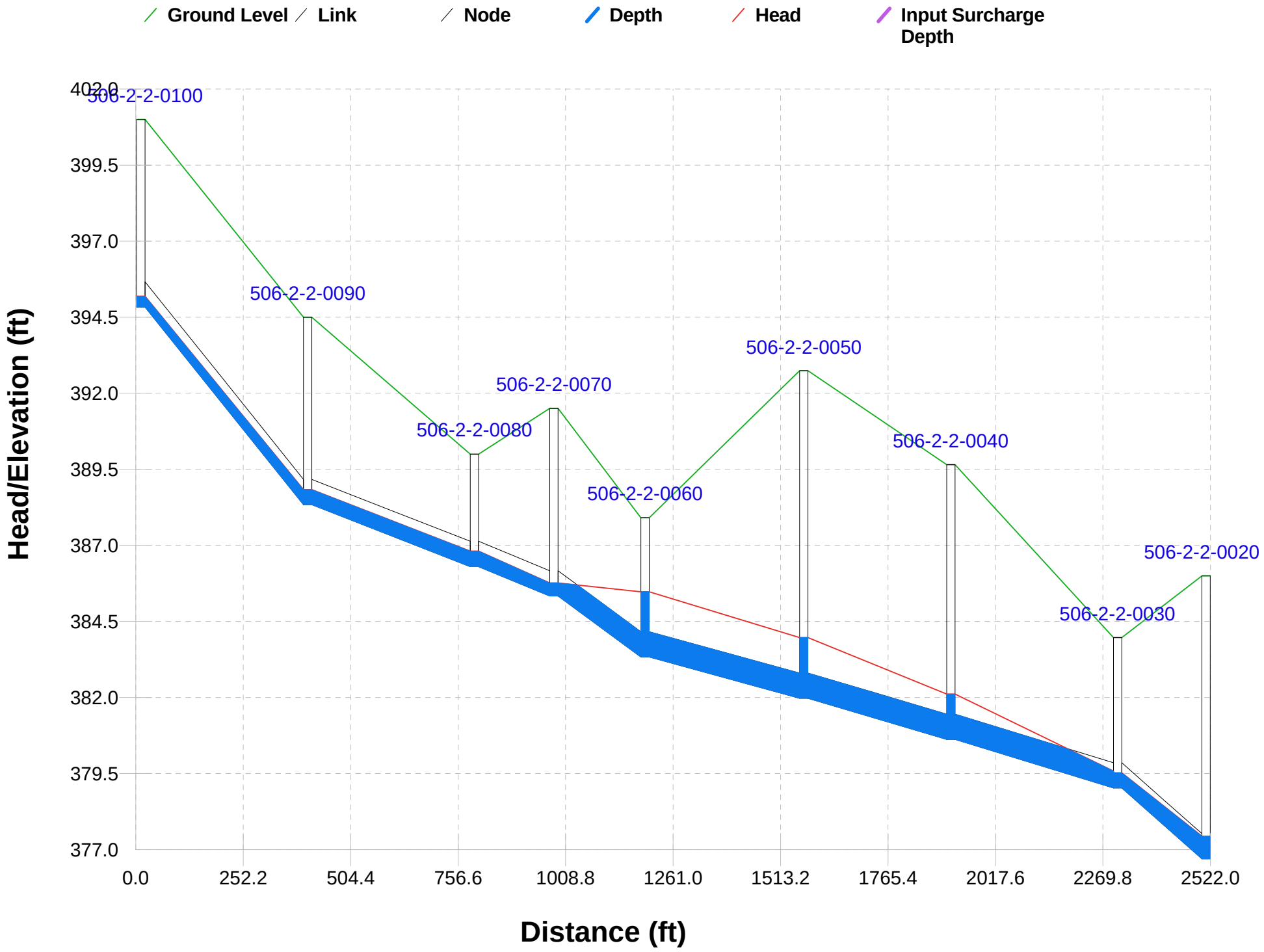
Existing Peak Day Flow - Bay Street (Port Orchard Boulevard to MPS)



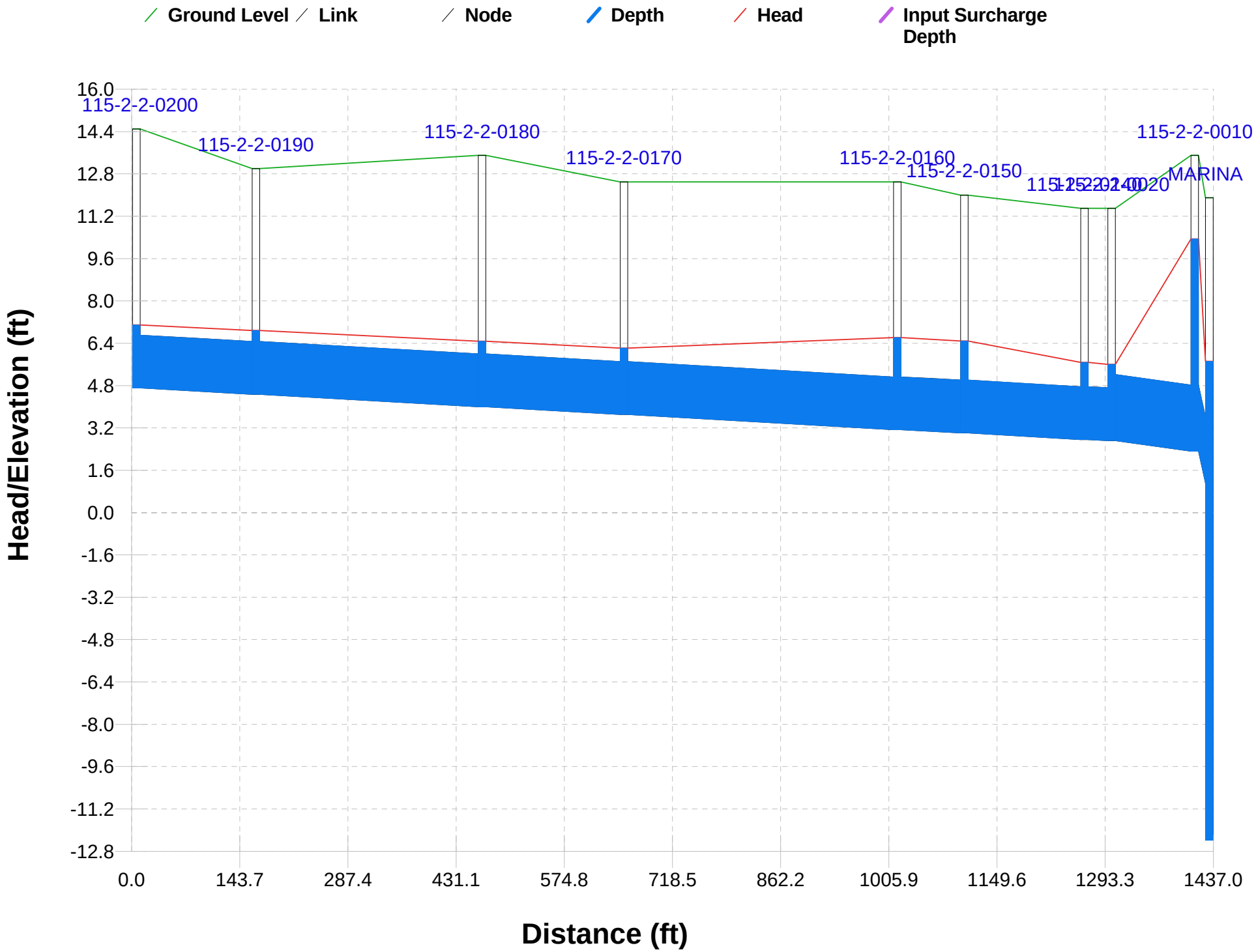
Existing Peak Day Flow - Port Orchard Boulevard (Tremont Street to Bay Street)



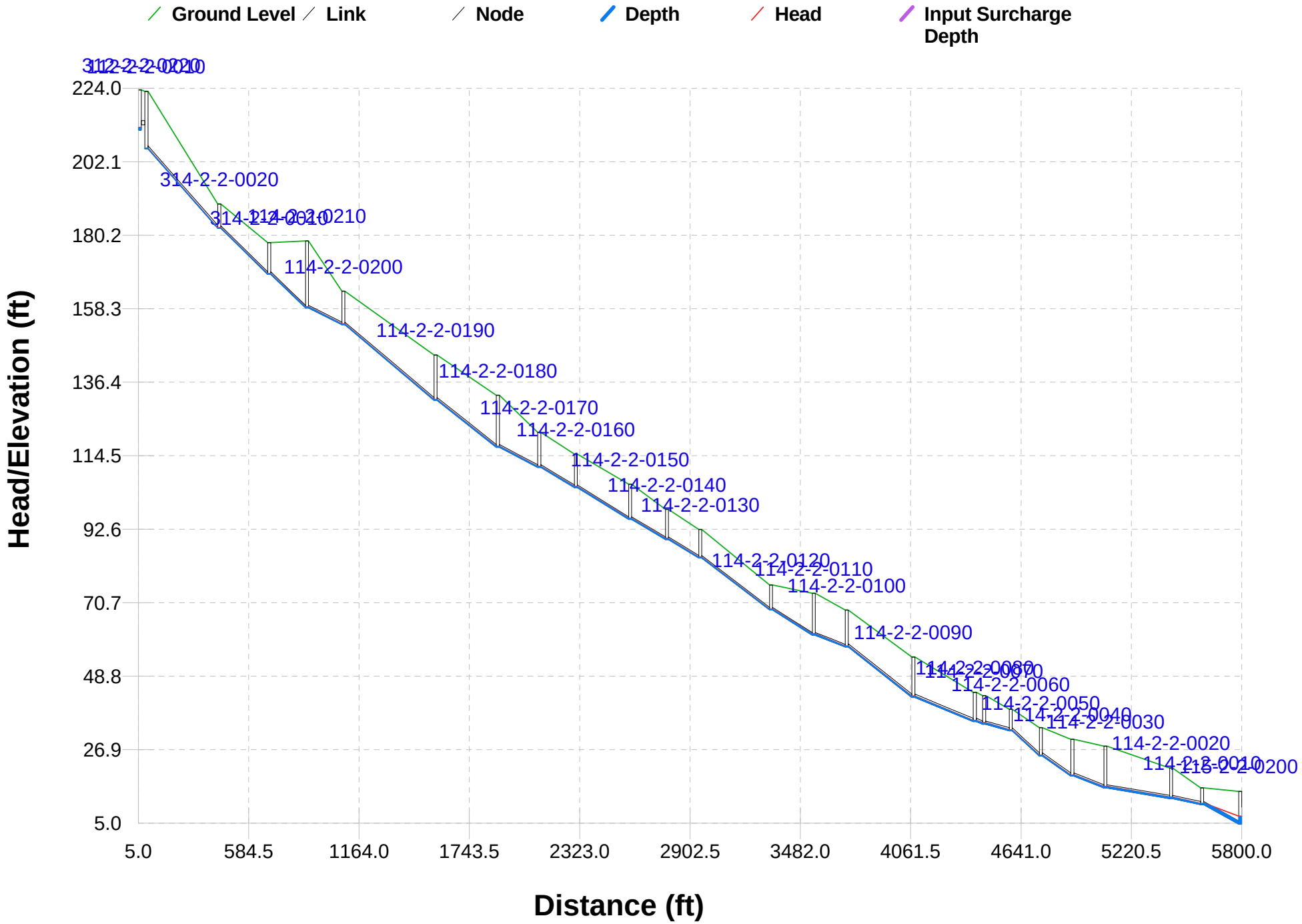
Existing Peak Day Flow - McCormick Woods Drive SW



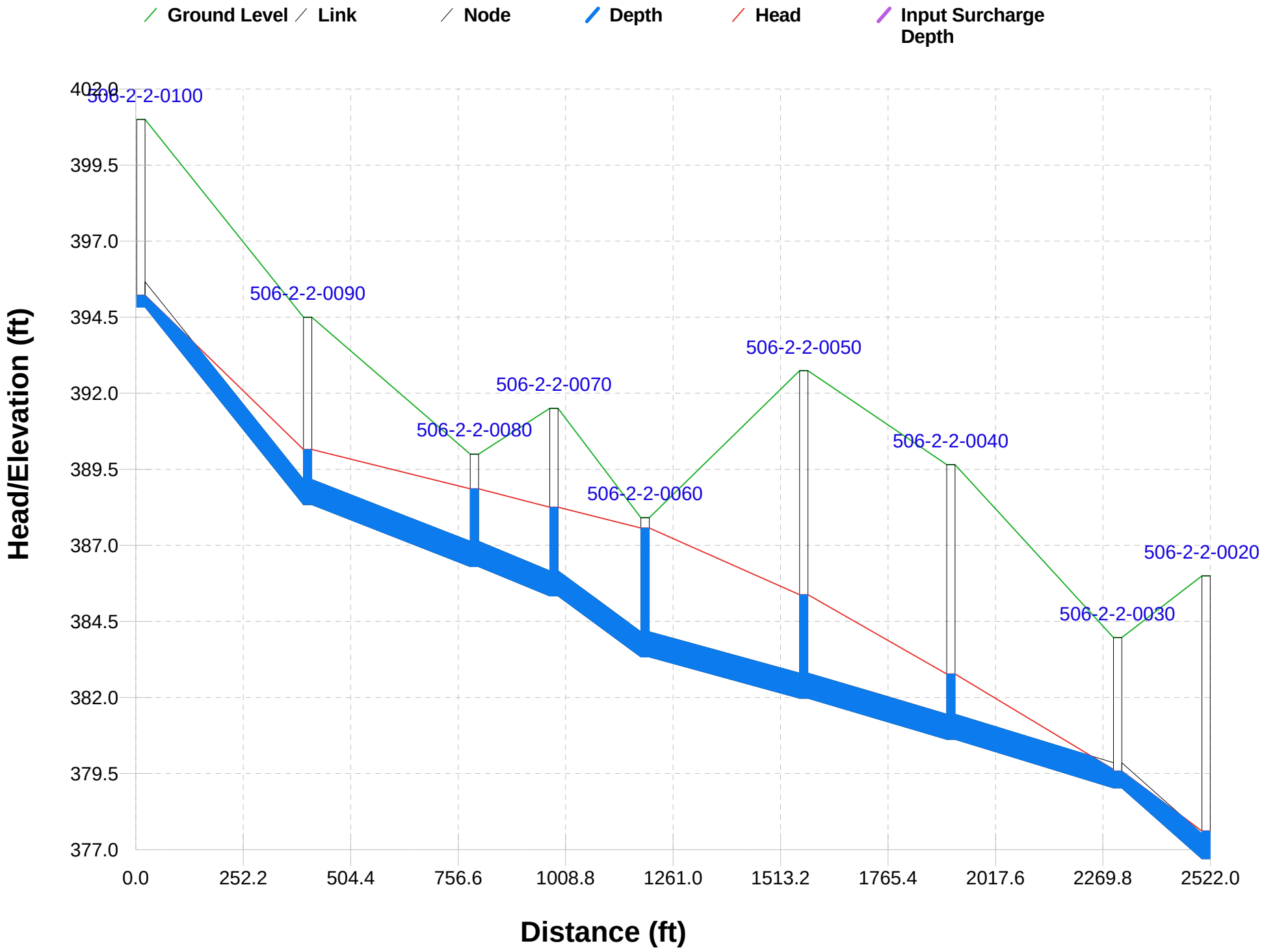
2022 Peak Day - Bay Street (Port Orchard Boulevard to MPS)



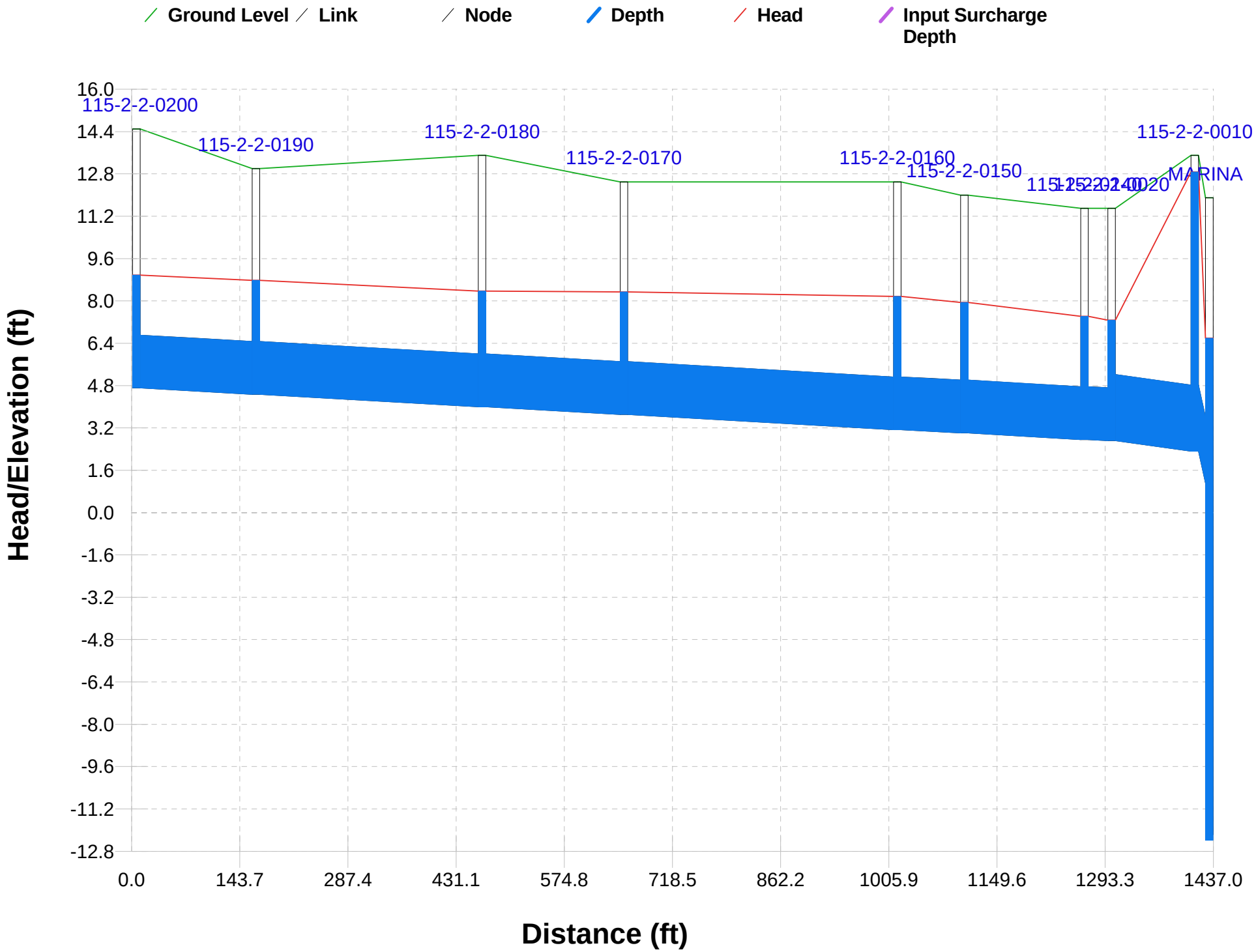
2022 Peak Day – Port Orchard Boulevard (Tremont Street to Bay Street)



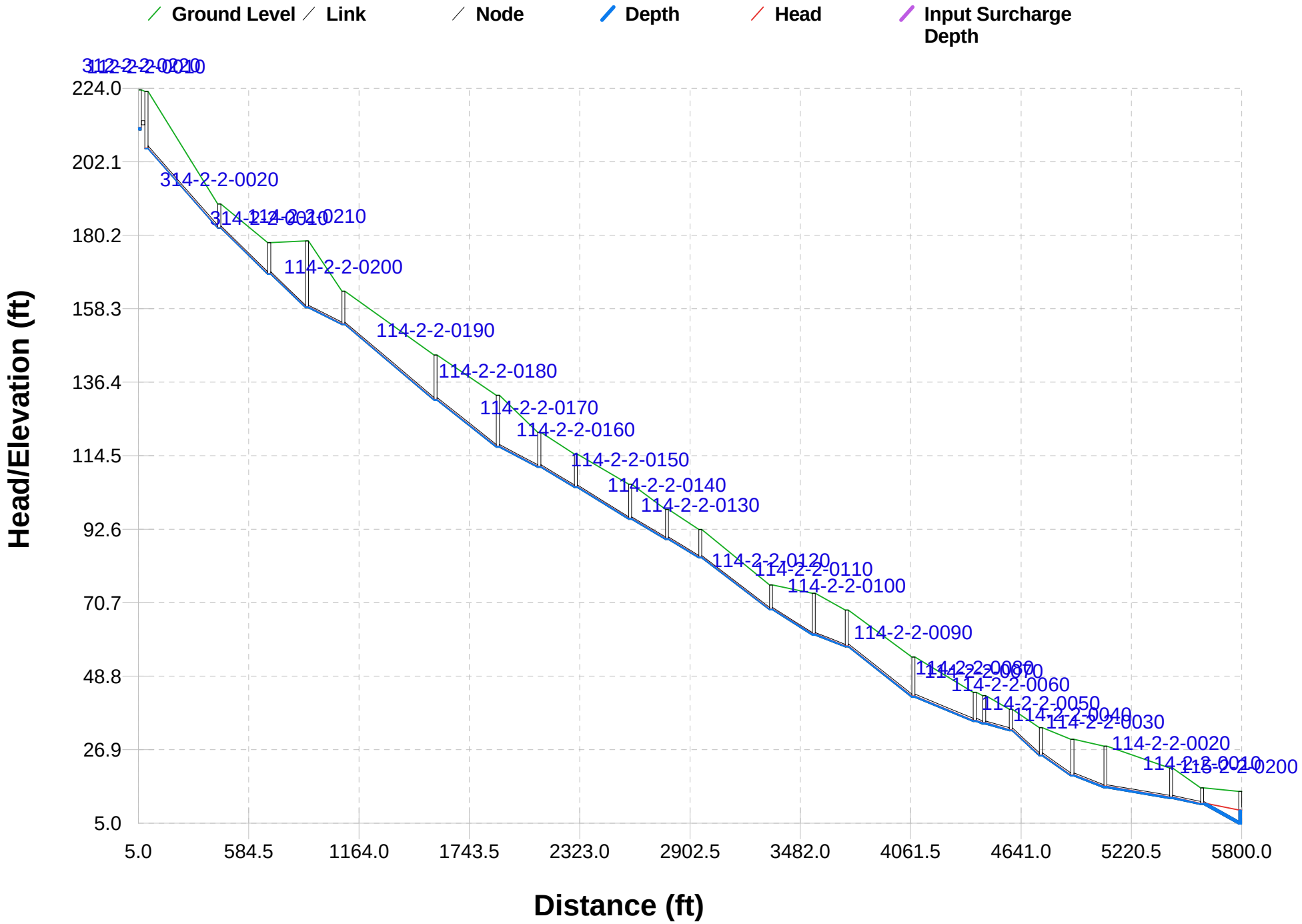
2022 Peak Day - McCormick Woods Drive SW



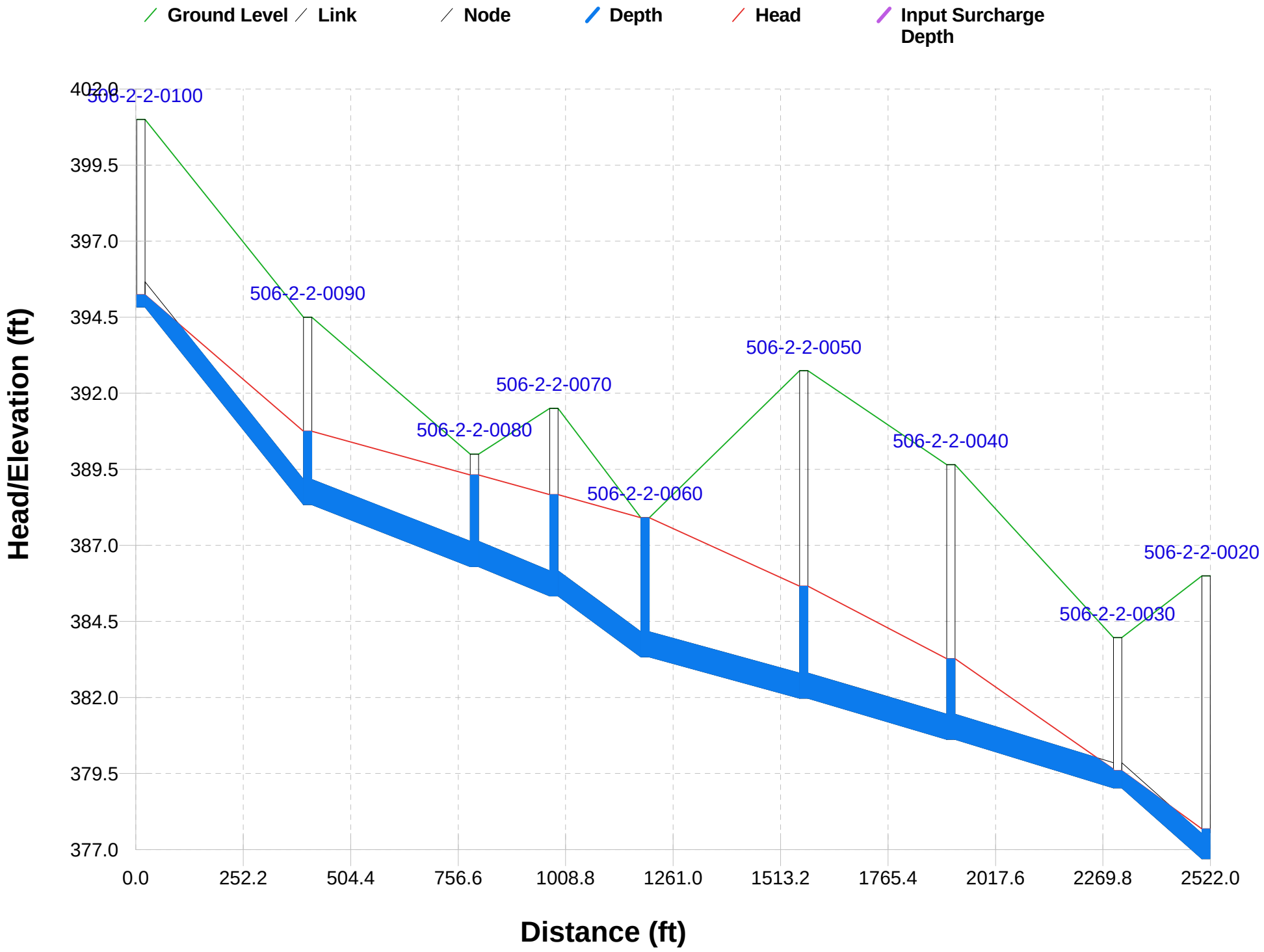
2026 Peak Day - Bay Street (Port Orchard Boulevard to MPS)



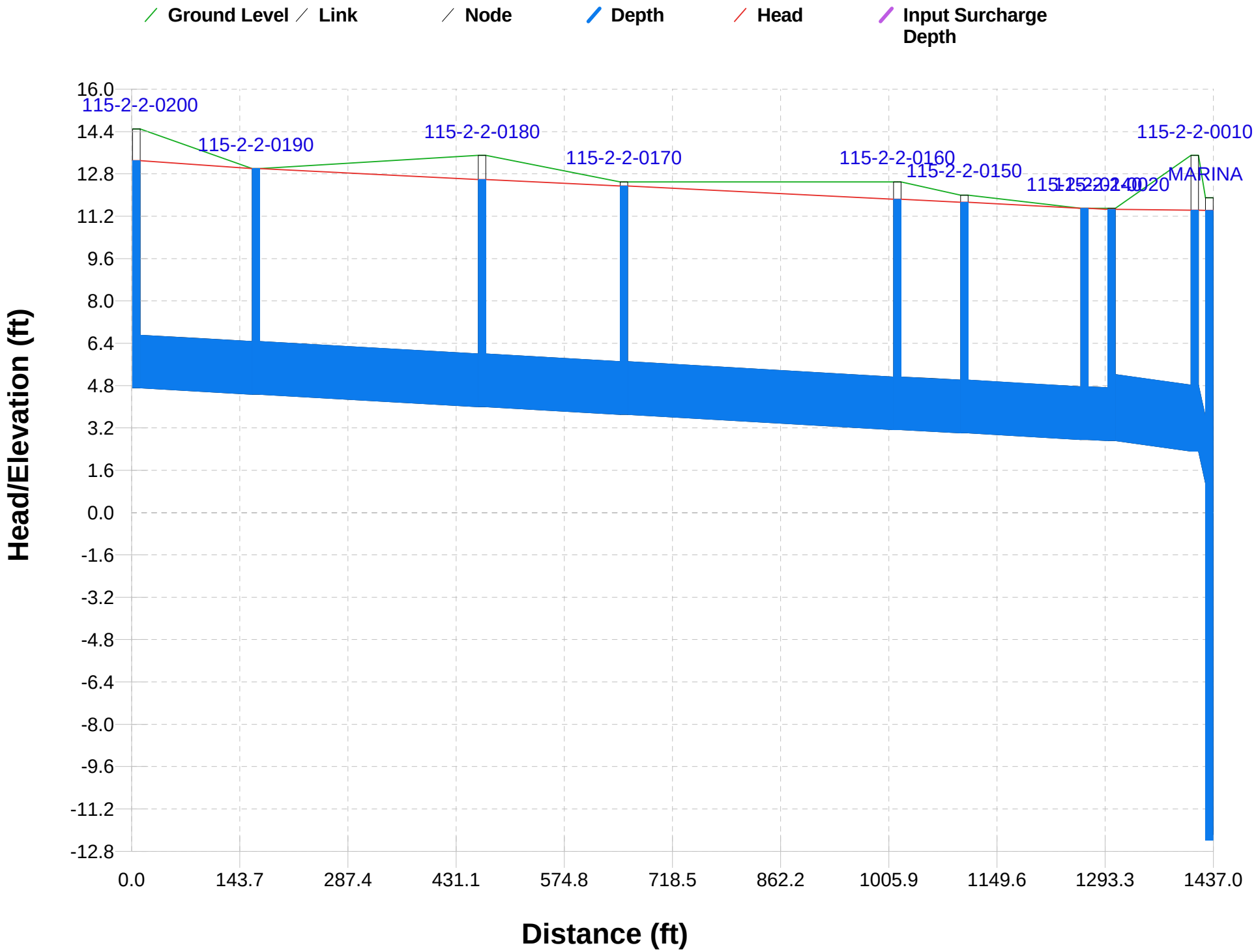
2026 Peak Day – Port Orchard Boulevard (Tremont Street to Bay Street)



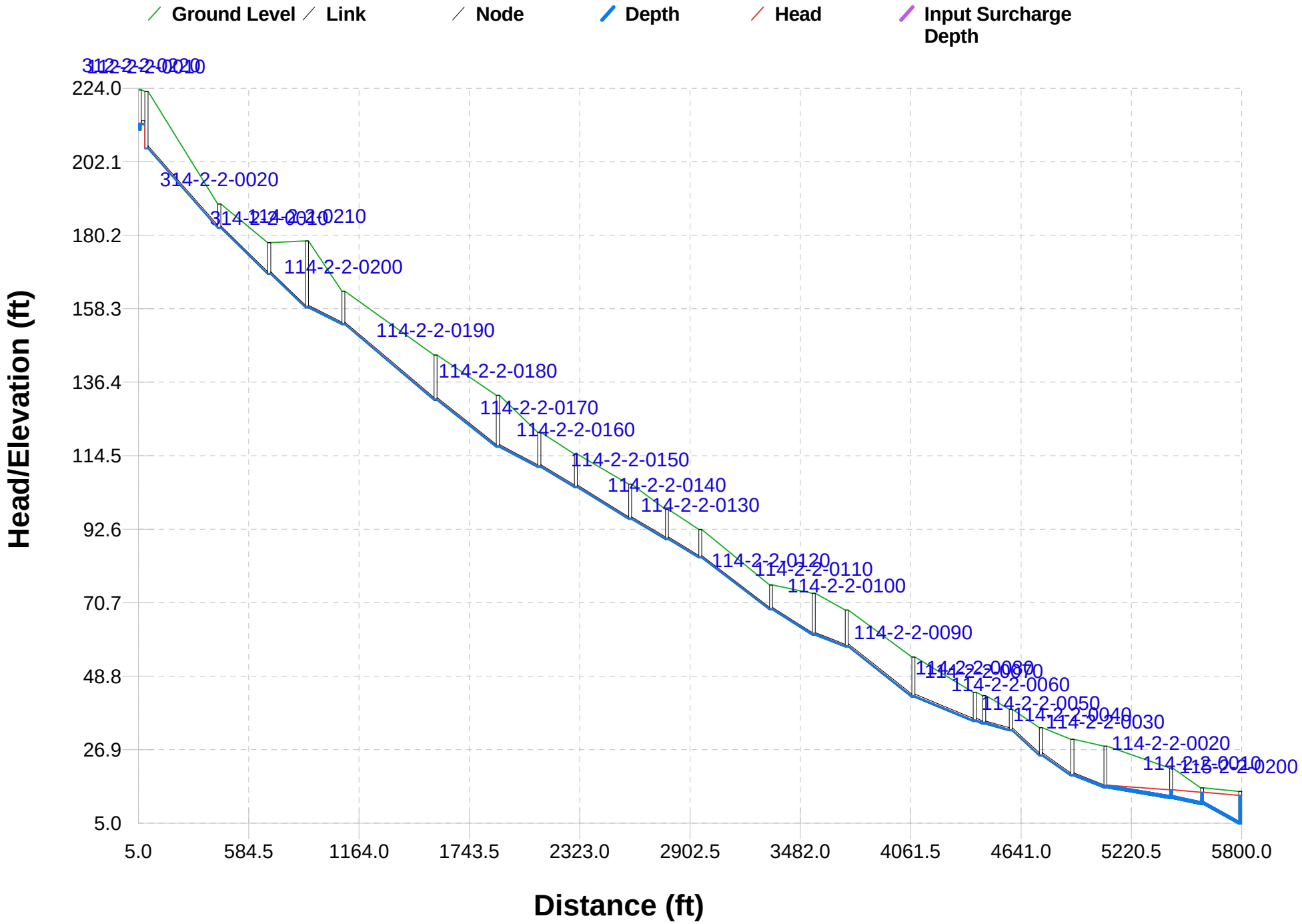
2026 Peak Day – McCormick Woods Drive SW



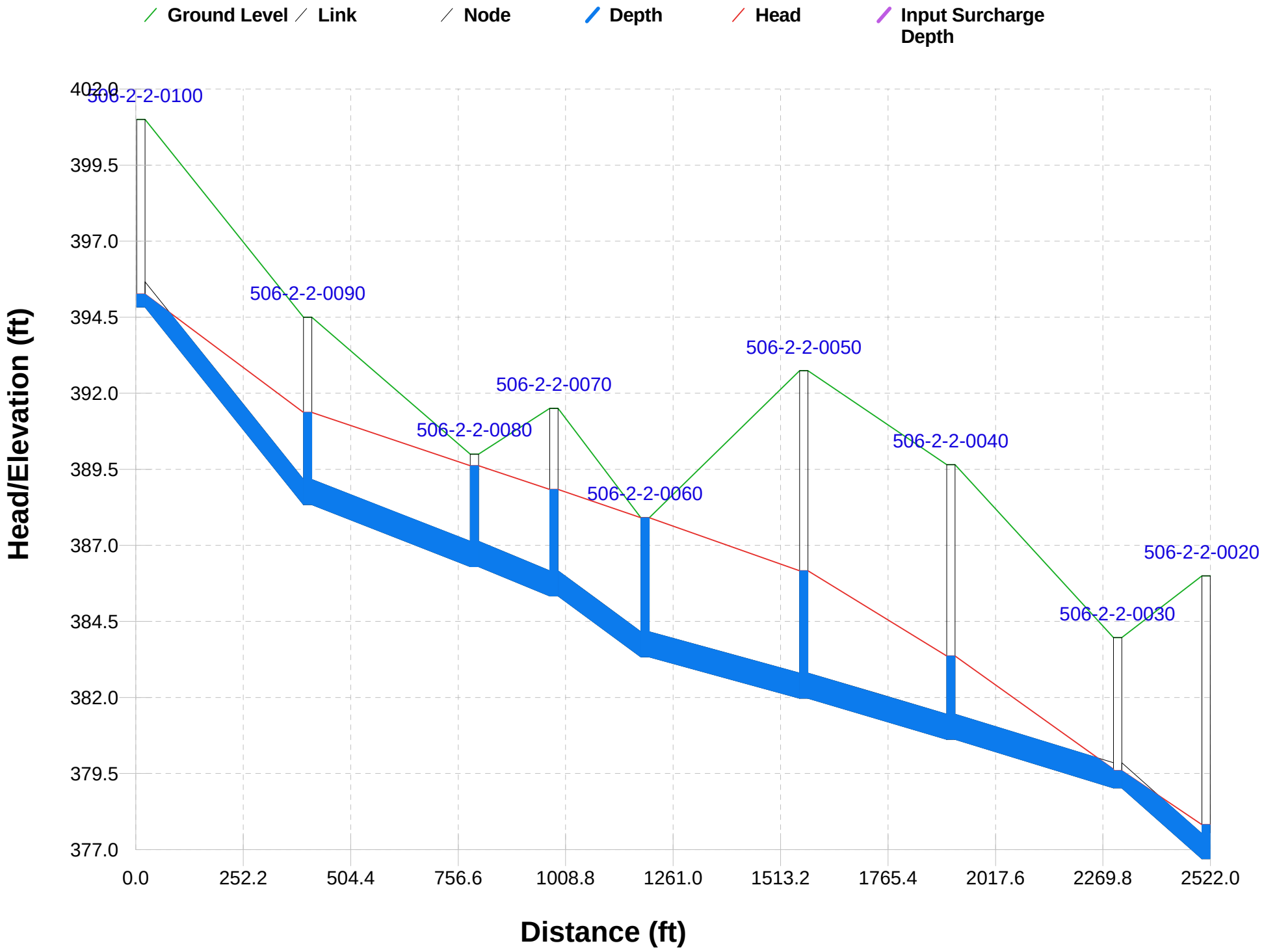
2036 Peak Day - Bay Street (Port Orchard Boulevard to MPS)



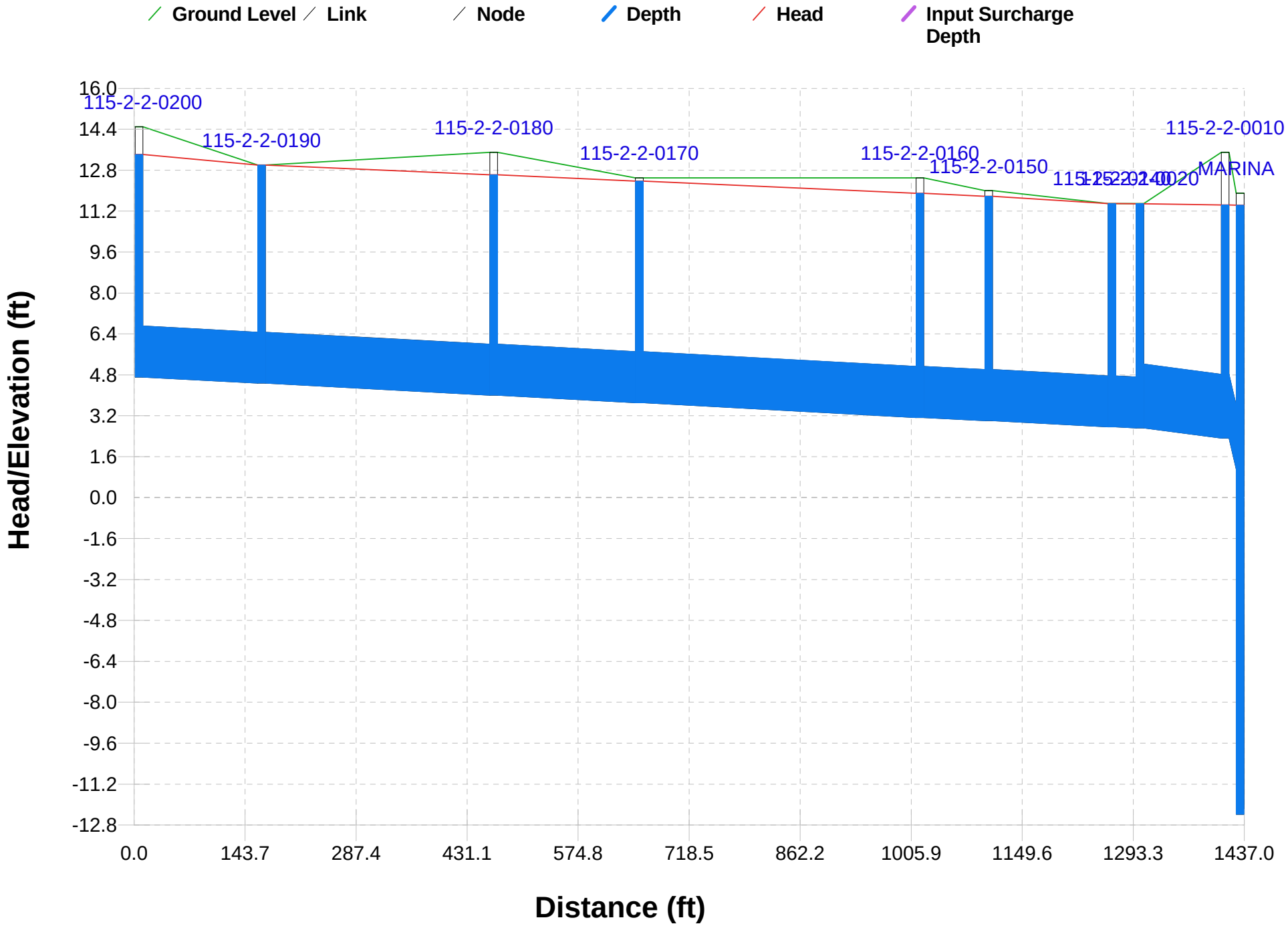
2036 Peak Day – Port Orchard Boulevard (Tremont Street to Bay Street)



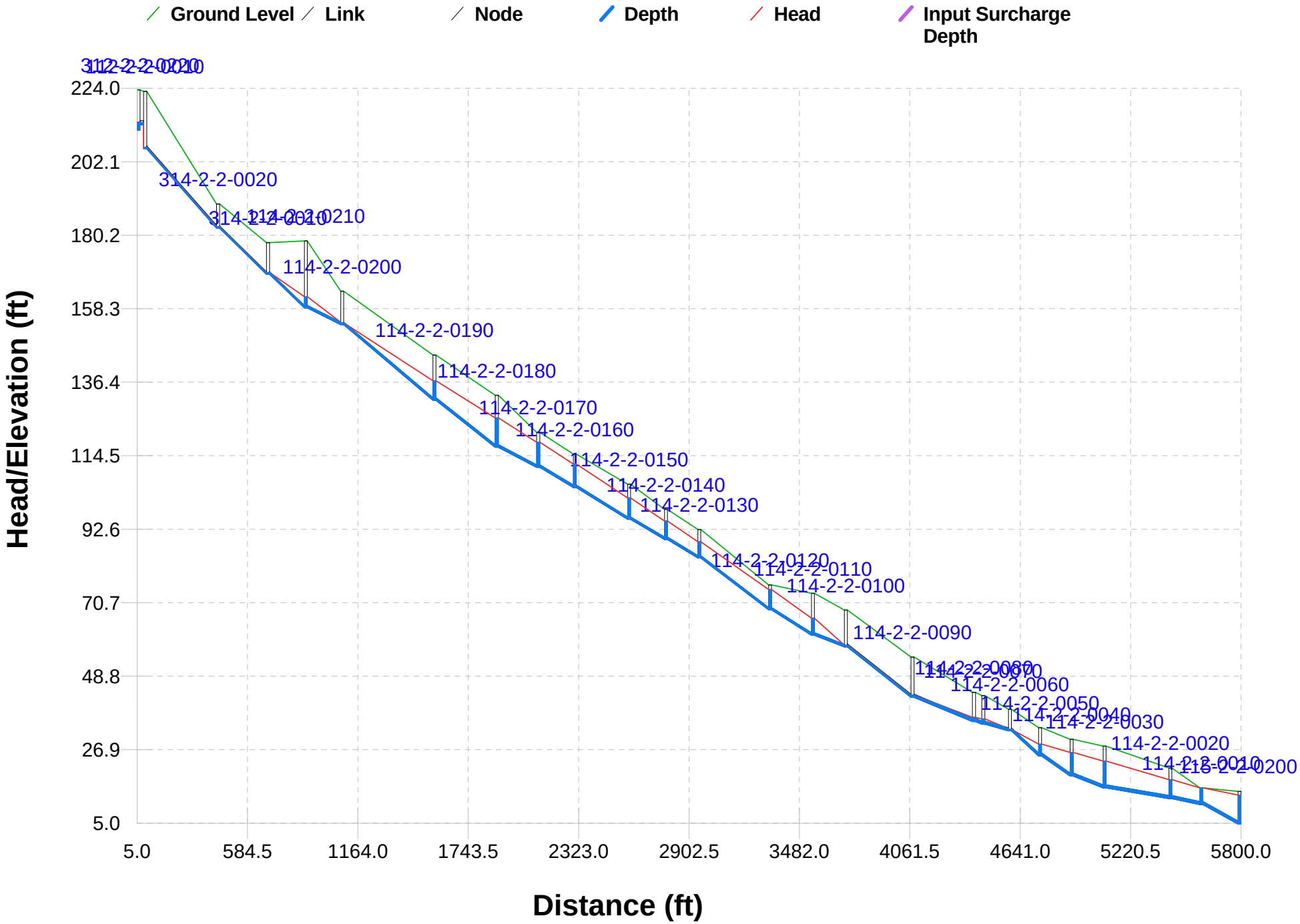
2036 Peak Day – McCormick Woods Drive SW



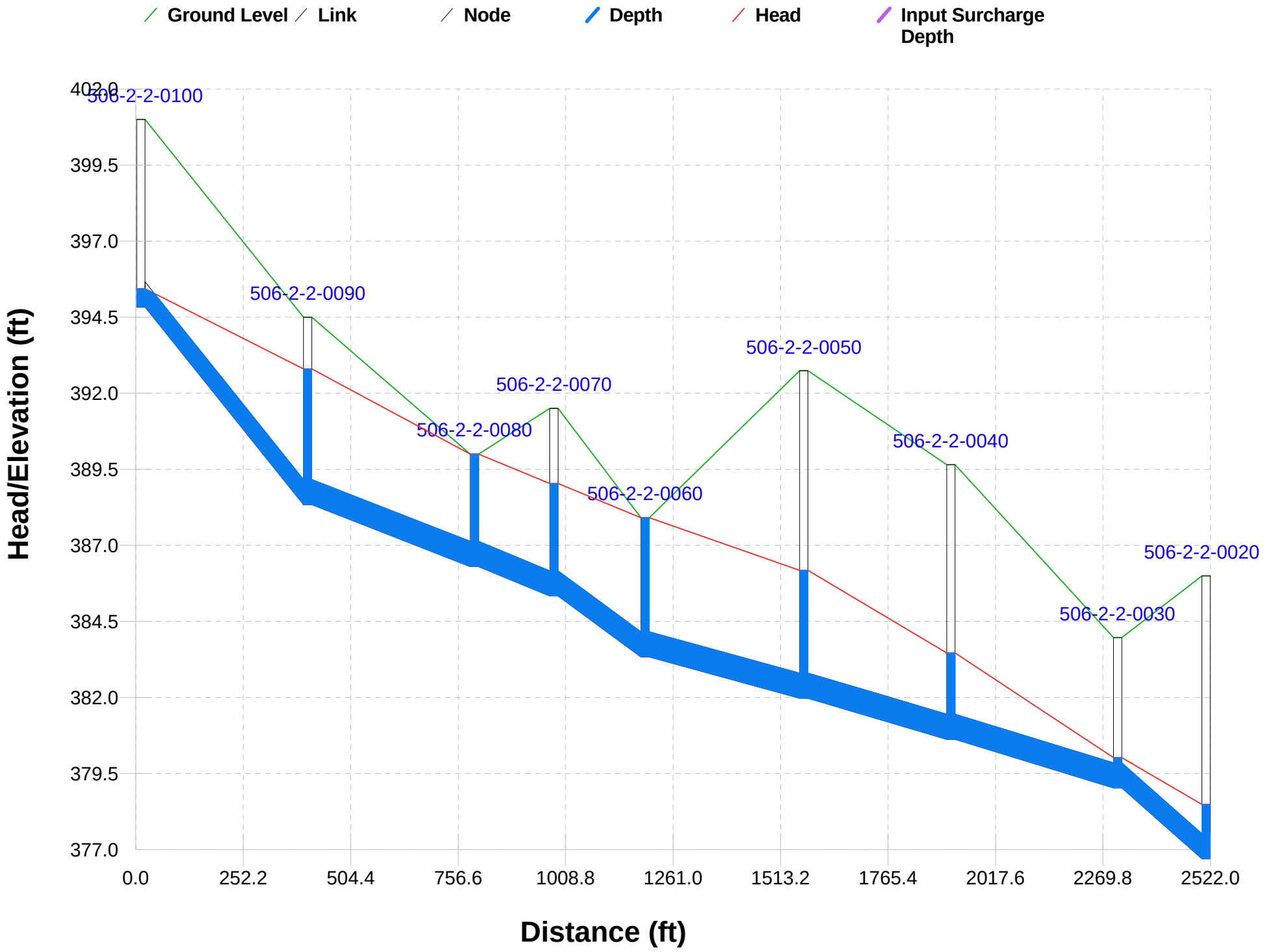
Build-Out Peak Day - Bay Street (Port Orchard Boulevard to MPS)



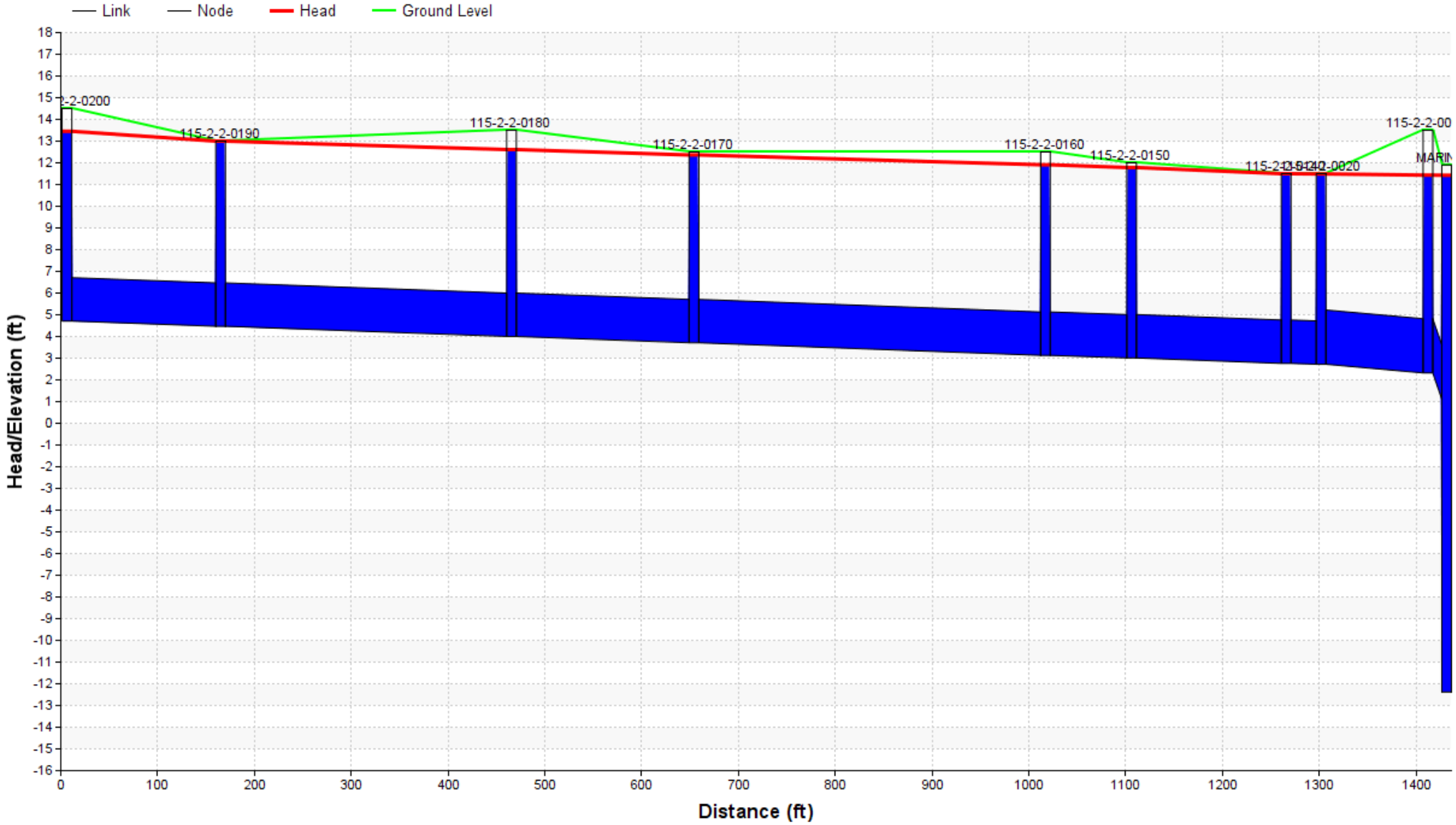
Build-Out Peak Day – Port Orchard Boulevard (Tremont Street to Bay Street)



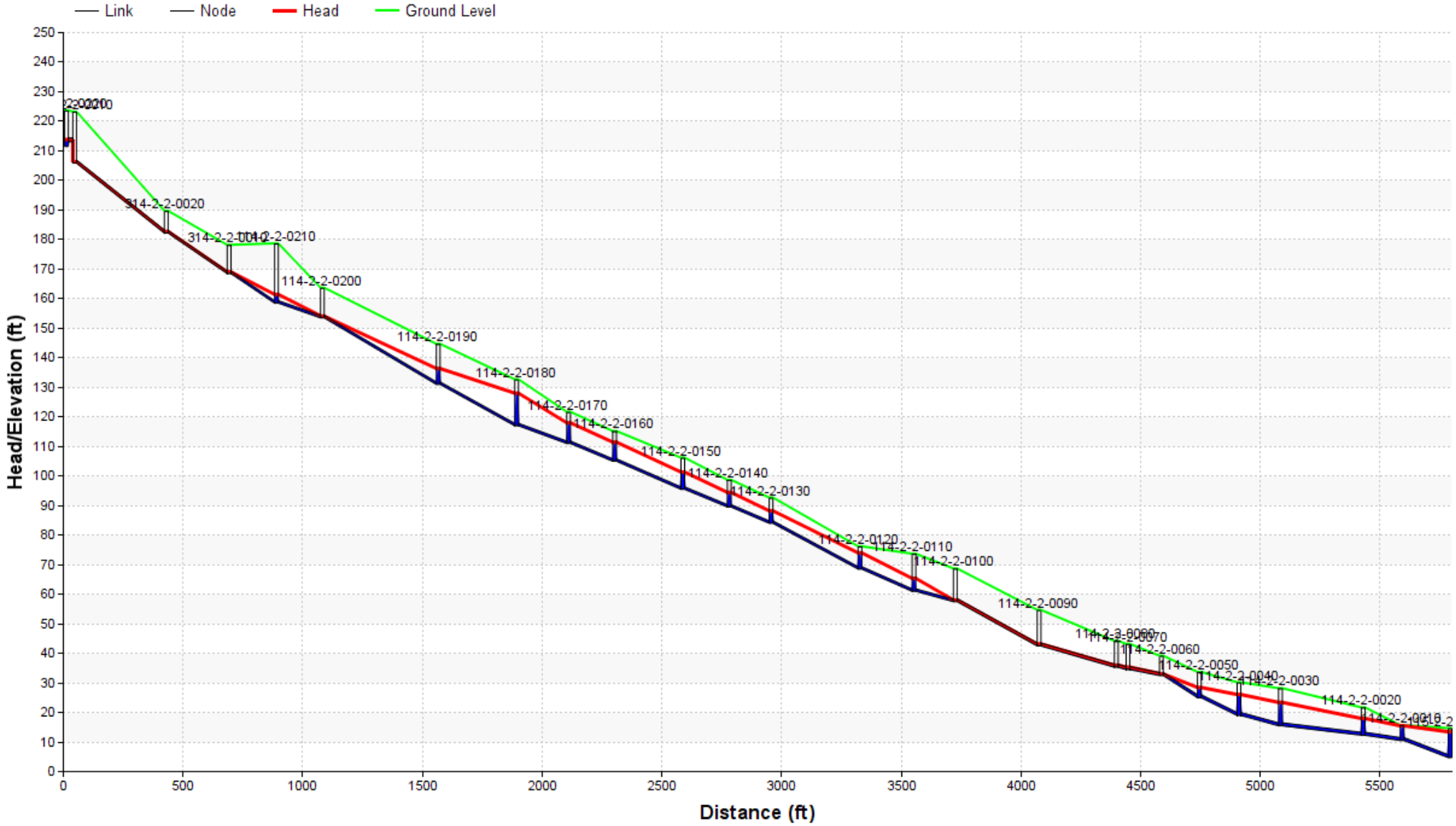
Build-Out Peak Day – McCormick Woods Drive SW



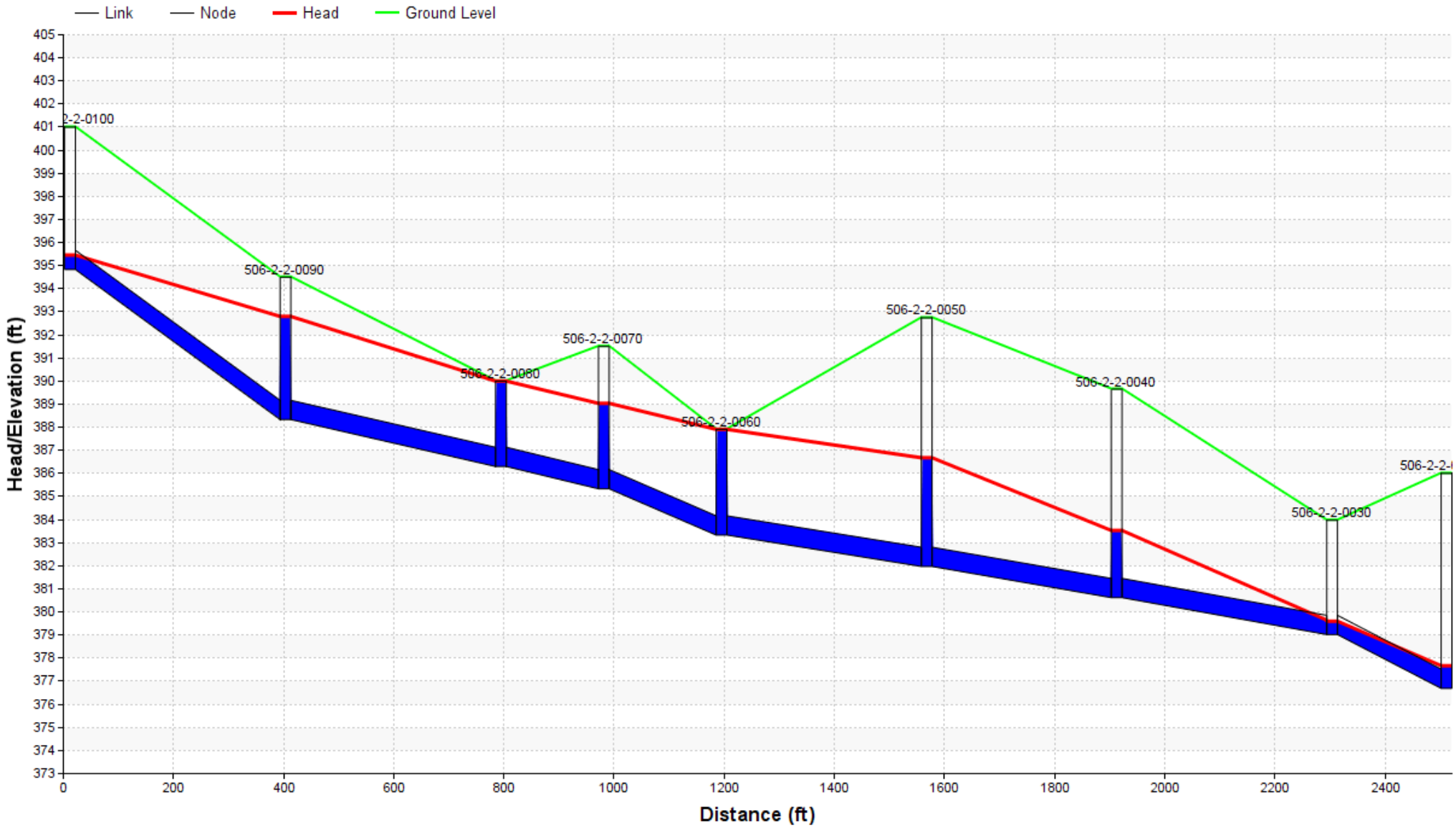
Sedgwick Alternative - Bay Street (Port Orchard Boulevard to MPS)



Sedgwick Alternative - Port Orchard Boulevard (Tremont Street to Bay Street)



Sedgwick Alternative - McCormick Woods Drive SW



Appendix H

Gap Analysis

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Katy Isaksen & Associates
Utility Financial Planning for Local Government

City of Port Orchard
Water & Sewer Financial Gap Analysis
Final Report – November 20, 2015

Summary
In 2016, the City's Comprehensive Plan is required to be updated and financially constrained, pursuant to the Growth Management Act. Individual Plan Elements (water, sanitary sewer, etc.) need to be updated, including adjustments to the Capital Improvement Plans (CIP) and associated fee structures. This Water & Sewer Gap Analysis provides the basis for discussion of this issue. The City contracted with Katy Isaksen & Associates (KI&A) to prepare the financial gap analysis with water and sewer rates necessary to fund a balanced and financially constrained CIP over the next six years.

KI&A worked with the City's engineering consultants preparing the water and sewer updated capital improvement plans (BHC Consultants for Sewer and PACE Engineers for Water). These were reviewed with Public Works and Finance to identify those that were already included in the operating budget. KI&A developed funding plan alternatives for the improvements along with a six-year rate outlook for each scenario. These scenarios were discussed with the Utilities Committee at five meetings along with other water usage and rate adjustment issues. KI&A presented the Gap Analysis and preferred scenario six-year rate outlook to the City Council for consideration at three work study sessions.

Rate Outlook. The water and sewer gap analysis and recommended six-year rates were presented at a Public Hearing on October 27, 2015. The rates shown in Tables 1 and 2 will allow the City to fund the six-year CIP projects and have financially constrained comprehensive plans.

TABLE 1: WATER GAP ANALYSIS & RATE OUTLOOK

WATER RATE OUTLOOK						
SMOOTH RATES THIS SCENARIO	2015	2016	2017	2018	2019	2020
BASE RATE						
Increase in Bimonthly Base Rate		$7.00	$7.00	$7.00	$7.00	$7.00
Recommended Bimonthly Base Rates	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50
AVERAGE 2-MONTH BILL @ 7,000 gallons						
Average Bimonthly Bill	$50.70	$58.40	$66.00	$73.60	$81.20	$88.80
Water usage rates and larger meter sizes to also be adjusted relative to the residential base rate.						

TABLE 2: SEWER GAP ANALYSIS & RATE OUTLOOK

SEWER RATE OUTLOOK						
SMOOTH RATES THIS SCENARIO	2015	2016	2017	2018	2019	2020
Increase in Bimonthly Rate		$13.00	$13.00	$13.00	$13.00	$13.00
Recommended Bimonthly Rate	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
Residential rates by unit, commercial rates assigned by class will be adjusted an equivlent amount.						

Capital Improvement Program (CIP). The water utility has received a loan from the Department of Health Drinking Water State Revolving Fund for the Well 10 project currently underway. Full loan payments are estimated to begin in 2018 with a partial payment for interest only in 2017. The other CIP projects will be funded by rates and connection charges and the projects scheduled will be reviewed each year during the budget process. These include completing well and treatment projects required by Department of Health, and beginning high priority water main replacement projects. Well 10 will allow

the City to become water independent and end the need to purchase water from the City of Bremerton. The current water contract ends in 2018.

TABLE 3: WATER CIP PROGRAM

SCENARIO A - EXISTING DWSRF LOAN + OTHER CIP BY RATES	
SIX-YEAR WATER CIP	**Estimated Cost ($2014)**
2014 DWSRF Loan	**$6,000,000**
Well 10—Pump, Generator, and Building	
Wells 6 and 10 Treatment Improvements	
Well 10 12-inch Transmission Main	
Highest Priority	**$3,193,200**
Well 11 Treatment & Connection	$800,000
Abandon Wells 4 & 5	$100,000
Water System Plan Update	$60,000
PRVs High to Low Zone: Mitchell & Dwight, Melcher/Pottery & Eaglecrest, Kendall & Maple	$195,000
Watermain Repl Ph1A: Seattle Avenue, 4" CI to 8", 842 lf	$252,600
Watermain Repl Ph1A: Division Street, 4" CI to 8", 859 lf	$257,700
Watermain Repl Ph1A: Hull Avenue, 4" CI to 8", 3,524 lf	$1,057,200
Watermain Repl Ph1A: Melcher-Tacoma-Cline, 4" CI to 8", 1,542 lf	$470,700
Telemetry Upgrades (medium priority)	$25,000
Beyond six-years: $3+million in medium priority projects to years 7-10 and begins setting aside $45,000 per year for future upsizing	

The sewer utility has four high priority pump station upgrade projects that must be completed in the next six years. There are not sufficient funds to pay for these costly projects in the short term. In order to reduce the impact on sewer rates, the financial plan calls for borrowing using low-interest loans from the Department of Ecology to complete the projects within six-years and have rates set to make the loan payments for the next 20 years.

TABLE 4: SEWER CIP PROGRAM

SCENARIO 1 - What if NO Grant and all SRF Loans for 4 Pump Stations?		
Six-Year Sewer CIP	**Cost Est in $2014**	**Funding Source**
2015 Sewer Plan Update, map & model	$120,000	pay-as-go
Marina PS Improvements	$3,800,000	SRF 2016-17
McCormick PS1 - Design & Construction	$1,280,000	SRF 2018-19
McCormick PS2 - Design & Construction	$1,290,000	SRF 2018-19
Bay St PS Improvement	$1,100,000	SRF 2020
Total Sewer CIP ($2014)	$7,590,000	
This summary shows cost estimates in 2014 dollars.		
Model escalates construction costs by 4% per year.		

The City continues to seek grants to assist with the utility projects but grants are uncertain and difficult to obtain. For example, the City applied for a Hazard Mitigation Grant for the Marina Pump Station Upgrade (approximately $4 million). They were told to reduce the request to include only the seawall portion (approximately $1 million) and come up with the local match and other funding on their own. It

is uncertain at this time whether the City will be successful in receiving a grant and when that may occur. The sewer outlook assumes that an Ecology SRF loan will be the funding source.

The City has a couple of sewer programs that are included in the annual budget and not duplicated in the CIP. An annual pipe rehabilitation program provides a level of funding for the crew to make repairs and rehabilitation as necessary throughout the year. The City also has a 10-year STEP conversion program that allows the owners of STEP systems to convert to sewer at their option. The program is scheduled for 2012-2021 for an average of 60 conversions per year. The 2015 budget of $380,000 will be available for other capital improvements after 2021.

Rate Structures. In addition to developing the six-year rate outlooks, the water and sewer rate structures were reviewed to be sure that sufficient revenue would be generated fairly from the customers to meet the needs of each utility. A detailed water consumption analysis was also completed to determine the current average usage levels of residential customers and whether the water usage tiers were a good fit.

A typical residence uses an average of 7,000 gallons (938 cubic feet) per two month billing period. The base rate includes up to 5,000 gallons and then customers pay for water by usage tier. The first tier was 5,001 to 30,000 gallons. Based on the average usage and the goal of water conservation, the tiers needed to be adjusted so customers would see lower bills for conserving. The 5,000-30,000 tier is recommended to be broken into three tiers, 5,001-10,000, 10,001-20,000 and 20,001-30,000 gallons. The rate differential was $0.10 between the tiers and is recommended to be increased.

TABLE 5: CHANGES TO WATER USAGE TIERS

Water Usage Tiers per Bimonthly Period	
Existing	**Proposed**
5,001-30,000 gal	5,001-10,000 gal
	10,001-20,000 gal
	20,001-30,000 gal
30,001-50,000 gal	30,001-50,000 gal
50,001-100,000 gal	50,001+ gal
100,001-150,000 gal	
150,001+ gal	

The City offers a low use discount to residences using up to 3,000 gallons on a bimonthly bill. This is recommended to continue.

Water usage rates should increase relative to the increase in base rate so that all customers are fairly sharing in the needed increase. For other customers, the larger meter sizes should pay a higher meter differential to reflect the higher demand on the water system. This is incrementally increased over the six years in the recommended rates.

The City jointly owns the wastewater treatment facilities with West Sound Utility District. This is considered a separate operation in the Gap Analysis as they jointly manage and set treatment rates. The treatment services are included as a line item within the operating expenses. The sewer treatment rates have been quite stable are assumed to remain the same. The City's sewer rates to customers include the treatment services. Any changes in treatment rates would need to be passed along to the customers.

The wastewater treatment costs are based on an equivalent residential unit (ERU) basis. The City's current sewer rate schedule includes 20 classes of customers with definitions and charges based on ERU's or portions thereof. This rate structure works well with the costs and only minor adjustments are recommended, such as adjusting definitions to match the zoning code. Council discussions resulted in a new customer class for public markets that is also included.

Recommended Rates. The recommended six-year water and sewer rates are shown in Tables 6 and 7.

TABLE 6: GAP ANALYSIS RECOMMENDED WATER RATES

Water Rates - Bimonthly		2015	2016	2017	2018	2019	2020
a) Single Connections							
3/4" Meter, 0-3,000 gal	Base	**$30.50**	$35.10	$39.70	$44.30	$48.90	$53.50
3/4" Meter, 3,001-5,000 gal	Base	**$46.50**	$53.50	$60.50	$67.50	$74.50	$81.50
5,001-10,000 gal	per 1000g	**$2.10**	$2.45	$2.75	$3.05	$3.35	$3.65
10,001-20,000 gal	per 1000g	**$2.10**	$2.55	$2.90	$3.20	$3.50	$3.85
20,001-30,000 gal	per 1000g	**$2.10**	$2.65	$3.00	$3.35	$3.70	$4.05
30,001-50,000 gal	per 1000g	**$2.20**	$2.80	$3.20	$3.55	$3.90	$4.30
50,001+ gal	per 1000g	**$2.30**	$3.00	$3.40	$3.80	$4.20	$4.60
b) Multiple Connections/Larger Meters							
3/4" Meter, 0-5,000 gal	Base	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50
3/4" Meter Base plus the following meter size differentials:							
1" Meter, 0-5,000 gal	Base+Diff.	$1.00	$2.00	$3.00	$4.00	$5.00	$6.00
1-1/2" Meter, 0-5,000 gal	Base+Diff.	$4.00	$8.00	$12.00	$16.00	$20.00	$24.00
2" Meter, 0-5,000 gal	Base+Diff.	$7.00	$14.00	$21.00	$28.00	$35.00	$42.00
3" Meter, 0-5,000 gal	Base+Diff.	$13.00	$26.00	$39.00	$52.00	$65.00	$78.00
4" Meter, 0-5,000 gal	Base+Diff.	$25.00	$50.00	$75.00	$100.00	$125.00	$150.00
6" Meter, 0-5,000 gal	Base+Diff.	$46.00	$92.00	$138.00	$184.00	$230.00	$276.00
8" Meter, 0-5,000 gal	Base+Diff.	$67.00	$134.00	$201.00	$268.00	$335.00	$402.00
10" Meter, 0-5,000 gal	Base+Diff.	$91.00	$182.00	$273.00	$364.00	$455.00	$546.00
c) Plus Consumption charge in excess of 5,000 gallons							
5,001-10,000 gal	per 1000g	$2.10	$2.45	$2.75	$3.05	$3.35	$3.65
10,001-20,000 gal	per 1000g	$2.10	$2.55	$2.90	$3.20	$3.50	$3.85
20,001-30,000 gal	per 1000g	$2.10	$2.65	$3.00	$3.35	$3.70	$4.05
30,001-50,000 gal	per 1000g	$2.20	$2.80	$3.20	$3.55	$3.90	$4.30
50,001+ gal	per 1000g	$2.30	$3.00	$3.40	$3.80	$4.20	$4.60
d) Multiple Connections - where more than one customer is served through one meter							
Base rate per unit, 0-5,000 ga	Base	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50
Plus meter differential for actual meter		as shown in b) above					
Plus consumption charge in excess of 5,(		as shown in c) above					
e) Outside City Limits	50% surcharge						
f) Fire Hydrant Service							
Schools	per hydran	$12.00	$13.80	$15.60	$17.40	$19.20	$21.00
Private Service	per hydran	$22.00	$25.30	$28.60	$31.90	$35.20	$38.50
g) Temporary Service	Greater of flat rate or as metered						
One-day Service	Flat rate	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50
	per 1000g	$2.20	$2.80	$3.20	$3.55	$3.90	$4.30
Construction Account	Flat rate	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50
0-50,000 gal	per 1000g	$2.20	$2.80	$3.20	$3.55	$3.90	$4.30
50,001+ gal	per 1000g	$2.30	$3.00	$3.40	$3.80	$4.20	$4.60
h) Hydrant Meter Rentals	Refundable deposit for meter rental; sales tax added to 30-day rental fees						
First 60 days	rental + tax	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Next 120 days	rental + tax	$250.00	$260.00	$270.00	$280.00	$290.00	$300.00
In excess of 180 days	rental + tax	$500.00	$520.00	$540.00	$560.00	$580.00	$600.00

TABLE 7: GAP ANALYSIS RECOMMENDED SEWER RATES

			2015	Water/Sewer Gap Analysis Recommended Rates				
		Bimonthly Rate:	**$98.00**	**$111.00**	**$124.00**	**$137.00**	**$150.00**	**$163.00**
Class No.	Class Description	Description	Bimonthly Rate	2016 Bimonthly Rate	2017 Bimonthly Rate	2018 Bimonthly Rate	2019 Bimonthly Rate	2020 Bimonthly Rate
1	Single-family residences and mobile home on single parcel	for each dwelling unit	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
2	Business and professional	for each business with a fixture	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for each business with an employee present, without a fixtur	$19.90	$22.20	$24.80	$27.40	$30.00	$32.60
		for each floor of an office building or retail complex that has a public or community bathroom	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Plus the following surcharge, based on the store/office interi	$0.00					
		Small, less than 15,000 sf, or	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Medium, 15,000 to 30,000 sf, or	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Large, More than 30,000 sf	$196.00	$222.00	$248.00	$274.00	$300.00	$326.00
3	Churches	for the church, plus *	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for the rectory, plus *	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for the annex	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		*Class 6 for educational parochial schools						
4	Hotels & motels, rest homes & care centers, and Kitsap County jail	base fee, plus	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		per unit	$19.90	$22.20	$24.80	$27.40	$30.00	$32.60
5	Apartments and mobile home parks	per dwelling unit	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
6	Schools	for each pupil, teacher, maintenance and administrative pers	$3.00	$3.30	$3.70	$4.10	$4.50	$4.90
7	Kitsap County courthouse (main complex)		$3,822.00	$4,329.00	$4,836.00	$5,343.00	$5,850.00	$6,357.00
8	Restaurants	Based on the seating capacity as determined by the building official						
	Espresso Bar	Seating not applicable. Classification includes similar food preparation businesses which do not require the cooking of food or the maintenance of kitchen equipment.	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
	Deli	No seating	$147.00	$166.50	$186.00	$205.50	$225.00	$244.50
	Small	Seating for 1 to 50	$294.00	$333.00	$372.00	$411.00	$450.00	$489.00
	Medium	Seating for 51 to 150	$441.00	$499.50	$558.00	$616.50	$675.00	$733.50
	Large	Seating for more than 150	$588.00	$666.00	$744.00	$822.00	$900.00	$978.00
9	Laundromats	base fee, plus	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		per washing machine	$19.90	$22.20	$24.80	$27.40	$30.00	$32.60
		Laundromats with less than four washing machines are considered Class 2. Dry Cleaners without washing machines are Class 2.						
10	Taverns		$245.00	$277.50	$310.00	$342.50	$375.00	$407.50
11	Car dealerships	for sales and administrative office, plus	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for service department, plus	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for car washing when the water is used to determine cost sharing for the sewer treatment plant.	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
12	Post office		$343.00	$388.50	$434.00	$479.50	$525.00	$570.50
13	Grocery stores	Basic fee, plus the following surcharges	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		Basic Store	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		Bakery	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		Wetted-Down Produce	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Food Disposal	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Meat Cutting Area	$196.00	$222.00	$248.00	$274.00	$300.00	$326.00
14	Bowling alley, boat marina, health maintenance organizations and work release & juvenile facilities	base fee, plus	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		for each equivalent residential unit (ERU) as determined for the cost-sharing formula for the sewer treatment plant	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
15	Car washes	base fee, plus	$49.00	$55.50	$62.00	$68.50	$75.00	$81.50
		per car washing bay	$147.00	$166.50	$186.00	$205.50	$225.00	$244.50

				Water/Sewer Gap Analysis Recommended Rates				
Recommended Sewer Rates		Bimonthly Rate:	2015	2016	2017	2018	2019	2020
16	Beauty shops and barber shops		$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
17	Day care	Basic fee, plus	$196.00	$222.00	$248.00	$274.00	$300.00	$326.00
		for less than or equal to 5 6 children	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		for 7 to 25 children	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for more than 25 children, use Class 6 rates						
18	Gas stations	for gasoline retail, which could include service bay	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		for non-automotive retail	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
19	Assisted living units	base fee, plus	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		per unit with private kitchen	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		per unit without private kitchen or studio apartment	$19.90	$22.20	$24.80	$27.40	$30.00	$32.60
20	Bed and breakfasts	base fee, plus	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		per rentable bedroom	$7.95	$8.90	$9.90	$11.00	$12.00	$13.00
21	Public Market (proposed new class)	basic fee, plus the following surcharges	$196.00	$222.00	$248.00	$274.00	$300.00	$326.00
		Nonfood retail	$24.50	$27.80	$31.00	$34.30	$37.50	$40.80
		Nonfood service business	$24.50	$27.80	$31.00	$34.30	$37.50	$40.80
		Juice/Soda/Ice Cream/Espresso Bar	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Restaurant (consume and buy on premises)	$196.00	$222.00	$248.00	$274.00	$300.00	$326.00
		Delicatessen (counter sales takeout ready-to-eat food produ	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Retail Meat/Seafood	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
		Retail Bakery	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00
	Special notes:	a) Home occupations will not be charged additional sewer fees.						
		b) For a combination of classes in one business, the highest rate will be selected						
		c) In the event that an established rate class does not accurately reflect the impact on the sewer system, the city engineer may determine the specific monthly rate.						
		d) Water accounts which serve a marina pier and do not have a connection to the sewer shall not be charged a sewer bill. A sewer bill will be charged and based on winter consumption if the water meter serves both the marina pier and any facility or pump station that is connected to the sewer system. For billing purposes, live-aboards will not be considered as a dwelling unit.						
		e) Properties served which are outside the city limits shall have a 50 percent surcharge on the bimonthly rates.						

Impact on Sample Customers. The impact on a low-use residence and an average residence are shown in Table 8. Water and sewer combined would increase $17.60 per two month bill for a low-use residence and $20.70 for an average residence.

TABLE 8: BIMONTHLY IMPACT ON LOW-USE AND AVERAGE RESIDENCES

LOW USE RESIDENCE @ 3,000 gallons		2015	2016	2017	2018	2019	2020
WATER ONLY	Low Use	$30.50	$35.10	$39.70	$44.30	$48.90	$53.50
Increase per Bimonthly Bill	W		*$4.60*	*$4.60*	*$4.60*	*$4.60*	*$4.60*
WATER + SEWER	Low Use	$128.50	$146.10	$163.70	$181.30	$198.90	$216.50
Increase per Bimonthly Bill	W+S		*$17.60*	*$17.60*	*$17.60*	*$17.60*	*$17.60*

AVERAGE RESIDENCE @ 7,000 gallons		2015	2016	2017	2018	2019	2020
WATER ONLY	Average	$50.70	$58.40	$66.00	$73.60	$81.20	$88.80
Increase per Bimonthly Bill	W		*$7.70*	*$7.60*	*$7.60*	*$7.60*	*$7.60*
WATER + SEWER	Average	$148.70	$169.40	$190.00	$210.60	$231.20	$251.80
Increase per Bimonthly Bill	W+S		*$20.70*	*$20.60*	*$20.60*	*$20.60*	*$20.60*

Comparable Local Rates. Utilities are required to be self-sufficient. Each jurisdiction has its own facilities, infrastructure and customer base to pay for the system. The local utilities include the cities of Bremerton, Gig Harbor and Poulsbo, Kitsap PUD, and Kitsap County wastewater. The comparison includes 2015 bimonthly bills, except for Port Orchard proposed 2016 rates and Gig Harbor previously

adopted 2016 rates. A typical residence using 7,000 gallons per two month bill is compared in Charts 1 and 2.

CHART 1: COMPARABLE RESIDENTIAL WATER BILLS

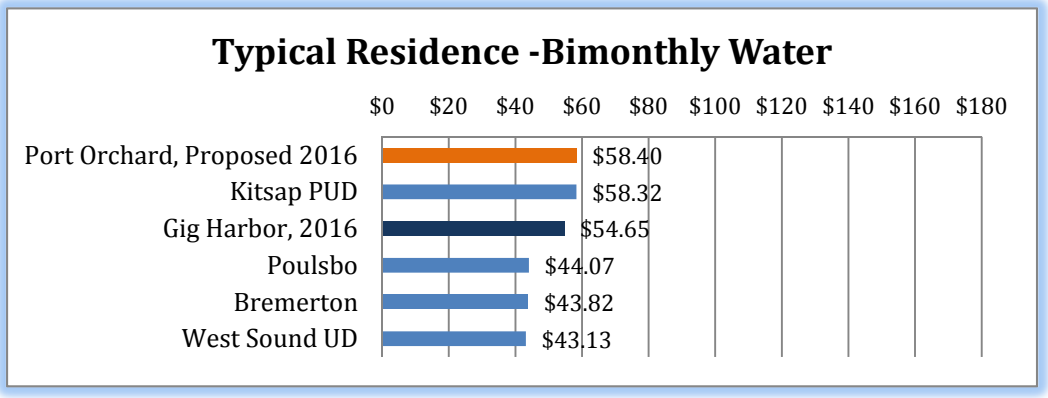

Chart 1 reflects a residence with a ¾" meter using 7,000 gallons (938 cubic feet) per bimonthly bill. All communities increased rates for 2015. Gig Harbor has adopted annual rate increases for 2015-2020.

CHART 2: COMPARABLE RESIDENTIAL SEWER BILLS

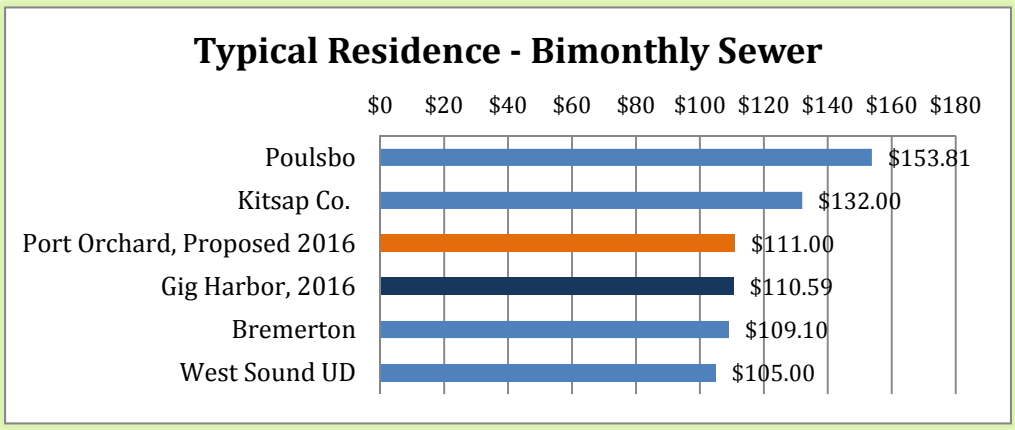

Chart 2 reflects a residence with a ¾" meter using 7,000 gallons (938 cubic feet) per bimonthly bill. All communities except Port Orchard increased rates in 2015. Gig Harbor has adopted annual rate increases for 2015-2020.

While it is nice to know what others charge for comparable service, it is important to understand that each utility must set rates and charges to fund its own system.

Connection Fees. New development pays capital facilities and connection charges for water and sewer upon connecting to each system. These will be updated when the water and sewer comprehensive plans are adopted to be sure all are paying a fair share of the existing and planned improvements.

For water, all new connections pay a capital facilities charge based on meter size. Depending on the circumstance, new water customers pay for the water meter, installation, distribution system and inspection as required by city code. Table 9 shows the new water connection fees as of 11/1/15.

TABLE 9: WATER CONNECTION FEES

Water Capital Facilities Charge per ERU based on meter size	11/1/2015
3/4" Meter	$5,011.81
1" Meter	$8,358.58
1-1/2" Meter	$16,667.04
2" Meter	$26,677.31
3" Meter	$53,354.59
4" Meter	$84,499.10
Irrigation Meter	$0.00
+ Inspection fees, connection fees and in-lieu-of assessment fees as required by city code.	

For sewer, all new connections pay a wastewater treatment facility fee for the joint wastewater plant, a general facilities charge for city sewer general facilities and inspection and other fees as required by city code. Table 10 shows the new sewer connection charges as of 11/1/15.

TABLE 10: SEWER CONNECTION FEES

Sewer Wastewater Treatment Facility Fee	11/1/2015
Per ERU	$3,597.37
McCormick Land Co. Div. 1-10	$881.25
Sewer General Facility Fee	
Per ERU	$3,085.04
+ Inspection & other fees as required by city code.	

Six-Year Summary Outlook. The six-year water and sewer outlooks are summarized in Tables 11 and 12. This provides a summary of the anticipated revenue with existing 2015 rates, projected operating expenses based on 2015 budget, existing and planned debt payments, and capital program funding and expenditures. The yellow line, Annual Increase/ (Use) of Reserves indicates the difference between existing rate revenue and expenditures for each year. If this line is positive, it means that the system is increasing reserves or savings for future years. If this line is negative ( ), it means that the reserves will need to be used to meet the planned expenditures in each year. Other alternatives include adjusting expenditures or increasing rates or other revenue. The cumulative impact on the base rate and average customer is calculated in the shaded area.

In order to lessen the impact on customers, the recommended rates were set to be the same level each year. This will require the City to manage the CIP program by funding the highest priority projects in each year as can be afforded with the available funding. A large project may take more than one year to accumulate enough funds to proceed.

Appendices. The appendices include the water and sewer CIP programs with funding sources and operating details such as model assumptions, operating revenue and expense details.

TABLE 11: SIX-YEAR OUTLOOK SUMMARY – WATER

The recommend rates have level increases over the six years, therefore the capital improvements will need to be reviewed each year during the budget process to balance the highest priorities with the funding available. Capital facilities charge revenue should also be used for the CIP.

WATER UTILITY SIX-YR OUTLOOK	Base Year	2015	2016	2017	2018	2019	2020	Comments
SCENARIO 1: SIX-YEAR OUTLOOK with Capital Facilities Charges toward CIP- 20 new customers per year - Pay-As-You-Go for Highest Priority Projects, medium deferred to years 7-10								
Operating Revenue								
W Sales to Customers, Muni, Public Auth		1,600,000	1,606,000	1,612,000	1,618,000	1,624,000	1,630,000	add new cust
Other Operating Revenue		50,750	50,750	50,750	50,750	50,750	50,750	flat
Subtotal W Revenue		**1,650,750**	**1,656,750**	**1,662,750**	**1,668,750**	**1,674,750**	**1,680,750**	
Expenses								
Subtotal Operations		1,536,813	1,547,600	1,611,400	1,665,600	1,672,000	1,730,400	
Water Debt								
W City Hall Debt (p+i)		30,592	30,592	30,592	30,592	30,592	-	thru 2019
Existing DWSRF Loan - Well 10		-	-	90,000	406,000	406,000	406,000	
Future DWSRF Loan(s)		-	-	-	-	-	-	
Subtotal Debt		30,592	30,592	120,592	436,592	436,592	406,000	
Net Available for Capital		**83,345**	**78,558**	**(69,242)**	**(433,442)**	**(433,842)**	**(455,650)**	
Other Revenue for Capital								
Transfer from Cum Res 403 for CIP		-	95,380	95,380	95,380	95,380	95,380	Capital Facil Chg = $4,769 x 20
DWSRF Proceeds		1,000,000	4,700,000	300,000	-	-	-	this scenario
Available for Capital		1,083,345	4,873,938	326,138	(338,062)	(338,462)	(360,270)	
Capital Program								
Equipment Replacement		9,500	9,500	9,500	9,500	9,500	9,500	carry forward
Water CIP - Six-Year		**1,060,000**	**5,468,000**	**1,122,000**	**611,600**	**715,600**	**785,800**	by constr cost escal
Subtotal Capital		1,069,500	5,477,500	1,131,500	621,100	725,100	795,300	
W Annual Increase/(Use) of Reserves		**13,845**	**(603,562)**	**(805,362)**	**(959,162)**	**(1,063,562)**	**(1,155,570)**	
Percentage Impact on W Rates - cumulative			*38%*	*50%*	*59%*	*65%*	*71%*	over existing rates
Percentage Impact on W Rates - annual		*0%*	*38%*	*12%*	*9%*	*6%*	*5%*	
Base Rate - 3/4" Meter, 3001-5000gal		$46.50						
Base Rate - if Balanced		$46.50	$63.98	$69.73	$74.07	$76.95	$79.47	
Existing Ordinance (Average Residence @ 7000gal)		**$50.70**						
Scen 1: Rates & CFC Pay CIP		**$50.70**	**$69.75**	**$78.39**	**$85.69**	**$91.02**	**$95.93**	**If Use of Reserves = 0**
Average increase in 2-mo bill (per year)			**$19.05**	**$8.63**	**$7.31**	**$5.32**	**$4.92**	
DOH Affordability @ 1.5% of MHI		$140.64	$140.64	$140.64	$140.64	$140.64	$140.64	
RECOMMENDED RATE SCENARIO								
For Smooth Rates		2015	2016	2017	2018	2019	2020	
Base needs to increase about $7.00 per year	Bimonthly	$46.50	$53.50	$60.50	$67.50	$74.50	$81.50	
Average 2-month water bill @ 7,000g	Bimonthly	$50.70	$58.40	$66.00	$73.60	$81.20	$88.80	

TABLE 12: SIX-YEAR OUTLOOK SUMMARY - SEWER

The recommend rates have level increases over the six years, therefore the capital improvements will need to be reviewed each year during the budget process to balance the highest priorities with the funding available. Capital facilities charge revenue should also be used for the CIP.

SEWER UTILITY SIX-YR OUTLOOK	Base Year	2015	2016	2017	2018	2019	2020	Comments
SCENARIO 1 - What if NO Grant and all SRF Loans for 4 Pump Stations? With Capital Facilities Charges toward CIP. Loans at 2.7% Interest.								
Operating Revenue								
Sewer Services to Customers, Muni, Pub Auth		3,070,000	3,099,000	3,128,000	3,157,000	3,186,000	3,215,000	add 50 new cust per yr
Other Sewer Operating Revenue		89,250	89,250	89,250	89,250	89,250	89,250	flat
Subtotal S Revenue		**3,159,250**	**3,188,250**	**3,217,250**	**3,246,250**	**3,275,250**	**3,304,250**	
Operating Expenses		3,195,161	3,316,500	3,442,600	3,573,800	3,710,400	3,852,600	
Sewer Debt								
S City Hall Debt (p+i)		30,592	30,592	30,592	30,592	30,592	-	thru 2019
Potential New Loan for CIP		-	-	-	242,000	242,000	437,000	
Subtotal Debt		30,592	30,592	30,592	272,592	272,592	437,000	
Net Available for S Capital		**(66,503)**	**(158,842)**	**(255,942)**	**(600,142)**	**(707,742)**	**(985,350)**	
Other Revenue for Capital								
Transfer Facil. Charges from Cum Res 403		120,000	150,000	150,000	-	-	-	Local match grants & comp plan
Grant Proceeds - Hazard Mitigation		-	-	-	-	-	-	Marina
Future DOE SRF Loan Proceeds		-	1,850,000	1,850,000	416,000	2,574,000	1,338,000	-
Available for S Capital		53,497	1,841,158	1,744,058	(184,142)	1,866,258	352,650	
Capital Program								
Equipment Replacement		9,500	9,500	9,500	9,500	9,500	9,500	carry forward
Sewer CIP		**120,000**	**2,000,000**	**2,000,000**	**416,000**	**2,574,000**	**1,338,000**	
Subtotal S Capital		129,500	2,009,500	2,009,500	425,500	2,583,500	1,347,500	
S Annual Increase/(Use) of Reserves		**(76,003)**	**(168,342)**	**(265,442)**	**(609,642)**	**(717,242)**	**(994,850)**	
Percentage Impact on S Rates- Cumulative		*2.5%*	*5.4%*	*8.5%*	*19.3%*	*22.5%*	*30.9%*	
Percentage Impact on S Rates - annual		*11%*	*5%*	*56%*	*20%*	*16%*	*0%*	
Average Residence - if Balanced	**$98.00**	**$100.43**	**$105.75**	**$114.07**	**$132.99**	**$155.05**	**$185.38**	**If Use of Reserves = 0**
Estimated Bimonthly Impact		*$2.43*	*$5.32*	*$8.32*	*$18.92*	*$22.06*	*$30.33*	
DOE says sewer is affordable at 2.0% of median household income ($56,257). At 2.0% of MHI, sewer rates would be considered affordable at $93.76 per month.								
RECOMMENDED RATE SCENARIO								
For Smooth Rates		2015	2016	2017	2018	2019	2020	
Bimonthly Rates with Level Increases	$98.00	$98.00	$111.00	$124.00	$137.00	$150.00	$163.00	*$13.00*

APPENDIX A. SIX-YEAR WATER CIP

	SCENARIO A - EXISTING SRF LOAN + OTHER CIP BY RATES										
	TEN-YEAR WATER CIP (focus on six-year)	Estimated Cost ($2014)	Total by Category		2015	2016	2017	2018	2019	2020
	2014 DWSRF Loan		**6,000,000**		1,000,000	4,700,000	300,000			
	Highest Priority									
2	Well 11 Treatment & Connection	$800,000	High		-	416,000	416,000	-	-	-
7a	Abandon Wells 4 & 5	$100,000	High		-	104,000	-	-	-	-
14	Water System Plan Update	$60,000	High		60,000	-	-	-	-	-
6	PRVs High to Low Zone: Mitchell & Dwight, Melcher/Pottery & Eaglecrest, Kendall & Maple	$195,000	High		-	-	211,000	-	-	-
15a	Watermain Repl Ph1A: Seattle Avenue, 4" CI to 8", 842 lf	$252,600	High		-	203,000	60,000	-	-	-
15a	Watermain Repl Ph1A: Division Street, 4" CI to 8", 859 lf	$257,700	High		-	-	90,000	91,000	95,000	-
15a	Watermain Repl Ph1A: Hull Avenue, 4" CI to 8", 3,524 lf	$1,057,200	High		-	-	-	475,600	475,600	237,800
15a	Watermain Repl Ph1A: Melcher-Tacoma-Cline, 4" CI to 8", 1,542 lf	$470,700	High		-	-	-	-	100,000	473,000
					-	-	-	-	-	-
	Subtotal Highest Priority		**$3,193,200**		-	-	-	-	-	-
	Medium Priority				-	-	-	-	-	-
1	Telemetry Upgrades	$25,000	Medium		-	-	-	-	-	30,000
7b	City Hall PS Elimination: Phase 2 New Well 7	$1,000,000	Medium		-	-	-	-	-	-
12	Melcher Street Pump Station Upgrade	$300,000	Medium		-	-	-	-	-	-
13	390 Zone Storage Improvements (Impounded Water)	$500,000	Medium		-	-	-	-	-	-
15b	Watermain Repl Ph1B: Dwight Street, 4" CI to 8", 896 lf	$268,800	High-Medium		-	-	-	-	-	-
15b	Watermain Repl Ph1B: Harrison Ave, 4" CI to 8", 629 lf	$188,700	High-Medium		-	-	-	-	-	-
15b	Watermain Repl Ph1B: Prospect Street, 6" CI to 8", 940 lf	$282,000	High-Medium		-	-	-	-	-	-
15b	Watermain Repl Ph1B: Dekalb Street, 4" CI to 8", 861 lf	$258,300	High-Medium		-	-	-	-	-	-
15b	Watermain Repl Ph1B: Ada-Taylor Street, 4" CI to 8", 713 lf	$213,900	High-Medium		-	-	-	-	-	-
					-	-	-	-	-	-
	Subtotal Medium Priority		**$3,036,700**		-	-	-	-	-	-
	Deferred to Future				-	-	-	-	-	-
10b	390 to 580 12-inch Tr Main Oversizing (build reserve over time)	$450,000	As Req by Dev		-	45,000	45,000	45,000	45,000	45,000
	Subtotal Deferred to Future		**$4,147,050**							
	Subtotal City-funded 6-Yr		**10,179,600**		**1,060,000**	**5,468,000**	**1,122,000**	**611,600**	**715,600**	**785,800**
	Less: Existing DWSRF Funding		**(6,000,000)**		(1,000,000)	(4,700,000)	(300,000)	-	-	-
	Less: Future DWSRF Funding		**-**							
	Funding from Water Rates 6-Yr		**4,179,600**		**60,000**	**768,000**	**822,000**	**611,600**	**715,600**	**785,800**
	CIP Impact to Water Rates									
	CIP Funded by Rates				60,000	768,000	822,000	611,600	715,600	785,800
	Less: Anticipated Connection Charges for CIP									
	Existing DWSRF Debt Repayment				-	-	90,000	406,000	406,000	406,000
	Total CIP Impact to Water Rates				**60,000**	**768,000**	**912,000**	**1,017,600**	**1,121,600**	**1,191,800**

APPENDIX B. WATER OPERATING DETAIL (ASSUMPTIONS, REVENUE, EXPENSES)

City of Port Orchard Gap Analysis Water/Sewer							
Prepared by Katy Isaksen & Associates							
	Budget 2015	2016	2017	2018	2019	2020	Comments
WATER UTILITY SIX-YR OUTLOOK							
Assumptions:							
New Customer ERU's per year	20	20	20	20	20	20	
General Cost Escalation	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	
Pumping/Purchased Water Cost Escalation	9.0%	9.0%	9.0%	3.5%	3.5%	3.5%	back to general in 2018
Construction Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	
Bimonthly Single Family Base Rate	**$46.50**	$46.50	$46.50	$46.50	$46.50	$46.50	Current City Code
Operating Revenue							
W Sales - General Customers	1,518,000	1,524,000	1,530,000	1,536,000	1,542,000	1,548,000	add new cust
W Sales - Public Municipalities	5,000	5,000	5,000	5,000	5,000	5,000	flat
W Sales - Public Authorities	77,000	77,000	77,000	77,000	77,000	77,000	flat
Late Payment/Penalties/Shut-off	21,000	21,000	21,000	21,000	21,000	21,000	flat
Rent - Utility Properties	26,800	26,800	26,800	26,800	26,800	26,800	flat
Other Revenue (unmetered,fire,other)	450	450	450	450	450	450	flat
Concurrency Fees (inspection)	-	-	-	-	-	-	flat
Connection Fees (inspection)	2,500	2,500	2,500	2,500	2,500	2,500	flat
Subtotal W Revenue	**1,650,750**	**1,656,750**	**1,662,750**	**1,668,750**	**1,674,750**	**1,680,750**	
Expenses							
Purchased Water	56,000	56,000	56,000	56,000	6,000	6,200	min. 50k thru 2018
Maintenance - Structures & Wells	22,153	22,900	23,700	24,500	25,400	26,300	by gen'l escal.
Water Treatment	139,531	144,400	149,500	154,700	160,100	165,700	by gen'l escal.
Supply Mains	94,260	97,600	101,000	104,500	108,200	112,000	by gen'l escal.
Services	39,977	41,400	42,800	44,300	45,900	47,500	by gen'l escal.
Pumping	193,107	210,500	229,400	237,400	245,700	254,300	by pump/purch wtr escal.
Distribution System	29,650	30,700	31,800	32,900	34,100	35,300	by gen'l escal.
Reservoir painting	50,000						
Meters	51,844	53,700	55,600	57,500	59,500	61,600	by gen'l escal.
Hydrants	5,518	5,700	5,900	6,100	6,300	6,500	by gen'l escal.
Customer Svcs - Meter Read/Billing	139,018	143,900	148,900	154,100	159,500	165,100	by gen'l escal.
Customer Service - Info	500	500	500	500	500	500	by gen'l escal.
General Admin Salaries & Benes	155,297	160,700	166,300	172,100	178,100	184,300	by gen'l escal.
Admin Clerical Salaries & Benes	160,463	166,100	171,900	177,900	184,100	190,500	by gen'l escal.
Supplies - General Admin	100	100	100	100	100	100	by gen'l escal.
Othr Srv&Chg - General Admin	10,350	10,700	11,100	11,500	11,900	12,300	by gen'l escal.
Insurance - Property & Liability	126,000	130,400	135,000	139,700	144,600	149,700	by gen'l escal.
Supplies - Gen Ops	2,000	2,100	2,200	2,300	2,400	2,500	by gen'l escal.
Fuel Consumed - Gen Ops	10,000	10,400	10,800	11,200	11,600	12,000	by gen'l escal.
Transportation Equip.	11,195	11,600	12,000	12,400	12,800	13,200	by gen'l escal.
Othr Srv&Chg - General Ops	15,700	16,200	16,800	17,400	18,000	18,600	by gen'l escal.
Utility Tax State	95,000	98,300	101,700	105,300	109,000	112,800	by gen'l escal.
Utility Tax City	80,000	82,800	85,700	88,700	91,800	95,000	by gen'l escal.
Other Admin (kpud,emer.gen,rights,well4)	49,150	50,900	52,700	54,500	56,400	58,400	by gen'l escal.
Subtotal Operations	1,536,813	1,547,600	1,611,400	1,665,600	1,672,000	1,730,400	

APPENDIX C. SIX-YEAR SEWER CIP

	SCENARIO 1 - What if NO Grant and all SRF Loans for 4 Pump Stations?							SRF Interest	2.7%
No.	Six-Year Sewer CIP - Escalated	Cost Est in $2014	2015	2016	2017	2018	2019	2020	Total
1	2015 Sewer Plan Update, map & model	$120,000	$120,000						$120,000
2	Marina PS Improvements	$3,800,000		$2,000,000	$2,000,000				$4,000,000
3	Bay St PS Improvement	$1,100,000						$1,338,000	$1,338,000
4	McCormick PS2 - Design	$190,000				$214,000			$214,000
5	McCormick PS2 - Construction	$1,100,000					$1,287,000		$1,287,000
6	McCormick PS1 - Design	$180,000				$202,000			$202,000
7	McCormick PS1 - Construction	$1,100,000					$1,287,000		$1,287,000
	Total Sewer CIP - Escalated	$7,590,000	$120,000	$2,000,000	$2,000,000	$416,000	$2,574,000	$1,338,000	$8,448,000
	Sewer CIP Funding Sources								
	Transfer Facil Charges fr 403		$120,000	$150,000	$150,000				
	Haz Mitigation Grant (87.5%)								
	Future SRF Loan Proceeds			$1,850,000	$1,850,000	$416,000	$2,574,000	$1,338,000	
	Rate Funded		$0	$0	$0	$0	$0	$0	$0
	Total Sewer CIP Funding		$120,000	$2,000,000	$2,000,000	$416,000	$2,574,000	$1,338,000	$0
						2018	2019	2020	2021
	SRF Debt Payments					$242,000	$242,000	$242,000	$242,000
								$195,000	$195,000
									$87,000
	Total SRF Debt Payments				$0	$242,000	$242,000	$437,000	$524,000
	Total Rate-Funded + Debt		**$0**	**$0**	**$0**	**$242,000**	**$242,000**	**$437,000**	

The Department of Ecology combined water quality funding assistance program is the target loan source that includes the Clean Water State Revolving Fund loan program. There is an annual application cycle for competitive applications that meet the prerequisites. The interest rate will change each year. This study assumes the City would be applying for 20-year loans.

APPENDIX D: SEWER OPERATING DETAIL (ASSUMPTIONS, REVENUE, EXPENSES)

City of Port Orchard Gap Analysis Water/Sewer							
Prepared by Katy Isaksen & Associates		with 2015 BUDGET					
	Budget 2015	2016	2017	2018	2019	2020	Comments
SEWER UTILITY SIX-YR OUTLOOK							
Assumptions:							
New Customer ERU's per year	50	50	50	50	50	50	Stetson/W McC/Rush
General Cost Escalation	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	
Pumping Cost Escalation	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	
Construction Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	
Bimonthly Single Family Flat Rate	**$98.00**	$98.00	$98.00	$98.00	$98.00	$98.00	
Operating Revenue							
S Services - Flat Rate	2,947,000	2,976,000	3,005,000	3,034,000	3,063,000	3,092,000	add new cust
S Services - Public Municipalities	9,000	9,000	9,000	9,000	9,000	9,000	flat
S Services - Public Authorities	114,000	114,000	114,000	114,000	114,000	114,000	flat
Late Payment/Penalties/Shut-off	55,000	55,000	55,000	55,000	55,000	55,000	flat
Rent - Utility Properties	26,800	26,800	26,800	26,800	26,800	26,800	flat
Other S Revenue (other, misc, leachate)	450	450	450	450	450	450	flat
Concurrency Fees (inspection)	2,000	2,000	2,000	2,000	2,000	2,000	flat
Connection Fees (inspection)	5,000	5,000	5,000	5,000	5,000	5,000	flat
Subtotal S Revenue	**3,159,250**	**3,188,250**	**3,217,250**	**3,246,250**	**3,275,250**	**3,304,250**	
Expenses							
Sewer Treatment	1,441,145	1,491,600	1,543,800	1,597,800	1,653,700	1,711,600	by gen'l escal.
Structures	17,893	18,500	19,100	19,800	20,500	21,200	by gen'l escal.
Pumping	269,930	288,800	309,000	330,600	353,700	378,500	by pumping escal.
Annual Programs (STEP conversion,telemetry)	420,000	434,700	449,900	465,600	481,900	498,800	by gen'l escal.
Maintenance of Mains	190,025	196,700	203,600	210,700	218,100	225,700	by gen'l escal.
Services	88,123	91,200	94,400	97,700	101,100	104,600	by gen'l escal.
Customer Svcs - Meter Read/Billing	68,673	71,100	73,600	76,200	78,900	81,700	by gen'l escal.
General Admin Salaries & Benes	155,425	160,900	166,500	172,300	178,300	184,500	by gen'l escal.
Admin Clerical Salaries & Benes	160,463	166,100	171,900	177,900	184,100	190,500	by gen'l escal.
Supplies - General Admin	200	200	200	200	200	200	by gen'l escal.
Othr Srv&Chg - General Admin	8,900	9,200	9,500	9,800	10,100	10,500	by gen'l escal.
Insurance - Property & Liability	120,000	124,200	128,500	133,000	137,700	142,500	by gen'l escal.
Supplies - General Operations	2,000	2,100	2,200	2,300	2,400	2,500	by gen'l escal.
Fuel Consumed - Gen Ops	10,000	10,400	10,800	11,200	11,600	12,000	by gen'l escal.
Transportation Equip.	12,084	12,500	12,900	13,400	13,900	14,400	by gen'l escal.
Othr Srv&Chg - General Ops	15,300	15,800	16,400	17,000	17,600	18,200	by gen'l escal.
Utility Tax State	54,000	55,900	57,900	59,900	62,000	64,200	by gen'l escal.
Utility Tax City	160,000	165,600	171,400	177,400	183,600	190,000	by gen'l escal.
Other Admin (safety train)	1,000	1,000	1,000	1,000	1,000	1,000	by gen'l escal.
Subtotal Operations	3,195,161	3,316,500	3,442,600	3,573,800	3,710,400	3,852,600	