LAKE WHATCOM WATER AND SEWER DISTRICT
1220 Lakeway Drive
Bellingham, WA 98229

REGULAR MEETING OF THE BOARD OF COMMISSIONERS

AGENDA

February 12, 2020

6:30 p.m. – Regular Session

1. CALL TO ORDER

2. PUBLIC COMMENT OPPORTUNITY
   At this time, members of the public may address the Board of Commissioners. Please state your name prior to making comments.

3. ADDITIONS, DELETIONS, OR CHANGES TO THE AGENDA

4. CONSENT AGENDA

5. SPECIFIC ITEMS OF BUSINESS
   A. Approval of Distribution of Draft Comprehensive Sewer Plan for Agency Review
   B. 2020-2024 Lake Whatcom Management Program Work Plan Approval
   C. Vacuum Truck Purchase Approval

6. OTHER BUSINESS

7. STAFF REPORTS
   A. General Manager

8. PUBLIC COMMENT OPPORTUNITY

9. ADJOURNMENT

AGENDA BILL Item 4		**Consent Agenda**	
DATE SUBMITTED:	February 6, 2020	MEETING DATE:	February 12, 2020
TO: BOARD OF COMMISSIONERS		FROM: Rachael Hope	
GENERAL MANAGER APPROVAL			
ATTACHED DOCUMENTS		1. See below	
		2.	
		3.	
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☒ / INFORMATIONAL /OTHER ☐

****TO BE UPDATED 2.12.2020****

BACKGROUND / EXPLANATION OF IMPACT

- Minutes for the January 29, 2020 Board Meeting
- Payroll Taxes for Q4 2019 totaling $5,417.38
- Payroll for Pay Period #03 (01/25/2020 through 02/07/2020) total to be added
- Payroll Benefits for Pay Period #03 total to be added
- Accounts Payable Vouchers total to be added

FISCAL IMPACT

Fiscal impact is as indicated in the payroll/benefits/accounts payable quantities defined above. All costs are within the Board-approved 2020 Budget.

RECOMMENDED BOARD ACTION

Staff recommends the Board approve the Consent Agenda.

PROPOSED MOTION

A recommended motion is:

"I move to approve the Consent Agenda as presented."

LAKE WHATCOM WATER AND SEWER DISTRICT
1220 Lakeway Drive
Bellingham, WA 98229

REGULAR SESSION OF THE BOARD OF COMMISSIONERS
Minutes
January 29, 2020

Board President Laura Abele called the Regular Session to order at 8:02 a.m.

Attendees:
Commissioner Laura Abele
Commissioner Todd Citron
Commissioner John Carter
Commissioner Bruce Ford
Commissioner Leslie McRoberts
General Manager Justin Clary
Assistant General Manager/Dist. Engineer Bill Hunter
Finance Manager/Treasurer Debi Denton
Operations & Maintenance Manager Brent Winters
Recording Secretary Rachael Hope
Consulting Engineer Melanie Mankamyer

No public were in attendance.

Consent Agenda

Action Taken
McRoberts moved, Carter seconded, approval of:

- **Minutes for the December 26, 2019 Board Meeting**
- **Minutes for the January 08, 2020 Board Meeting**
- **Payroll for Pay Period #01 (12/28/2019 through 01/10/2020) totaling $42,611.07**
- **Payroll Benefits for Pay Period #01 totaling $50,677.17**
- **Payroll for Pay Period #02 (01/11/2020 through 01/24/2020) totaling $50,519.40**
- **Payroll Benefits for Pay Period #02 totaling $33,736.91**
- **Accounts Payable Vouchers totaling $210,723.64**

Motion passed.

General Manager's Report
Clary updated the Board on several topics, including the commissioner briefing schedule for 2020, progress on the On-site Sewage Impact Assessment with Herrera Consulting, and an invitation extended to the District from the Washington Water Regional Resiliency Assessment Program to participate in a program to help increase readiness for natural disasters. Discussion followed.

Engineering Department Report
Hunter presented the Board with a new format for the engineering department's monthly report, including the replacement of the full project log with a one-page at-a-glance summary. He gave updates on ongoing projects, including upcoming bid openings and 2020 issued water availability forms. Discussion followed.

Finance Department Report

Denton highlighted year end summaries for 2019 and the financial report for the 4th quarter of 2019. Discussion followed.

Operations Department Report

Winters reported that we have had no safety incidents or near misses. He apprised the board of ongoing safety training activities, sewer pipe assessment standards training, and progress on the purchase of a new vac truck. Discussion followed.

Abele commended District crew members for timely notification and repair of a water meter issue at her property, for good communication and expeditious repair.

With no further business, Abele adjourned the Regular Session at 8:59 a.m.

_____ _____

Recording Secretary, Rachael Hope Date Minutes Approved

_____ _____

Laura Abele Todd Citron

_____ _____

Bruce R. Ford Leslie McRoberts

_____

John Carter

2019-4th Qtr Payroll taxes

CHECK REGISTER

Lake Whatcom W-S District
MCAG #: 2330

Time: 14:55:44 Date: 01/29/2020
01/29/2020 To: 01/29/2020 Page: 1

Trans	Date	Type	Acct #	Chk #	Claimant	Amount	Memo
352	01/29/2020	Payroll	5	10025	WA ST DEPT OF EMPLOYMENT SECUR	177.83	4th Quarter 10/01/2019 - 12/31/2019
353	01/29/2020	Payroll	5	10026	WA ST DEPT OF LABOR AND IND	5,239.55	4TH Quarter 10/01/2019 - 12/31/2019
		401 Water Fund				3,464.39	
		402 Sewer Fund				1,952.99	
						5,417.38	Payroll: 5,417.38

I do hereby certify, under penalty of perjury, that the above is an unpaid, just, and due obligation as described herein, and that I am aithorized to certify this claim.

Sign _____ **Date** 1/29/2020

Board Authorization - As the duly elected board for this district we have reviewed the claims listed and approve the payment with our signatures below.

_____ **Commisioner**

_____ **Commisioner**

_____ **Commisioner**

_____ **Commisioner**

_____ **Commisioner**

AGENDA BILL Item 5.A	**Distribution of 2020 Update to the Comprehensive Sewer Plan for Agency Review**			
DATE SUBMITTED:	January 21, 2020	MEETING DATE:	February 12, 2020	
TO: BOARD OF COMMISSIONERS		FROM: Bill Hunter, Assist. GM/District Engineer		
GENERAL MANAGER APPROVAL				
ATTACHED DOCUMENTS		1. Comprehensive Sewer Plan Report, 2020 Update		
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☒	INFORMATIONAL /OTHER ☐

BACKGROUND / EXPLANATION OF IMPACT

The District owns and operates a sanitary sewer collection and conveyance system that is comprised of approximately 75 miles of pipeline and 28 sewer lift stations. All sewage collected by the District's system is conveyed to city of Bellingham's system for treatment at the city's Post Point wastewater treatment plant.

The District maintains a comprehensive sewer plan that summarizes the existing system and defines future system improvements to accommodate growth and maintain existing system function through proactive replacement of applicable facilities. The plan is developed to comply with the Whatcom County comprehensive plan, the requirements of the State Growth Management Act (GMA), and Washington Administrative Code Section 173-240-050. The existing plan was approved by the Washington State Department of Ecology on June 6, 2014. Per state statute, the District is required to update the plan every six years. As such, included within the 2019 Budget is funding for update of the existing plan. The District's consultant engineer, Wilson Engineering, has developed an update to the plan that is now ready for agency review prior to final District adoption. The draft plan was provided electronically to the Board during its regularly scheduled November 11, 2019 meeting to provide sufficient time for Board review prior to action.

An updated version of the Report for the 2020 Sewer Comp Plan is attached. The full Comp plan as it will be distributed will be available on the District website for review on Monday, February 10, 2020.

FISCAL IMPACT

As this is an infrastructure system planning document, capital improvements are included within it for integration into the District's six-year capital improvement program. Associated costs will be integrated into the rate study scheduled for completion in 2020 and into subsequent District budgets during the applicable planning year(s).

RECOMMENDED BOARD ACTION

Staff recommends the Board approve the distribution of the draft comprehensive sewer plan to applicable State agencies for review.

PROPOSED MOTION

A recommended motion is:

> "I move to approve the distribution of the 2020 update to the comprehensive sewer plan to applicable State agencies for review as presented."

LAKE WHATCOM WATER AND SEWER DISTRICT
1220 Lakeway Drive
Bellingham, Washington 98229

COMPREHENSIVE SEWER PLAN
2020 UPDATE

BOARD OF COMMISSIONERS:

Laura Abele, President
Todd Citron, Secretary
John Carter, Commissioner
Bruce Ford, Commissioner
Leslie McRoberts, Commissioner

Justin Clary, PE, General Manager

Prepared By:
WILSON ENGINEERING, L.L.C.
805 Dupont Street, Suite #7
Bellingham, Washington 98225
(360) 733-6100 (office); (360) 647-9061 (fax)

WILSON ENGINEERING

February 2020

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Average dry weather flow	The average non-storm flow over 24 hours during the dry months of the year (May through September). It is composed of the average sewage flow and the average dry weather inflow/infiltration.
Average wet weather flow	The average flow over 24 hours during the wet months of the year (October through April) on days when no rainfall occurred on that or the preceding day.
BMPs	Best management practices
CAOs	Critical Areas Ordinances
CIP	Capital improvement program
City	City of Bellingham
Clean Water Act (CWA)	Also known as the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).
Collection main	In collection systems, this is a larger pipe in which smaller branch and submain sewers are connected. The collection main may also be called a main or trunk sewer.
Collection system	In a wastewater system, a collection system is a system of pipes which receives and conveys sewage and/or storm water.
County	Whatcom County
District	Lake Whatcom Water and Sewer District
DOH	Washington State Department of Health.
Domestic wastewater	Human-generated sewage that flows from homes and businesses.
DNR	Washington Department of Natural Resources
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency.
ERU	Equivalent Residential Unit
ESA	Endangered Species Act
Fecal coliform bacteria	A group of organisms common to the intestinal tracts of humans and animals. The presence of fecal coliform bacteria in water, wastewater, or biosolids is an indicator of pollution and possible contamination by pathogens.
Force main	A pipeline leading from a pumping station that transports wastewater under pressure.

GMA	Growth Management Act
GPD	A measurement of flow rate expressed in gallons per day.
gpcd	gallons per capita per day (gallons per person per day)
HDPE	High-density polyethylene pipe
HOA	home owner's association
HPA	Hydraulic Project Approval
I & I	Infiltration and inflow
Infiltration	The penetration of water from the land surface into the soil, or the penetration of water from the soil into a sewer system by such means as defective pipes, pipe joints or connections, or manhole walls.
Inflow	Flows of extraneous water into a wastewater conveyance system from sources other than sanitary sewer connections, such as roof leaders, basement drains, manhole covers, and cross-connections from storm sewers.
Interceptor sewers	The portion of a collection system that connects main and trunk sewers with the wastewater treatment plant, thereby controlling the flow into the plant.
LAMIRD	Limited Area of More Intense Rural Development
Large On-site sewage treatment system (LOSS)	A DOH permitted facility receiving less than 100,000 gpd of sewage from residential sources.
Lateral sewers	Pipes that receive sewage from homes and businesses and transport that sewage to trunks and mains.
LLRI	Lake Louise Road Interceptor
LWBI	Lake Whatcom Boulevard Interceptor
LWMP	Lake Whatcom Management Program
Main sewer	This is a larger pipe in which smaller branch and submain sewers are connected. It may also be called a trunk sewer.
MG	Million gallons, a measure of liquid volume.
MGD	A measurement of flow rate expressed in millions of gallons per day.
mg/L	A measurement of concentration in milligrams per liter sometimes expressed as parts per million (ppm).
National Pollutant Discharge Elimination System (NPDES)	Section 402 of the U.S. Clean Water Act, which prohibits discharge of pollutants into navigable waters of the United States unless a special permit is issued by EPA, a state, or (where delegated) a tribal government on an Indian reservation.

NPDES Permit	Permit issued under the National Pollution Discharge Elimination System, which establishes reporting requirements and other conditions for discharge of pollutants to receiving waters.
OSS	Residential on-site sewage treatment system
O&M	operation and maintenance
Pathogens	Microorganisms that can cause disease in other organisms or humans, animals, and plants. Pathogens include bacteria, viruses, fungi, or parasites found in sewage, in runoff from farms or city streets, and in water used for swimming. Pathogens can be present in municipal, industrial, and nonpoint source discharges.
Peak flow	The maximum flow expected to enter a facility.
Pump station	A pump station is used when sewer trunk lines have conveyed flows to a low-lying area. The pump station lifts the wastewater up to a point where it can flow by gravity to a wastewater treatment plant or another pump station
PVC	polyvinyl chloride pipe
Raw sewage	Untreated wastewater.
RCW	Revised Code of Washington
Sewer Basin / Zone	The land area tributary to a collection system point that includes all sources of the wastewater at issue.
Side sewer	A privately owned and maintained sewer which connects the plumbing system of the building to the public sewer pipes.
State Environmental Policy Act (SEPA)	A state law (Chapter 43.21C RCW) that requires state agencies and local governments to consider environmental impacts when making decisions about certain activities, such as development proposals over a certain size, and comprehensive plans. As part of this process, environmental impacts are documented and opportunities for public comment are provided.
SVCA	Sudden Valley Community Association
Telemeter	To transmit to a distant receiving station by radio or other electronic means.
TMDL	total maximum daily load
Treatment	Chemical, biological, or mechanical procedures applied to industrial or municipal wastewater or to other sources of contamination to remove, reduce, or neutralize contaminants.

Trunk sewer	This is a larger pipe in which smaller branch and submain sewers are connected. It may also be called a main sewer.
UGA	Urban Growth Area
ULID	Utility Local Improvement District
WAC	Washington Administrative Code
Wastewater collection system	The piping and pumping system used for the collection and conveyance of domestic, commercial, and industrial wastewater.
Water quality criteria	Standards used to protect of water for drinking, swimming, raising fish, farming or industrial use.
Watershed	Lake Whatcom Watershed
Wastewater Treatment Plant (WWTP)	An Ecology-permitted water pollution control facility intended to remove pollutants from wastewater and provide disinfection before discharge.
WCC	Whatcom County Code
WDFW	Washington Department of Fish and Wildlife

I. BACKGROUND

A. Scope and Objective of Update

1. General

This updated Comprehensive Sewer Plan for Lake Whatcom Water and Sewer District (District) has been prepared at the request of the District Board of Commissioners and in accordance with the Washington State Department of Ecology (Ecology) guidelines as presented in Washington Administrative Code (WAC) 173-240-050.

In accordance with Revised Code of Washington (RCW) 57.16.010, the District's Comprehensive Sewer Plan is submitted to the following persons and/or agencies for review and approval:

- Washington State Department of Ecology
- Director, Whatcom County Health Department
- County Engineer, Whatcom County Public Works Department
- Whatcom County Council

2. Scope and Objective

The purpose of this report is to provide a comprehensive overview of the existing sewage installations and treatment facilities operated and maintained by Lake Whatcom Water and Sewer District. In addition, this report addresses potential future facilities development and projected population growth.

This report will cover the following topics:

- system owner/operator information,
- sewer system layout including a description of the existing system boundaries,
- description of existing collection facilities including recently completed improvements,
- discussion of development trends within sewer district boundaries,
- discussion of existing and future collection and treatment issues such as existing and future sewer flows, and infiltration/inflow (I&I),
- discussion of sewer rate structure and revenue planning,
- discussion of present and future development alternatives within the district boundaries,
- outline of future improvement projects within the District.

3. Overview of Growth Management Implications on this Sewer Plan Update

This update of the Comprehensive Sewer Plan for the District seeks to comply with the Whatcom County Comprehensive Plan and the requirements of the Washington State Growth Management Act (GMA), Chapter 36.70A RCW. The primary reasons for Lake Whatcom Water and Sewer District to update its plan at this time are:

- to ensure compliance with RCW requiring regular updates,

- to incorporate capital improvements made in the last several years,
- to outline and update the District's Capital Improvement Plan, and
- to ensure the District's ability to set and collect appropriate General Facilities Charges (i.e. connection charges) and sewer service charges for all District facilities.

The District owns and operates wastewater facilities in unincorporated Whatcom County. The District boundary includes the area around Lake Whatcom that is not part of the City of Bellingham. The District operates collection systems on both the north and south shore of Lake Whatcom and now has twenty-six sewer pump stations (after replacing Country Club Pump Station with a gravity main and decommissioning the pump station in 2019), all located in Whatcom County.

Whatcom County is the land-use planning and permitting authority for the District area. Whatcom County Comprehensive Plan Policy 5T-1 is to "Discourage extension of sewer lines in areas not designated as urban growth areas or Rural Communities, except in those limited circumstances shown to be necessary to protect basic public health and safety and the environment and when such services are financially supportable at rural densities and do not permit urban development" (see also Policy 2EE-4). Although not presently permitted under GMA or by its current comprehensive plan, Whatcom County previously approved development and lot creation at urban densities around Lake Whatcom, both inside and outside of what are now designated as urban growth areas (UGAs) and limited areas of more intense rural development (LAMIRDs, Whatcom County Code [WCC] 20.80.100). This Comprehensive Sewer Plan endeavors to be consistent with the provisions contained in the Whatcom County Comprehensive Plan. However, the forecasting included in this Plan is based on the District's judgment that, where such residential development already exists or is permitted under previous Whatcom County subdivision and development approvals, these urban-density properties should be connected to public sewers and on-site septic systems (OSS) should not be allowed.

In accordance with the District's Administrative Code, properties that lie within the District's boundaries are generally required to connect to the sewer if the property lies within 200 feet of the public sewer and is inside of a UGA or LAMIRD, or within 150 feet of the public sewer and is outside of a UGA or LAMIRD.

B. System Owner/Operator Information

1. District Office Location and Governing Information

The sewer collection facilities covered in this report are owned and operated by:

Lake Whatcom Water and Sewer District (formerly Whatcom County Water District 10)
1220 Lakeway Drive
Bellingham, Washington 98229
(360) 734-9224 – Office Telephone
(360) 738-8250 – Office Fax

The District is administered by a five-person Board of Commissioners (Board) who are each elected to six (6) year terms. This Board meets twice monthly and holds special sessions as the need arises.

2. District Operations Information

The District is responsible for planning, construction, operation and maintenance of all public sewer facilities within the District's boundaries around Lake Whatcom, Washington. In addition, the District is responsible for operation and maintenance of a 10-inch force main and a 12-inch force main and several gravity mains operating between the District's sewer collection system and the City of Bellingham's sewer collection system for transport to the City's Post Point Wastewater Treatment Plant. The operations and maintenance of the District's facilities is overseen by the General Manager who works with a support staff consisting of an Assistant General Manager/Engineer, Finance Manager, Operations and Maintenance Manager, and six other office administrative / technical staff members. The field crew consists of an additional eight employees. The District contracts for legal counsel, consulting engineers, and auditors. The District operates out of their office at 1220 Lakeway Drive, and their maintenance facility at 1010 Lakeview Street, Bellingham, Washington.

C. Existing District Boundaries and Sewer System Locations

1. General District Boundary Information

Lake Whatcom Water and Sewer District (formerly Whatcom County Water District No. 10) was originally formed in November 1968 to provide sewer service to the residences around Lake Whatcom that were not already served by the City of Bellingham. In 1971 a sewer interceptor between Sudden Valley and Geneva was constructed to transport sewage to the City of Bellingham for treatment. At the same time, a series of utility local improvement districts (ULID Nos. 1-5) were established in Geneva and Edgewater Lane (on North Shore) for the construction of branch collector sewers. Collector sewers and pump stations were installed in Sudden Valley as each platted Division was developed. Subsequent to formation, the District assumed control and operation of the Sudden Valley Development water and sewer system on January 1, 1977, and of the Geneva Water Corporation July 1, 1977.

In the late 1970s, the District helped establish two utility local improvement districts (ULID No. 11 and ULID No. 16) and constructed the majority of the North Shore Sewer System. These two ULIDs financed the main interceptor and pump stations. Developer extension agreements have expanded the sewer collection system to include the Eagleridge, Agate Heights, and Edgewood subdivisions.

The District boundary includes areas in southwestern Whatcom County which are situated around and/or in the immediate vicinity of Lake Whatcom. The extent of the District's existing boundaries is detailed on Exhibit A.

Lake Whatcom Water and Sewer District can be divided into the following three main components for the purpose of analyzing its wastewater systems:

a. Sudden Valley - Geneva Collection System – The District owns and operates a wastewater collection and force main transport system on the south-west shore of Lake Whatcom serving the Geneva area, the Sudden Valley Divisions and adjacent areas.
b. North Shore Collection System – The District owns and operates a wastewater collection and force main transport system on the north and north-east shore of Lake Whatcom serving many of the properties along Northshore Drive outside of City of Bellingham city limits. There are approximately 100 residences on septic systems within 200 feet of Lake Whatcom that are within the District's boundary but beyond the extents of the existing wastewater collection and force main transport system.
c. South Bay / Blue Canyon Study Area – This area is included within the District's official boundary and encompasses the area adjacent to the southern end of Lake Whatcom. The District does not currently provide water or sewer service to the existing developed properties in the South Bay / Blue Canyon Study Area, so all rely on septic systems and wells or lake draws for drinking water. In late 2006, the District was approached by a developer interested in sewer service in this Study Area, and a feasibility study was completed. The study was incorporated in the District's 2008 Comprehensive Sewer Plan because it includes an area-wide analysis with comprehensive planning information. Because the Growth Management Act limits sewer extensions outside of defined urban areas, the District is not actively pursuing extending service to the South Bay / Blue Canyon Study Area, which is not a designated UGA or LAMIRD, as allowed under WCC 20.80.100, in the Whatcom County Comprehensive Plan. However, extending sewer service to already-built areas in the Lake Whatcom watershed is one approach to reducing phosphorus and/or bacteria loading and would support the Lake Whatcom total maximum daily load (TMDL) reduction goals.

More information on the topography, geology, hydrology and soils of each area can be found in Section VII, Exhibit N - Study Area Characteristics.

2. Public Water System Information

The District owns and operates public water systems within its boundaries in Whatcom County. The District's Water System Comprehensive Plan was approved by the Washington State Department of Health (DOH) on October 3, 2018 and by Whatcom County Health Department March 2018.

There are several small Group A and Group B water systems that also operate within the District's boundaries which are shown in Exhibit H.

The District operates sewer collection and transmission facilities only. The District does not have existing domestic wastewater treatment facilities, nor is it proposing any new domestic wastewater treatment facilities. Therefore, it is not necessary to include a discussion or map of the relationship between the location of existing private and public wells, other sources of water supply, and water distribution structures and domestic wastewater treatment facilities in this sewer plan.

II. EXISTING FACILITIES

A. Wastewater Collection and Delivery System

This section describes and analyzes the existing District facilities which are divided into two service areas:

- Sudden Valley - Geneva Collection System;
- North Shore Collection System.

Analysis of the existing and future projected wastewater flows for the system, as well as a discussion of the system inflow and infiltration, is included. Hydraulic modeling of both service areas was also performed and discussion is included.

1. Sudden Valley – Geneva Collection System

a) System Description

Originally put into service between 1970 and 1975, the Sudden Valley sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding either the interceptor system along Lake Whatcom Boulevard (LWB) or the Lake Louise Road (LLR) interceptor with lift stations, pump stations and force mains. This system provides sewage collection for all service connections inside the Sudden Valley subdivisions and delivers this wastewater via either the LWB interceptor or the LLR interceptor to the City of Bellingham for treatment. The Geneva sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding the LWB interceptor. Each sewer lift station or pump station installation is comprised of a wet well, dry-pit or top-mounted pumping equipment, local pump station controls and telemetry communication system. In addition, fourteen lift stations are connected to emergency backup generators to ensure normal pump station operation in the event of a power outage. The remaining lift stations are equipped with onsite generator receptacle outlets for connection to the District's portable generators in the event of a power outage and Camp Firwood PS has an automatic transfer switch with a dedicated portable generator on site Fall through Spring.

Table 1 summarizes the collection and delivery system components for the Sudden Valley - Geneva Collection System. Reference Exhibits B-1 to B-3 for additional information and mapping for this system.

Table 1: Sudden Valley - Geneva Collection System - Component Listing

System Component	Approximate Quantity
Sewer Manholes	1,790
Sewer Lift Stations	23
SV Sewer Detention Basin	1 @ 725,000 gallon capacity
4-inch Force Main	4,920 LF
6-inch Force Main	4,665 LF
8-inch Force Main	6,625 LF
10-inch Force Main	20,380 LF
12-inch Force Main	28,135 LF
15-inch Force Main	160 LF
6-inch Gravity Branch Sewer	13,275 LF
8-inch Gravity Branch Sewer	298,779 LF
10-inch Gravity Branch/Interceptor Sewer	8,620 LF
12-inch Gravity Sewer Interceptor	4,810 LF
14-inch Gravity Sewer Interceptor	5,090 LF
Total LF of Pipe	***395,459 LF***

The District has completed several improvement projects included in the previous Comprehensive Plan. These included smoke testing and video inspection to find leaks or illicit connections, spot repairs of leaking gravity mains, and grouting of leaking manholes. Over the past several years the District has installed manhole inserts (dishes) in areas with a high risk of flooding or surface water flow to reduce inflow into the collection system.

Additionally, the District has an ongoing program to upgrade its aging sewer lift stations. For some, the equipment has been completely replaced (including wet wells); others have been upgraded with new pump impellers and refurbished motors, and one has been taken out of service having been replaced by a gravity main. Table 2 lists the pump stations that have been upgraded since 2014.

Table 2: Sudden Valley-Geneva Collection System – Sewer Lift Station Upgrades Completed

Sewer Lift Station	Upgrade Description
Strawberry Point Pump Station (2016)	Smith & Loveless top-mounted pump station converted to a submersible pump station with new duplex pumps, increased capacity, new controls and telemetry, and wetwell rehabilitation.
Par Pump Station (2018)	Smith & Loveless top-mounted pump station converted to a submersible pump station with new duplex pumps, VFDs, controls and telemetry, wetwell rehabilitation and relocated emergency generator receptacle for easier access adjacent to the road.
Geneva Pump Station (2019)	Smith & Loveless top-mounted pump station converted to a submersible pump station with new duplex pumps, controls, power service, telemetry, wetwell rehabilitation and new standby generator.

Sudden Valley Pump Station (2016)	Replaced level transmitters with new submersible level transmitter and radar level transmitters for redundant wetwell level monitoring.
Beaver Pump Station (2018)	Replaced level transmitters with new submersible level transmitter and radar level transmitters for redundant wetwell level monitoring.
Flat Car Pump Station (2017) (2018)	Emergency bypass pipe and fittings procured and stored at the pump station for emergency redirection of flow from Flat Car to Sudden Valley Pump Station for maintenance and repairs of Beaver Pump Station and Lake Louise Road Interceptor. Replaced level transmitters with new submersible level transmitter and radar level transmitters for redundant wetwell level monitoring.
Strawberry Canyon Pump Station (2017)	New standby generator, I&I repairs and re-route of the overflow path of existing 500,000 gallon water reservoir out of this basin, because an overflow would inundate the station in the event of an overflow.
Lowe Pump Station (2018)	Replace aging Rotophase unit with VFDs.
Marina & Tomb Pump Stations (2016)	New standby generator (operates both pump stations).
Airport Generator (2019)	New standby generator.
Country Club Pump Station (2019)	New gravity sewer main installed by HDD methods enabled removal of pump station.
Camp Firwood Pump Station (2018)	New automatic transfer switch to operate a seasonally-dedicated towable generator.

The District has also completed several other projects that add to the operational flexibility of the sewer system. Table 3 lists the projects that have been completed since 2014.

Table 3: Sudden Valley-Geneva Collection System –Sewer System Projects Completed

	Upgrade Description
Sewer Capacity, Management, Operations and Maintenance (CMOM) Projects (on-going)	Smoke testing, pressure grouting and cure-in-place pipe (CIPP) repairs.
Whatcom Falls Manhole Sewer Rehab (2016)	Replaced a deteriorating 48-inch diameter sewer manhole in Whatcom Falls Park with a new 60-inch manhole with fiberglass reinforced plastic (FRP) liner and connecting piping.
Sewer Push Camera (2018)	The District purchased a portable sewer push camera for use in small diameter, 4 and 6-inch, pipes. This camera supplements the District's camera van inspection system.

Lake Whatcom Boulevard Interceptor Valve (2017)	Install gate valve inside an existing sewer manhole to allow for flow control of North Point Pump Station during wet weather events. Closing this valve routes North Point Pump Station flows through the Lake Louise Road Interceptor, allowing Airport Pump Station to pump without competing with North Point pumps.
Compulsory Sewer Connections (on-going)	Project compelled several single family residences with on-site sewage disposal systems to connect to public sewer. Additional compulsory sewer connections ongoing.
Backhoe (2019)	The District purchased a new CAT 420F2 HRC Backhoe to aid in ongoing operations and maintenance projects.
Vac Trucks (used - 2014; new - 2020)	The District purchased a used VacCon V390LHA and a new Vactor 2100-I to aid in ongoing operations and maintenance projects.
Boom Truck (2013)	The District purchased a new F-550 with Liftmoore crane to aid in ongoing operations and maintenance projects. (2013)

b) Inflow and Infiltration

As stated previously, the Sudden Valley- Geneva sewer collection system consists of 6-inch to 12-inch gravity lateral sewers feeding either of two interceptor systems with lift stations and force mains. The District regularly conducts video inspections of the gravity sewers to determine locations and severity of inflow and infiltration, and schedule repairs. The District has also completed projects in the South Shore collection system to reduce I&I including installing manhole dishes in areas of high surface inflow, and smoke testing to look for areas of likely I&I and illegal drain connections.

Previous analyses of the District's I&I were based on the evaluation criteria outlined in the Sewer System Infrastructure Analysis and Rehabilitation Handbook (EPA/625/6-91/030) for construction grant applicants:

> "No further I/I analysis will be necessary if domestic wastewater plus non-excessive infiltration does not exceed **120 gallons per capita per day (gpcd)** during periods of high groundwater. The total daily flow during a storm should not exceed **275 gpcd**, and there should be no operational problems such as surcharges, bypasses or poor treatment performance resulting from hydraulic overloading of the treatment works during storm events."

The results of the 2011-2012 I&I analyses indicated that the Sudden Valley- Geneva sewer collection system inflow and infiltration rates were substantially lower than the EPA criteria. During periods of high groundwater, the domestic wastewater plus non-excessive infiltration ranged from 69-73 gpcd and did not exceed 120 gpcd. The

total daily flow during a storm ranged from 169-174 gpcd and did not exceed 275 gpcd. The total daily flow during dry weather/no rain ranged from 56-60 gpcd.

While the South Shore I&I levels are within the EPA's guidelines, the District recognizes that I&I is an ongoing, costly issue. The District continues to search for sources of I&I and has developed a methodology using sewer flow meters and historical pump run times from its SCADA system to identify problem sewer basins by the excess flows when compared to the driest month (typically August). These areas are targeted for video inspection or smoke testing to identify non-compliant connections and/or specific problems that can then be included in a repair contract.

In 2019 the District purchased a portable weir for fitting inside 8-inch sewer mains. The weir is a Thel-Mar volumetric weir that can be used to analyze changes in flowrates comparing dry weather flows to flows during rain events. The weir will be deployed in targeted locations in an effort to narrow the areas for video inspection or smoke testing.

The I&I analysis and calculations based on pump run times is included in Exhibit C .

c) Existing Wastewater Flows

As of October 2019, the District provides sewer service to approximately 3,653 customers within the Sudden Valley-Geneva Collection System. All residential service connections are un-metered and based upon a usage assessment of one (1) equivalent residential unit (ERU) per connection. The non-residential connections (schools, camps, strip mall, etc.) are charged based on the number of equivalent residential units the facility represents, as determined by the District's Administrative Code. The number of ERUs served by the District within the Sudden Valley-Geneva Collection System is 3,953 (October 2019). Based on data from January 2018 – September 2019, monthly influent flows through the meters from the Sudden Valley-Geneva Collection System have averaged 20.6 million gallons per month, or about 705,000 gallons per day. The average daily flow per existing ERU is approximately 179 gallons per day including inflow and infiltration, or **67** gpdc (at **2.67** residents per ERU). The same data set yields a minimum month average daily flow per existing ERU of approximately 111 gallons per day, or **40** gpdc, and a maximum month average daily flow per existing ERU of approximately 298 gallons per day, or 111 gpdc. See Table 4 below.

The District's contract with the City of Bellingham specifies a maximum flow rate which is discussed in detail in Section C - City of Bellingham Wastewater Treatment Plant, 1. Wastewater Treatment Agreement. The District operates within those contract limits.

d) Future Projected Wastewater Flows

To finance the construction of the Lake Louise Road Interceptor project, the District formed Utility Local Improvement District (ULID) 18. All vacant properties within the Geneva and Sudden Valley "urban growth areas" (UGAs)[1] were included in the

[1] Sudden Valley was later defined as a Limited Area of More Intense Development (LAMIRD).

benefit area unless the property owner "opted out" and restricted the property from development for twenty-five years (ending in 2028). Properties not included in the UGAs but abutting the benefit area and the project improvements were allowed to "opt-in". Of the 1,100 parcels originally restricted, approximately 50 are "vacant" and not combined with other parcels or otherwise permanently restricted per recent Whatcom County assessor data. These 50 vested properties could potentially be developed starting in 2028. These numbers should be revisited and possibly adjusted as the restriction period draws to an end in 2028.

There are approximately 640 vacant parcels close enough to connect to existing sewer mains in the Sudden Valley-Geneva Collection System boundaries. See Table 4 below for existing and buildout projections.

Although projected wastewater flows were previously calculated the two ways – using the South Shore flow meter data and using industry-standard rates –the two numbers were diverging. The metered data shows a decrease in flows per ERU from 195 GPD to 180 GPD. The industry standard uses 100 GPD per person, and the number of persons per household has increased from 2.6 to 2.67[2]. The design standard would then be 267 GPD per ERU, which is 48% higher than the number derived from the metered data. The District has elected to use the metered data since it is a more accurate representation of actual conditions.

Based on the annual average metered wastewater flows, and a peak wastewater flow calculated using a peaking factor, Sudden Valley-Geneva Collection System is projected to have the following average and peak daily flows:

[2] Sudden Valley and Geneva, 2017 American Community Survey by the U.S. Census Bureau, weighted average

Table 4: Sudden Valley-Geneva Study Area – Population / Flow Projections

Study Area: Sudden Valley / Geneva	LWWSD Existing (2019)	Whatcom County Projections Year-2036	LWWSD Projections 20 years – 2039 (@15 ERU/year*)	LWWSD Projections Full build-out ***
Equivalent Residential Units ERUs* (Service connections)	3,953 (3,653)	Households : 4,333	4,253 (3,953)	4,657 (4,357)
Population Estimate (2.67 residents per service)	10,555	11,222 (@ 2.59persons /household)	11,356	12,434
Projected Average Daily Flow (GPD): Flow Meter Average - 180 GPD per ERU	711,540 GPD	779,940 GPD	765,540 GPD	838,260 GPD
Projected Peak Daily Flow (GPM): Flow Meter Average x 3 Peaking Factor	1,482 GPM	1,625 GPM	1,595 GPM	1,746 GPM

* For most future growth, assume 1 connection = 1 ERU. Vacant parcels larger than 5 acres were allocated 1 ERU/5 acres.

** Assumes a 90%/10% split between South Shore and North Shore service areas; does not allocate any growth to South Bay / Blue Canyon.

*** Reduction includes permanently restricted lots, substandard lots with adjacent ownership, shorelands, etc.

It should be noted that the population and connection projections used for this report will not exactly match projections made by the City of Bellingham or Whatcom County, primarily because the sewer service area boundaries are different than the boundaries used by the City and County. In addition, sewer planning analyses typically "round up" when determining potential connections to avoid future capacity issues, while the City's Annual Build-out Analysis always "rounds down", but counts all vacant parcels without making any determination regarding whether they are viable parcels for development.

e) Hydraulic Modeling

Hydraulic modeling of portions of the South Shore collection system trunk mains was performed for the District's Comprehensive Sewer Plan - 2014 Update to evaluate capacity during peak hourly wet weather flow conditions. The physical model network consisted of the Sudden Valley Pump Station, LWBI force main, LWBI gravity main, and Cable Street Pump Station. The South Shore model was used to simulate several operational scenarios that the District typically uses. Conditions have not materially changed and the previous results are still valid and are summarized below. (The Lake Louise Road Interceptor design in 2001 sufficiently addressed the various operating scenarios through build-out conditions).

Hydraulic modeling of the Lake Whatcom Boulevard Interceptor (LWBI) trunk main portion of the South Shore system was performed to evaluate capacity for multiple operational scenarios during peak hourly wet weather flow conditions. This full analysis can be found in Exhibit D of the 2014 Comprehensive Sewer Plan Update.

The standard District operating mode sends the flow from the Sudden Valley Pump Station (via Flat Car PS) to the Lake Louise Road Interceptor (LLRI) – the former "High Energy" scenario – because of the lack of sufficient capacity in the LWBI. The schematic for this standard operating mode is shown in Exhibit E-1.

The District maintains the capability to send flows from the Sudden Valley Pump Station and the Flat Car Pump Station to the LWBI. This operating mode is used only during dry weather and mainly to facilitate maintenance on the LLRI and its associated facilities (Flat Car and Beaver Pump Stations). This reverse mode was used during the reconstruction of the Whatcom Falls sewer manhole, which is the discharge location of the LLRI into the City of Bellingham's sewer collection system. The schematic for this reverse operating mode is shown in Exhibit E-2.

The previous model simulations identified capacity limitations in the LWBI under future (build-out) conditions and the current operating scenario (Exhibit E-1). LWBI does not have capacity for this scenario (flooding manholes and many pipes at or above capacity). Previous simulations indicate that manhole flooding along Lake Whatcom Boulevard occurs at 1,190 gpm, which is less than what is needed for buildout. One option previously identified to address this shortfall is to re-route flows from North Point PS to flow south to Sudden Valley PS, and to the LLRI instead of north to the LWBI (see Exhibit E-3). This scenario was modeled to see if there was a sufficient diversion of flows to eliminate the capacity issues.

The results indicate that by re-routing the North Point flows, the manhole flooding is eliminated. Several pipes still show that they would be at capacity, but this model did not update the flow loads to account for any reduction in residential flows since 2014. This analysis will be revisited with updated residential flows as the system gets close to having 1,190 gpm in the LWBI. More details regarding this supplemental hydraulic modeling are included in the attached Supplemental Hydraulic Analysis Technical Memorandum (Exhibit D).

2. North Shore Collection System

a) System Description

Originally put into service between 1975 and 1977, the North Shore sewer collection system consists of 6-inch to 10-inch gravity lateral sewers feeding the North Shore Road interceptor system with lift stations and force mains. This system provides sewage collection for service connections along North Shore Road and in the Eagleridge, Dellesta Park, Agate Heights, Edgewood and Georgia Point subdivisions. This wastewater is delivered to the City of Bellingham for treatment. Each lift station installation is comprised of a wet well, dry-pit or top-mounted pumping equipment, local pump station controls and telemetry communication system. One lift station is connected to an emergency backup generator to ensure normal pump station operation in the event of a power outage. The other two lift stations are equipped with onsite generator receptacle outlets for connection to the District's portable generators in the event of a power outage.

Table 5 summarizes the collection and delivery system components for the North Shore Collection System. Reference Exhibit B-4 for additional information and mapping for this system.

Table 5: North Shore Collection System - Component Listing

System Component	Approximate Quantity
Sewer Manholes	152
Sewer Lift Stations	3
4-inch Force Main	1,053 LF
8-inch Force Main	5,781 LF
6-inch Gravity Branch Sewer	402 LF
8-inch Gravity Branch /Interceptor Sewer	16,654 LF
10-inch Gravity Branch/Interceptor Sewer	7,292 LF
12-inch Gravity Sewer Interceptor	2,059 LF
15-inch Gravity Sewer Interceptor	5,838 LF
16-inch Gravity Sewer Interceptor	1,087 LF
Total LF of Pipe	***40,166 LF***

The District has also completed several projects associated with the North Shore sewer system. Table 6 lists the projects that have been completed since 2014.

Table 6: North Shore Sewer System – Projects Completed

Projects	Description
Dellesta Pump Station (Construction - 2020)	90% design and permitting complete for future pump station upgrades.
Edgewater Pump Station (Construction - 2020)	90% design and permitting complete for future pump station upgrades.
North Shore Sewer Force Main Protection (2019)	Project encased a sewer force main exposed in an existing creek bed and raised stream bed with fill and cobbles to further protect pipe and facilitate fish passage.
North Shore Sewer Extension Preliminary Investigation (2015-2017)	Preliminary investigation to determine feasibility of sewer extension to connect existing on-site septic systems.
North Shore Water Sampling (2017)	Study conducted by Herrera Environmental Consultants to determine if on-site sewage systems around Lake Whatcom impacts the water quality of Lake Whatcom. (See Exhibit M).

b) Inflow and Infiltration

As stated previously, the North Shore sewer collection system consists of 8-inch-10-inch gravity lateral sewers feeding an interceptor system with lift stations and force mains. The District regularly conducts video inspections of the gravity sewers to determine locations and severity of inflow and infiltration.

Previous analyses of the District's I&I were based on the evaluation criteria outlined in the Sewer System Infrastructure Analysis and Rehabilitation Handbook (EPA/625/6-91/030) for construction grant applicants:

> "No further I/I analysis will be necessary if domestic wastewater plus non-excessive infiltration does not exceed **120 gallons per capita per day (gpcd)** during periods of high groundwater. The total daily flow during a storm should not exceed **275 gpcd**, and there should be no operational problems such as surcharges, bypasses or poor treatment performance resulting from hydraulic overloading of the treatment works during storm events."

The results of the 2011-2012 I&I analyses indicated that the North Shore sewer collection system inflow and infiltration rates were substantially lower than the EPA criteria. During periods of high groundwater, the domestic wastewater plus non-excessive infiltration ranged from 58-86 gpcd and did not exceed 120 gpcd. The total daily flow during a storm ranged from 102-145 gpcd and did not exceed 275 gpcd. The total daily flow during dry weather/no rain ranged from 57-66 gpcd.

While the North Shore I&I levels are within the EPA's guidelines, the District recognizes that I&I is an ongoing, costly issue. The District continues to search for sources of I&I and has developed a methodology using historical pump run times from its SCADA system to identify problem sewer basins by the excess flows when compared to the driest month (typically August). These areas are targeted for video inspection smoke testing to identify specific problems that can then be included in a repair contract.

As noted previously, the I&I analysis and calculations based on metered flows and pump run times is included in Exhibit C.

c) Existing Wastewater Flows

As of October 2019, the District provides sewer service to approximately 366 customers within the North Shore Collection System. All residential service connections are un-metered and based upon a usage assessment of one (1) equivalent residential unit (ERU) per connection. The non-residential connections (residential treatment center, Agate Bay Trailer Park) are charged based on the number of equivalent residential units the facility represents, as determined by the Uniform Plumbing Code fixture count method. The number of ERUs served by the District within the North Shore Collection System is 391 (October 2019). Based on data from January 2018 – September 2019, monthly influent flows through the meters from the North Shore Collection System have averaged 1.9 million gallons per month, or about 65,600 gallons per day. The average daily flow per existing ERU is approximately 170 gallons per day including inflow and infiltration, or 67 gpdc (at 2.55 residents per ERU). The same data set yields an average minimum daily flow per existing ERU of approximately 105 gallons per day, or 41 gpdc, and an average maximum daily flow per existing ERU of approximately 264 gallons per day, or 104 gpdc. See Table 7 below.

The District's contract with the City of Bellingham specifies a maximum flow rate which is discussed in detail in Section C - City of Bellingham Wastewater Treatment Plant, 1. Wastewater Treatment Agreement. The District operates within those contract limits.

d) Future Projected Wastewater Flows

Continuing efforts by Whatcom County and the City of Bellingham have substantially reduced the potential density and developable land in the North Shore service area from what had been envisioned when the sewer collector system was designed. The County has down-zoned the area to a 5-acre minimum parcel size for any new subdivision of property. There have also been numerous land purchases and development restrictions by the City and others in the North Shore service area.

There are approximately 50-170 potential additional connections to the North Shore Collection System for an estimated 535 connections (560 ERUs) at build-out. These potential additional connections consist of previously created lots suitable for residential development under current land use regulations that are near existing sewers and existing residential development served by on-site septic systems near Lake Whatcom that could be served by sewer extensions should they be permitted in the future.

Although projected wastewater flows were previously calculated in two ways – using the North Shore flow meter data and using industry-standard rates –the two numbers were diverging. The metered data shows a decrease in flows per ERU from 180 GPD to 168 GPD. The industry standard uses 100 GPD per person, and the number of persons per household has increased from 2.5 to 2.55[3]. The design standard would then be 255 GPD per ERU, which is 50% higher than the number derived from the metered data. The District has elected to use the metered data since it is a more accurate representation of actual conditions.

The numbers presented below are the existing and projected flows for the North Shore Collection System. As discussed above, the projected flows are based on the metered data and assumes an average daily wastewater flow per ERU of 168 gallons and a peak daily wastewater flow per ERU of 672 gallons (4 times average daily flow). The twenty-year projection is based on a growth rate of 1 ERU/year, which is representative of the actual growth of recent years. The build-out projection includes the 100-125 properties at the east end of Northshore Road that currently do not have sewer available. See Table 7 below.

[3] Whatcom County, 2017 American Community Survey by the U.S. Census Bureau

Table 7: North Shore Study Area – Population / Flow Projections

Study Area: North Shore	LWWSD Existing (2019)	Whatcom County Projections Year-2036	LWWSD Projections 20 years – 2039 (@1 ERU/year*)	LWWSD Projections Full build-out***
Equivalent Residential Units ERUs* (Service connections)	391 (366)	Households**: 462	411 (394)	553 (528)
Population Estimate (2.55 residents per service)	977	11,222 (@ 2.59persons /household)	1,048	1,410
Projected Average Daily Flow (GPD): Flow Meter Average - 170 GPD per ERU	65,688 GPD	77,616 GPD	69,048 GPD	94,010 GPD
Projected Peak Daily Flow (GPM): Flow Meter Average x 4 Peaking Factor	182 GPM	216 GPM	192 GPM	261 GPM

* For all future growth, assume 1 connection = 1 ERU. No large user growth is anticipated.

** Assumes a 90%/10% split between South Shore and North Shore service areas; does not allocate any growth to South Bay.

*** Includes approximately 105 existing developed properties and 20 vacant properties at the east end of Northshore Road.

It should be noted that the population and connection projections used for this report will not exactly match projections made by the City of Bellingham or Whatcom County, primarily because the North Shore sewer service area boundaries are very different than the rural watershed area. In addition, sewer planning analyses typically "round up" when determining potential connections to avoid future capacity issues, while the City's Annual Build-out Analysis always "rounds down".

e) Hydraulic Modeling

Hydraulic modeling of the North Shore collection system trunk main was performed for the District's Comprehensive Sewer Plan - 2014 Update to evaluate capacity during peak hourly wet weather flow conditions. Conditions have not changed and the previous results are still valid.

The following is a summary of the results of the modeling simulations of the North Shore collection system trunk main;

- Existing conditions – modeling indicates adequate capacity,
- Future (build-out) conditions – adequate capacity. However, the existing 4-inch meter and line could become enough of a restriction at high flows (350 gpm) to back up water and cause flooding at two shallow manholes upstream of the meter.

B. Pumping Facilities

1. Sudden Valley – Geneva Collection System

The Sudden Valley – Geneva Collection System is equipped with twenty-three (23) sewer pump stations which lift and transport wastewater collected out of Sudden Valley and around Lake Whatcom to the City of Bellingham. Reference Exhibit E-1 through E-3 for flow schematics and system layout of pump stations. District pump stations located in the Sudden Valley – Geneva Collection System are as follows:

- Afternoon Beach
- Airport
- Austin Creek
- Beaver
- Boulevard
- Cable St.
- Camp Firwood
- Euclid St
- Flat Car 2
- Geneva
- Lakewood
- Lake Louise
- Lowe St
- Marina Circle
- North Point
- Par
- Plum
- Ranch House
- Rocky Ridge
- Strawberry Canyon
- Strawberry Point
- Sudden Valley
- The Tomb

2. North Shore Collection System

The North Shore is equipped with three (3) sewer pump stations which lift and transport wastewater collected around Lake Whatcom to the City of Bellingham. Reference Exhibit F for flow schematic and system layout of pump stations. District pump stations located in the North Shore Collection System are as follows:

- Agate Bay
- Dellesta Park
- Edgewater

C. City of Bellingham Wastewater Treatment Plant

1. Wastewater Treatment Agreement

Since 1974, the District has contracted with the City of Bellingham to provide treatment and disposal of all wastewater originating from the District's collection facilities. In 2014, the District and the City negotiated an update to this contract at the request of the State Auditors' office. A copy of the Agreement is included in Exhibit G. Wastewater originating in the Sudden Valley- Geneva Collection System and the North Shore Collection System flow to the City of Bellingham's sewer collection system and then to its Post Point Wastewater Treatment Plant in Bellingham, Washington. The Agreement lists five points of connection to the City sewer system which include the following:

- Whatcom Falls Park (from Lake Louise Road Interceptor)
- Electric Avenue at Flynn Street (from Cable Street and Euclid force mains)

- Euclid Avenue (from Euclid gravity main)
- Flynn Street (gravity flow from the Mill Wheel Park main)
- Northshore Road Meter (from Northshore Interceptor)

In 1999, the District constructed a 700,000 gallon detention basin adjacent to Sudden Valley Pump Station. Prior to the completion of the Lake Louise Road Interceptor and a general lifting of the sewer connection moratorium, the capacity of the detention basin allowed the District to issue 770 sewer connections in select areas. With the LLRI in service, the detention basin has been used for storing excess flows only during extremely severe storm events. The detention basin may be of use to provide flow equalization on the south shore during heavy storm events to assist the City of Bellingham in mitigating overflows from their sewer system, if the facility's capacity is not needed by the District.

2. Projected 20-Year Wastewater Flows

With the current building trends around Lake Whatcom and the density reduction efforts reducing build-out levels, the projection for 20-year growth is approximately 85% of the build-out values on the south shore and 88% on the north shore. The build-out levels should be revisited prior to 2028. Referencing the wastewater flow projections already outlined for the Sudden Valley - Geneva Collection System and the North Shore Collection System, the 20-year average daily and peak wastewater flows to the City of Bellingham WWTP are projected as follows:

District Wastewater Flows to the Bellingham WWTP - Projected 20-Year Flows

Average Daily Flow:	0.75-0.9 million gallons per day,
Peak Daily Flow:	2.5-2.7 million gallons per day.

District Wastewater Flows to the Bellingham WWTP - Projected Full Build-out Flows

Average Daily Flow:	0.85-1.0 million gallons per day,
Peak Daily Flow:	2.8-3.0 million gallons per day.

D. Industrial Wastewater-Producing Facilities within the District System

There are no existing industrial wastewater-producing facilities within the District's boundaries. At this time, the District's contract with the City prohibits the connection of any industrial wastewater-producing facilities.

III. FUTURE SEWER SERVICE REQUIREMENTS

While the current trend is towards density reduction, it is difficult to predict the rate at which new services will be requested, including how many of the properties restricted for 25 years under ULID 18 will be developed in the future. At this point, though, the District does not anticipate needing additional capacity from the City.

Potential developer extension/ULID facilities are not included in the Capital Improvement Plan (Exhibit K), because their occurrence is more speculative than the infrastructure improvement projects outlined in the future improvements section. Potential projects that the District is aware of are listed below. The District may only provide sewer service where it is legally possible to do so considering applicable County zoning and development regulations.

A. Potential Sewer Service in the Sudden Valley- Geneva Collection System

The District will consider extensions to the existing Sudden Valley-Geneva sewer collection system only on an "as-needed" basis in those areas within the District boundaries not presently served by the gravity sewer collection system (reference Exhibit A). At this time, the potential areas for sewer main extensions within this service area are areas outside of the UGA that have been developed with septic systems (Reference Exhibits J-1 to J-3).

1. Other Developer Extensions / Local Improvement Districts

The area south of the District maintenance facility (1010 Lakeview Street) was developed with septic systems and a common community drainfield. This area has about 20 properties and could potentially be connected to the District's public sewer. The homeowners would either need to petition for a Local Improvement District or request approval for a Developer Extension Agreement. There are also several properties outside of a UGA or LAMIRD but within 150 feet of the Lake Louise Road Interceptor that could be connected to public sewer if requested or when their septic system has failed.

There are very few properties remaining in this service area that could be subdivided or grouped to create a development. For any new development requiring extension of sewer mains, the property owners will need to enter into a developer extension agreement with the District whereby the owner becomes responsible for all design, construction, and inspection costs associated with the new branch sewer line. At the time the new line goes into operation, the District will be granted ownership of, and operation and maintenance responsibilities for all new sewer facilities associated with the development.

It should be noted that, in accordance with the Interlocal Agreement for Sewer Services with the City of Bellingham, connection of any parcel created since 2005 to the District's sewer system requires the approval of the City.

B. Potential Sewer Service in the North Shore Collection System

The District will consider extensions to the existing North Shore sewer collection system only on an "as-needed" basis in those areas within the District boundaries not presently served by the gravity sewer collection system. At this time, there are no active developer extension projects within this service area. The District has identified one area that has already been developed with on-site septic systems that may be a candidate in the future for a sewer extension (Reference Exhibit J-4 for a map of this extension).

1. North Shore Road ULID

There are approximately 105 existing homes on North Shore Road beyond the east end of the District's sewer system. These homes have on-site septic systems and many are close to Lake Whatcom. These homes are not currently in a UGA or LAMIRD, however providing public sewers to these residences may be a cost-effective means of reducing the phosphorous and bacterial loading to Lake Whatcom. In addition to the normal process of petitioning for a Utility Local Improvement District, a project to extend sewer here would require obtaining a Conditional Use Permit and approval of the Hearing Examiner. A preliminary investigation about extending the District's sewer service to this area was performed in 2015. The Technical Memorandum detailing the Northshore System Extension Preliminary Investigation is attached in Exhibit M.

There are very few properties remaining in the area that could be subdivided, or grouped to create a development. For any new development that would require extension of sewer mains, the property owners will be required to enter into a developer extension agreement with the District whereby the owner becomes responsible for all design, construction, and inspection costs associated with the new branch sewer line. At the time the new line goes into operation, the District will be granted ownership of, and operation and maintenance responsibilities for all new sewer facilities associated with the development.

It should be noted that, in accordance with the Interlocal Agreement for Sewer Services with the City of Bellingham, connection of any parcel created since 2005 to the District's sewer system requires the approval of the City.

C. Potential Sewer Service in the South Bay / Blue Canyon Study Area

The District has no existing sewer facilities in the South Bay / Blue Canyon Study Area. The District will consider extending public sewer on an "as-needed" basis in those areas within the District boundaries. Extensions would be funded by developers requesting such extensions, or by LID/ULID should a petition of the affected population be submitted to the District. A feasibility study was prepared in 2006 that included this Study Area. The feasibility study was incorporated in the District's 2008 Comprehensive Sewer Plan because it included an area-wide analysis with comprehensive planning information. However, since the details for the implementation of serving this Study Areaare not yet defined, facilities to service this area will be addressed in the future. A project to extend sewer here would require obtaining a Conditional Use Permit and approval of the Hearing Examiner. Should a project proceed,

additional analyses will be prepared and a facility plan / engineering report will be submitted for the requisite approvals.

IV. SEWER RATE STRUCTURE AND REVENUE PLANNING

A. Requirements for Connection to the District System

Sewer and/or water connections are available on a first come, first served basis where capacity exists. There is overall system capacity when the system as a whole has the capability to serve additional service connections. There may be localized areas in the system that are insufficient in size or are in too poor condition to allow local connections, but the system can still be considered to have overall system capacity.

The District has adopted a detailed policy regarding the requirements for connection to the District system for any new sewer customer or developer extension. This policy is defined in Section 3.4 of the District's Administrative Code. Properties connecting to the District's sewer system must also comply with all applicable County and State regulations including but not limited to building codes and stormwater regulations.

Generally, properties which lie within the District's boundaries are required to connect to the sewer if the property lies within 200 feet of the public sewer and is inside of a UGA or LAMIRD, or within 150 feet of the public sewer and is outside of a UGA or LAMIRD. Properties developed with on-site septic systems that subsequently have public sewer available, have five years to connect to the public sewer from the date when sewer service is available.

Additional sewer connection and service requirements can be found in Section 3.4 of the District's Administrative Code.

B. Revenue Planning

The District performs a review of the sewer rate schedule regularly to determine that these charges are sufficient to generate revenue to offset the cost of all necessary operation and maintenance of the District. In the event that this review indicates a necessary revision of user charges, the District promptly amends the rates by formal resolution of the board of commissioners.

In 2014, the District commissioned a water and sewer rate study to examine the District's rate structures. The purpose of the study was to provide recommendations regarding water and sewer rate adjustments aimed at bringing revenues in line with annual operating and capital obligations while utilizing surplus cash reserved in the District's general and capital funds. The District commissioned an update in 2016 and will contract for a full rate study in 2020.

The 2016 rate study update recommended continuing the 2.5% per year increases in the sewer fees for the 5 year analysis period (2017-2021).

In 2017, the District commissioned a separate study to make recommendations regarding the general facilities charge (GFC) to be charged to new customers connecting to the system. The Board adopted increased GFCs that were based on the study recommendations for implementation in January 2018.

Recommendations from 2014 rate study and the 2016 update were implemented by the District and are reflected in the sewer rate information presented in the next section. The District will be obtaining an updated rate study in 2020.

C. Sewer Rate Structure

The District sewer service rates and charges outlined below shall be subject to change by resolution of the board of directors as conditions warrant.

1. Sewer Service Rates

The District bills bi-monthly for sewer service. The calculation of bi-monthly sewer charges is based on the assigned number of equivalent residential units (ERUs) for a particular customer.

Reference Exhibit I for a tabulation of the sewer rates in the current Master Fees and Charges Schedule for the District. Also included in this resolution are the rate adjustment schedules, through the year 2021, as recommended in the 2016 sewer rate study update commissioned by the District.

The rate increases will assure that the District is adequately recovering the true costs of running the system, including paying back of all existing and anticipated loan and bond funds. By adequately recovering the true costs for system operation and maintenance, the District staff will be able to perform adequate, routine maintenance activities which will add to the service life of the system. Additionally, implementing the recommended rate increases outlined in the rate study will allow the District to maintain the appropriate reserves required for emergencies, if revenues meet regular expenses.

2. General Facilities Connection Fee (GFC)

The 2019 General Facilities Connection Fee for sewer is $7,919 per ERU (Item 28 of the Master Fees and Charges Schedule). Additional fees such as Latecomer fees may also apply. The District also charges fees for permit processing and inspection in accordance with the current Master Fees and Charges Schedule.

The Master Fees and Charges Schedule is incorporated here by reference. The current schedule is included in Exhibit I.

3. Cost per Service

The District's cost for sewer service recently has ranged from $3,500,000 to $4,850,000 and is projected to be $4,838,000 this coming year (2020 Budget, in progress). This 2020 budget includes $2,644,000 per year in operation and maintenance costs and debt service costs of $643,000 per year. It also includes $1,550,000 in System Reinvestment for capital projects and equipment replacement. Dividing these costs over the District's sewer Equivalent

Residential Units (4,359 ERUs projected for 2020) yields the yearly cost per service listed in Table 8 below. Also included for reference are the Cost of Service for 2018 and 2019.

Table 8. Yearly Cost Per Sewer Service

Sewer Utility Cost of Service	2020 Budget Cost per ERU	2019 Projected Cost per ERU	2018 Actuals Cost per ERU
Debt service	$ 148	$ 149	$ 150
O&M	$ 607	$ 572	$ 554
System Reinvestment (Capital Projects, Equipment)	$ 356	$ 397	$ 109
Sewer Utility Total	$ 1,110	$ 1,118	$ 813

V. FUTURE IMPROVEMENT PROJECTS

A. Future Maintenance and Operational Improvements

1. Sewer Flushing Program

As part of the District's ongoing maintenance, certain gravity mains have been identified as requiring routine inspection and/or cleaning. The District utilizes a computer maintenance management system to track maintenance work performed and set automatic recurring tasks at an appropriate interval depending on historical maintenance needs of each main. When a main is re-inspected or maintenance is performed the interval period is refined as needed for the next future task to be automatically generated when due.

The availability of the Sudden Valley Detention Basin and the bypass connection allow the District to reverse the flow in the pressure section of the LWBI and send the majority of the flows to the Sudden Valley PS and then to the LLRI. With the reduced flows the District is able to flush the gravity sections without taking the LWBI off-line.

2. I&I Identification Program

Annual I&I Analyses

The District has an ongoing program to analyze sewer flow meter and pump station run-time data in an effort to isolate potential source locations of I&I so they can be further investigated using sewer video or smoke testing. See Exhibit C for the current I&I analysis report.

Sewer Videoing Program

The District has an ongoing sewer videoing program. As a part of the regular maintenance program for their facilities, the District will continue to video portions of the collector system annually in an effort to identify possible points of inflow and infiltration into the system. Areas to video are targeted based on pump run times (as an indication of I&I severity) and the majority of the video work is performed during the wet season in order to see active leaks. The District is also able to inspect manholes with the camera as they pass through them. If repair work is deemed necessary, the District will perform said work as part of their regular maintenance improvement program.

Targeted Smoke Testing Program

The District recently completed a system-wide smoke testing program within its collection systems to aid in identifying potential sources of inflow and infiltration within the system. As a part of the ongoing maintenance program for their facilities, the District will continue to smoke test targeted basins with higher inflow and infiltration rates looking for non-compliant connections in addition to faulty pipes. In the event that a non-compliant connection is found, the District will notify the property owner of their responsibility to remedy the situation. In the event that a significant, potential I&I source is identified through the smoke testing program, the District will follow-up with a CCTV camera inspection of the subject area to determine if repair work is required. If repair work is deemed necessary, the District will perform said work as part of their regular maintenance improvement program.

B. Future Administrative, Financial and Planning Improvements

1. Hazard Mitigation Plan For District Wastewater Facilities

Since 2000, the Federal government has required local communities to have an approved mitigation plan in place to be eligible for the Hazard Mitigation Grant Program (HMGP) funds (44CFR201.6). Jurisdictions without an approved plan will not be eligible for future mitigation financial assistance. One strategy for the plan development is for local communities to work together to create a Multi-jurisdictional Hazard Mitigation Plan. This approach is advantageous and efficient in that a single, comprehensive plan would then address the concerns of all jurisdictions with the same countywide hazards. To that end, the District will work, in conjunction with Whatcom County Division of Emergency Management to develop hazard mitigation plan in compliance with federal requirements.

Preparation and adoption of this hazard mitigation plan will ensure compliance with federal regulations. In addition, the development and adoption of an approved hazard mitigation plan will ensure that the District is eligible for future mitigation financial assistance under the Hazard Mitigation Grant Program.

2. Update Existing Emergency Response Plan

Currently, the District has an existing Emergency Response Plan which outlines District priorities and activities in response to an emergency event such as; natural disasters, vandalism, catastrophic equipment failures, etc. As a part of this activity, the District will update the existing Emergency Response Plan, as necessary, to ensure compliance with applicable federal regulations and the requirements of the Department of Homeland Security. The District will continue to conduct emergency response training exercises and drills with staff to enhance emergency preparedness.

3. Maintenance Management Program Development

In 2002, the District began developing a system-wide Maintenance Management Program to move from reactive maintenance to preventative maintenance, better manage work flow processes, and aid in planning, administration, and operation and maintenance record keeping for the District's facilities. To date, the database and maps includes information regarding pipe size, material and lengths for water and sewer mains; schematic locations of District facilities including mains, manholes, pump stations, PRVs and reservoirs (water). Since 2002, maintenance activities have been logged in to the system as they are completed.

The District has completed adding the watershed boundary, customer billing information, and facility specifications. All sewer assets have installation dates and the District has completed inspections, mapping and overall condition index (OCI) determinations for most facilities in the Geneva and North Shore areas. As a part of this ongoing development program, the District will continue to augment and update the Maintenance Management program to include the following:

a. parcel maps (working with Whatcom County),
b. updated aerial photo layers (from Whatcom County),
c. archival operation and maintenance record information, 80%complete
d. link sewer main video inspections

e. facility inspections (manholes, sewer pump stations) - Sudden Valley
f. mapping-grade GPS facility locations - Sudden Valley
g. facility overall condition index (OCI) for manholes, mains, pump stations - Sudden Valley

4. Lake Whatcom Watershed Committee (WRIA 1)

As a part of this planning project, the District's Manager will participate in a steering and planning committee to look at watershed-wide issues affecting water quality for people and fish. The Committee will plan cooperative actions which will address the watershed water quality. This group process will result in more collaborative planning approach to water issues, including drinking water sources, and storm water runoff.

As of this time, there is no adopted water quality management plan under the Federal Water Pollution Control Act as amended for this area. The District will comply with such a plan once it is developed and adopted.

5. Sewer Service Rate Increases

The District contracts with a financial consultant about every 5 years to prepare a comprehensive rate study, with interim updates every 2 to 3 years, and implements the recommended incremental rate increases. The last rate study update was completed in 2016, with the next comprehensive rate study scheduled to begin 2020.

C. Future Capital Improvement Projects

1. Pump Station Upgrades – Ongoing

As mentioned above, the District has completed several pump station replacements and upgrades in the last six years (see Table 2). The District plans to continue replacing and/or upgrading one or two pump stations per year as needed. The proposed schedule for these replacements or upgrades are included in the District's Capital Improvement Plan (see Exhibit K).

Replacement of the aged control, telemetry and pump equipment will result in increased reliability, reduced emergency operator call-outs, reduced equipment operation costs and prevention of sewage overflows. Each pump station will be evaluated to determine the specific upgrades required but at least will normally include new pumps, new controls and new telemetry equipment.

2. Miscellaneous Sewer Line Replacement and Repair

The original District collection and force main systems are almost fifty years old. As a part of ongoing regular maintenance on the system, the District monitors the existing underground sewer lines for signs of leakage and/or failure. As a part of this project, the District will perform sewer repair and/or replacement work as necessary to ensure a functional and environmentally safe system. The line repairs include both trenchless spot repairs as well as repairs that require excavation.

3. Manhole Rehabilitation

The District has a disproportionately high number of manholes due to the extreme topography of its service areas. Many of these manholes are located in roadways and are heavily impacted by traffic. Staff has observed inflow and infiltration that appears to originate in the manholes. The District has been inspecting manholes for deterioration and leaks as part of their ongoing sewer videoing program and developed a priority list of manholes in need of rehabilitation. This Manhole Rehabilitation program and the Miscellaneous Sewer Line Replacement and Repair program above constitute the District's Capacity, Management, Operations and Maintenance (CMOM) Program, and has an annual budget of about $165,000.

4. Repair/Replace Lake Whatcom Boulevard Mains

The hydraulic modeling has identified several segments of the Lake Whatcom Boulevard Interceptor that are potentially undersized for future flows even when flow from the North Point pump station is redirected to the Lake Louise Interceptor. The District has also identified several segments that are in poor condition and will need to be rehabilitated or replaced. This project will confirm the pipe sizes needed for buildout, and undertake the appropriate measures to repair and/or replace the pipe segments identified as deficient.

VI. DOCUMENTS INCORPORATED BY REFERENCE

The District maintains several documents that are relevant to this Comprehensive Sewer Plan that are hereby incorporated by reference. Since the nature of these documents requires them to be updated more frequently than the Comprehensive Sewer Plan, they have not been integrated into this Plan.

The documents incorporated by reference include:

- District Design and Construction Standards
- Developer Extension Agreement - Master Form
- Capital Improvement Plan
- Master Fees and Charges Schedule (current version is attached in Exhibit I)
- Comprehensive Water System Plan
- District Administrative Code

VII. NON-PROJECT SEPA

VIII. EXHIBITS

EXHIBIT A. DISTRICT BOUNDARY

EXHIBIT B. SEWER COLLECTION SYSTEMS

EXHIBIT C. UPDATE OF I&I ANALYSIS

EXHIBIT D. SUPPLEMENTAL HYDRAULIC SEWER MODEL ANALYSIS

EXHIBIT E. SUDDEN VALLEY- GENEVA FLOW SCHEMATICS

EXHIBIT F. NORTH SHORE FLOW SCHEMATIC

EXHIBIT G. CITY / DISTRICT SEWER AGREEMENT

EXHIBIT H. PUBLIC WATER SYSTEMS

EXHIBIT I. MASTER FEES AND CHARGES SCHEDULE

EXHIBIT J-1 TO J-4. POTENTIAL SEWER GROWTH MAP

EXHIBIT K. CAPITAL IMPROVEMENT PLAN

EXHIBIT L. WATER QUALITY MONITORING REPORT
LAKE WHATCOM NORTH SHORE ON-SITE SEWAGE SYSTEM LEACHATE DETECTION PROJECT
(Herrera, July 10, 2017)
And
NORTH SHORE ON-SITE SEPTIC SYSTEM PHOSPHORUS LOADING ANALYSIS
(Herrera, June 21, 2018)

EXHIBIT M. NORTH SHORE SYSTEM EXTENSION PRELIMINARY INVESTIGATION
(Wilson Engineering, November 19, 2015)

EXHIBIT N. STUDY AREA CHARACTERISTICS

AGENDA BILL Item 5.B	**Lake Whatcom Management Program 2020-2024 Work Plan**		
DATE SUBMITTED:	January 30, 2020	MEETING DATE:	February 12, 2020
TO: BOARD OF COMMISSIONERS		FROM: Justin Clary, General Manager	
GENERAL MANAGER APPROVAL			
ATTACHED DOCUMENTS		1. Lake Whatcom Management Program 2020-2024 Work Plan	
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☒ INFORMATIONAL /OTHER ☐

BACKGROUND / EXPLANATION OF IMPACT

Due to observed deterioration of the water quality in Lake Whatcom, the Lake Whatcom Water and Sewer District, city of Bellingham, and Whatcom County entered into an interlocal agreement in 1998 that formally created the Lake Whatcom Management Program. The Program's primary goal is to improve lake water quality by jointly implementing programs affecting the Lake Whatcom watershed.

Since its creation, the Program partners have developed and implemented four five-year work plans focused on the following program areas: land preservation; stormwater; land use; monitoring and data; hazardous materials; recreation; aquatic invasive species; utilities and transportation; education and engagement; and administration. With the most recent work plan (2015-2019) approaching expiration, the interjurisdictional coordinating team (ICT) of the Program began development of a successor work plan in June 2019. The outcome of the ICT's effort (the attached 2020-2024 work plan) has been developed to reflect current conditions and regulatory requirements while maintaining the Program's overarching goal of continued improvement of lake water quality.

FISCAL IMPACT

No fiscal impact is anticipated with approval of the work plan.

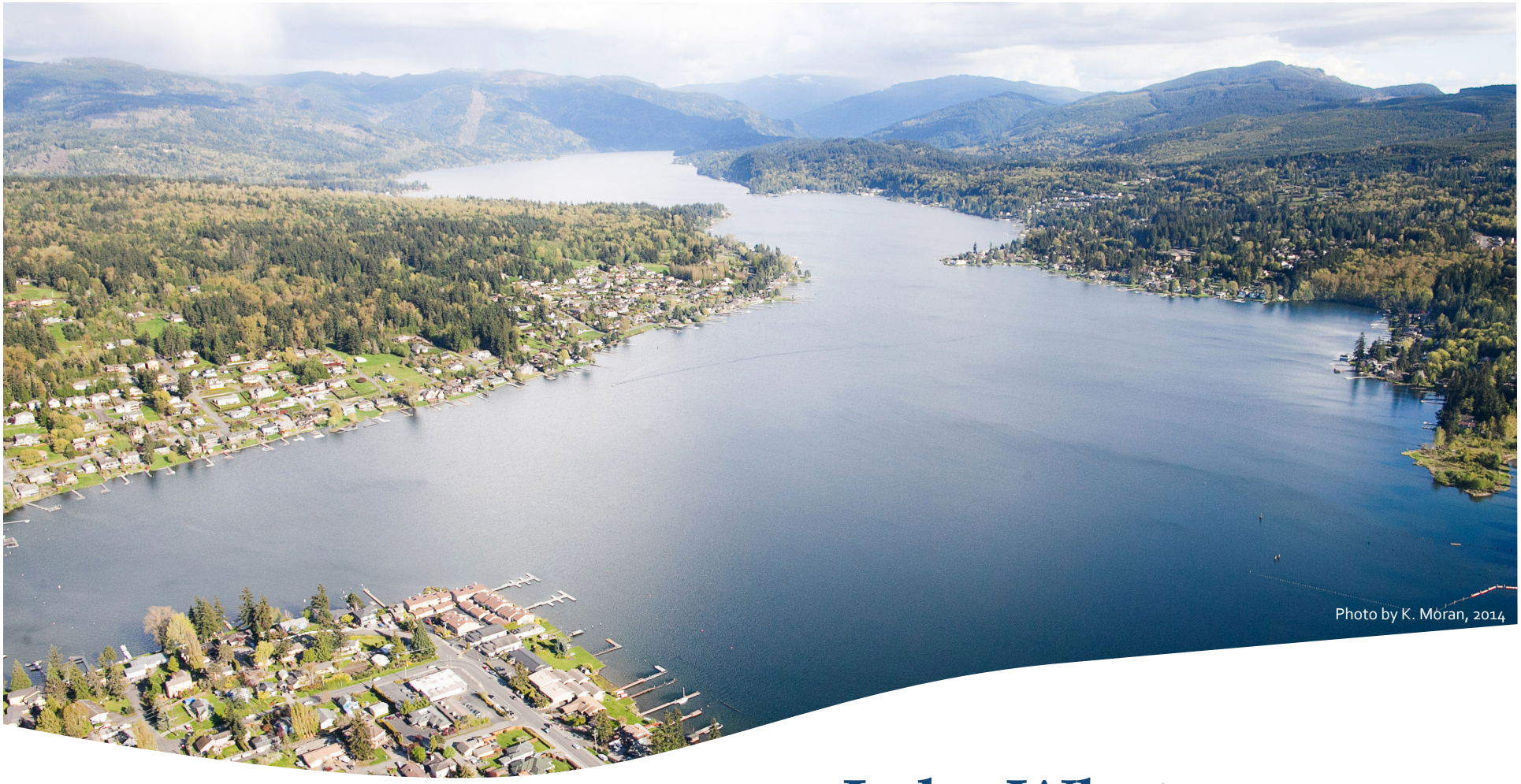
RECOMMENDED BOARD ACTION

Staff recommends the Board approve the work plan as presented.

PROPOSED MOTION

A recommended motion is:

> "I move to approve the Lake Whatcom Management Program 2020-2024 Work Plan as presented."



Lake Whatcom
Management Program
2020-2024 Work Plan

February 2020

DRAFT

Prepared by the Lake Whatcom
Interjurisdictional Coordinating Team

ACKNOWLEDGEMENTS

Lake Whatcom Management Committee

Justin Clary, Lake Whatcom Water and Sewer District General Manager

Seth Fleetwood, City of Bellingham Mayor

Satpal Singh Sidhu, Whatcom County Executive

Interjurisdictional Coordinating Team

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Sudden Valley Community Association

Washington State University Whatcom County Extension

Western Washington University Institute for Watershed Studies

Lake Whatcom Watershed Advisory Board

Lake Whatcom Management Program

lakewhatcom.whatcomcounty.org

Table of Contents

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Introduction

Lake Whatcom plays an important role in the quality of life for Whatcom County residents. It is the drinking water source for over 100,000 people, a recreational destination for outdoor enthusiasts and provides valuable habitat for plants and animals unique to our region. Keeping the lake clean and its forests and ecosystems healthy is no small task. Watershed residents and visitors play a critical role in this effort through stewardship of this shared resource. Local organizations and governments work to promote stewardship and take cooperative action to restore water quality, protect environmental health and preserve healthy forests in the watershed.

The 2020–2024 Lake Whatcom Management Program Work Plan represents this coordinated endeavor, bringing together the planned efforts of the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District and consolidating them in one place to ensure actions are efficient and effective. This document outlines the efforts that these local entitities will implement over the next five years to further the goals of the Lake Whatcom Management Program (see page 4).

Lake Whatcom | Photo by T. Ward, 2018

Statement from County Executive, City Mayor, District General Manager

As new leaders of Whatcom County, the City of Bellingham, and the Lake Whatcom Water and Sewer District, we stand by our organizations' long-standing commitment to restore, protect, and preserve Lake Whatcom's water quality and ecological health.

This updated work plan builds on over two decades of coordinated work and an impressive list of on-the-ground projects that are fulfilling our commitments to make steady progress in protecting and improving the lake. We are committed to working with our staff and the community to accomplish the work identified in this work plan. Our partnership is strong, and we remain on schedule to achieve a clean and protected source of drinking water for people and a healthy habitat for wildlife.

Justin Clary
District General Manager

Seth Fleetwood
Bellingham Mayor

Satpal Singh Sidhu
County Executive

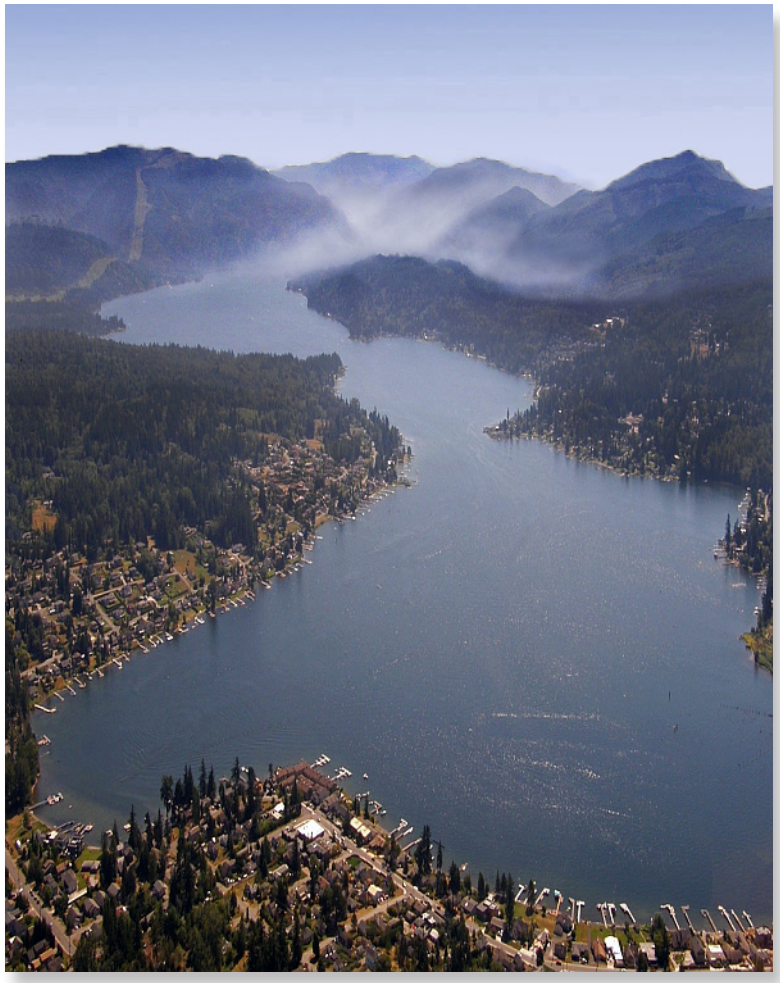
A Comprehensive Approach

The Lake Whatcom Management Program (LWMP) had its beginnings in the 1980s and early 1990s, when deterioriation of Lake Whatcom's water quality was documented and brought to the attention of agencies and the public. In response, a joint resolution was passed by the City of Bellingham, Whatcom County and the Lake Whatcom Water and Sewer District in 1992 to organize efforts to address the most serious threats to the watershed. This comprehensive approach to managing the lake became the basis of the LWMP, which was established by Interlocal Agreement in 1998.

The LWMP shares resources to apply the best available science, engage the most knowledgeable local experts and build the strongest coalition amongst all who enjoy the benefits of this shared natural resource. The program strives to ensure that public dollars are spent responsibly and to the greatest benefit of the community and our quality of life. The LWMP identifies threats to Lake Whatcom, eliminates them if possible and mitigates them as necessary. As new threats are identified, solutions to address them are incorporated into subsequent work plans.

Program focus has evolved and expanded over time. In the 1990s, threats from forest harvest and forest practices were a major concern. In 1998, reducing phosphorus in stormwater entering the lake became a primary focus when Lake Whatcom was placed on the state's list of polluted water bodies due to low dissolved oxygen levels. By 2012, concern over threats from invasive mussels led to a new collaborative Aquatic Invasive Species program.

Current management efforts are focused in ten program areas, comprehensively addressing watershed health. Work plans are developed by LWMP partners. The 2020–2024 Work Plan is the fifth plan to date. It will guide actions to reduce the amount of phosphorus reaching the lake and address other watershed issues over the next five years. Consistent with previous plans, the 2020–2024 Work Plan is organized by program areas, each with specific objectives and planned activities.



Lake Whatcom | Photo by M. Kjelstad, 2010

Watershed and Lake Facts

Population and Drinking Water Supply

- Lake Whatcom is the drinking water source for over 100,000 Whatcom County residents, which is about half the county's population.
- Lake Whatcom provides drinking water for the City of Bellingham, Lake Whatcom Water and Sewer District, several smaller water districts and associations and homes that draw water directly from the lake.
- The City of Bellingham withdraws water from the lake's middle basin through a 1,200-foot wooden pipeline that leads to the water treatment plant in Whatcom Falls Park.
- About 18,000 people live in the Lake Whatcom watershed (2018 estimate).
- Approximately 25% of the watershed population lives within the City of Bellingham and approximately 75% live outside city limits in unincorporated Whatcom County.

Lake Whatcom | Photo by K. Moran, 2014

Physical Characteristics

- Lake Whatcom is about 10 miles long and just over one mile wide at its widest point.
- Lake Whatcom has about 30 miles of shoreline.
- Lake Whatcom's surface area is about 5,000 acres with eight percent within city limits.
- Lake Whatcom holds about 250 billion gallons of water.
- Lake Whatcom's natural outflow is to Whatcom Creek and Bellingham Bay.
- The City of Bellingham controls the lake level with a small dam at the outlet draining to Whatcom Creek. When the lake level reaches 314.94 feet above mean sea level the city is obligated to release water through the control dam.
- Lake Whatcom's watershed covers about 56 square miles (36,000 acres) with three percent (1,080 acres) within city limits.
- Lake Whatcom is fed by 36 streams (many do not flow year-round). Major tributaries include Silver Beach, Carpenter, Olsen, Smith, Anderson, Brannian, and Austin Creeks.
- Lake Whatcom also periodically receives water diverted from the Middle Fork of the Nooksack River by the City of Bellingham to meet water supply needs.

Program Goals

The Lake Whatcom Management Program is guided by the general goals established in the 1992 Joint Resolution of the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District. These are:

- To recognize Lake Whatcom and its watershed as the major drinking-water reservoir for the county and develop public and private management principles for the lake and watershed consistent with a drinking water reservoir environment.
- To protect, preserve and enhance water quality and manage water quantity to ensure long-term sustainable supplies for a variety of uses, with priority placed on domestic water supply. Management programs and actions will be made in recognition of existing contractual agreements and potential for review and renegotiation in light of these goals.
- To prioritize protection over treatment in managing Lake Whatcom and its watersheds. Management actions shall reflect a long-term view of replacement or treatment costs.
- To manage water quantity to sustain long-term efficient use of the water for beneficial uses within the county that are consistent with a drinking-water reservoir, and recognize the integral link with the Nooksack River and associated water resource concerns.
- To ensure that opportunities for public comment and participation are provided in policy and management program development, and to promote public awareness and responsible individual actions.
- To promote learning, research, and information opportunities which better our understanding of the watershed system, the impacts of activities, and the benefits and potentials of policies implemented.

Lake Whatcom | Photo by T. Ward, 2017

Addressing the Challenges

The Lake Whatcom Management Program (LWMP) addresses the main challenges facing the lake and its watershed to meet long term management objectives for watershed health. These objectives are met through actions by residents, visitors and local governments.

Objective:	Management Challenge:	Our Response:
Water quality in the lake is restored to protect human health and support a diverse ecosystem.	Runoff from developed areas entering the lake changes water chemistry and disrupts the natural balance of the ecosystem. Nutrients in the runoff feed algae blooms that affect native species and rob the water column of oxygen, creating poor water quality that threatens the health of aquatic species. Bacteria in stream runoff are a potential threat to the health of humans and pets coming into contact with the lake and streams.	LWMP actions prevent, capture, and reduce the amount of nutrients and bacteria in runoff entering the lake. Large-scale engineering projects, small-scale pollution prevention efforts, and one-on-one assistance to residents all help reduce pollution. In addition, regulations and forest management strategies are designed to ensure that land use activities do not further exacerbate these problems.
Clean, safe drinking water is available for over 100,000 Whatcom County residents, and its source is protected from pollution.	Nutrients in polluted runoff lead to algae growth that can clog intake structures and interfere with water treatment processes. When such impacts occur, providing an adequate supply of drinking water requires the use of additional treatment strategies for both public and private systems. This increases costs and decreases efficiency of water supply systems.	As water purveyors, the City of Bellingham and the Lake Whatcom Water and Sewer District plan, operate and maintain treatment systems that remove impurities and provide clean, safe tap water to their customers. LWMP partners monitor water quality in the lake, in tributary streams, and from the tap. They also respond to spills, collect hazardous materials from residents and construct stormwater treatment facilities to capture pollution before it enters the lake.
High quality recreational opportunities around the lake are available, accessible and managed in a way that preserves the health of forests and waterways.	Recreation throughout the watershed, from boating to hiking to mountain biking, can damage forests, harm water quality, cause erosion and disturb critical wildlife habitat. Recreation activities that occur in environmentally sensitive areas, such as wetlands or steep slopes, can change the landscape in ways that result in long-term environmental damage. While most recreational activities in the watershed contribute positively to our community and our quality of life, unmanaged uses can threaten our shared enjoyment of the lake.	The LWMP recognizes the overlap between recreation and land preservation, which rely on each other to succeed. Preserved land that can support low-impact recreation is made accessible to the public. Recreational activities that adversely impact the watershed's natural functions are discouraged or prevented. Impacts from boating on the lake (e.g., fuel spills, invasive species transport, and shoreline erosion from wakes) are managed by providing adequate boater amenities and educating boaters and visitors about these risks.

Addressing the Challenges (continued)

Objective:	Management Challenge:	Our Response:
A high quality of life is maintained for our community and watershed residents.	The Lake Whatcom watershed is a desirable place to live and visit because of its beauty and access to recreational opportunities. The ability to boat, swim and enjoy the view of bright blue water contribute to a high quality of life enjoyed by both the community as a whole and watershed residents. Impacts to the lake that threaten those uses, including poor water quality, invasive species, unpleasant odors or unusable docks or beaches, could negatively affect quality of life and watershed property values.	All aspects of the LWMP work together to protect watershed health and water quality which in turn protects quality of life and property values. Watershed residents play an important role. LWMP success depends on their stewardship. The LWMP provides incentives and assistance to help residents reduce their impact. Property owners are encouraged to install water quality landscape improvements through the Homeowner Incentive Program. Residents are provided a guide to watershed living that gives them information and tools to enjoy their property without contributing to ongoing problems. The city and county have adopted rules for development in the watershed that ensure residents can enjoy their property while protecting the lake.
All of the uses and benefits of the lake are protected from aquatic invasive species infestations.	Aquatic invasive species (AIS) pose a significant long-term risk to all uses of Lake Whatcom. The introduction of zebra and quagga mussels would have highly detrimental impacts to water quality, recreation and property values. These tiny mussels could encrust pipes resulting in costly impacts to drinking water systems. Invasive aquatic plants can spread quickly throughout the lake, outcompeting native species, and resulting in blooms impacting shorelines, water access, and fishing. AIS are not easily controlled or eliminated. An infestation would likely create a permanent change in the lake with unknown consequences.	The LWMP has had a dedicated AIS prevention program since 2012. Throughout the boating season, inspectors work throughout the watershed to prevent the introduction of AIS and to educate boaters on their risk. This team of trained specialists provides on-site inspections for watershed residents and work at boat launches around the lake. If needed, the AIS crew uses specialized equipment to decontaminate boats before they enter the lake. These inspectors also staff boat launches at other lakes in the county to protect Lake Whatcom from AIS that may be introduced, or are already present, in those waterbodies.

Focus on Phosphorus

Lake Whatcom Management Program (LWMP) activities focus on reducing phosphorus levels in Lake Whatcom in response to federal Clean Water Act requirements and the state Total Maximum Daily Load (TMDL) process. The TMDL plan sets a target for phosphorus reduction and a timeline for achieving the target. In response to this process, phosphorus has become a major guiding issue for the five-year work plans over the past decade.

What is Phosphorus?

Phosphorus is a naturally occurring nutrient that stimulates plant growth and is essential for animal and plant life.

Where does phosphorus come from?

Phosphorus is an element found in soils, sediments and organic material. Phosphorus is transported by water and air. Specific sources include: erosion, fertilizers and pesticides, organic material (e.g., leaves, grass clippings, and other compost), animal waste, sewage effluent, and phosphorus-based soaps and detergents.

How does phosphorus get into the lake?

Phosphorus is primarily transported to the lake through stormwater runoff. On natural landscapes, stormwater slowly seeps into the ground where it is filtered by forests and soils. Human activity in developed landscapes increases the amount of phosphorus in stormwater above natural levels. Runoff flowing across surfaces such as roads, roofs, driveways and yards picks up pollutants like phosphorus and flows directly into the nearest ditch or storm drain leading to the lake.

Why is phosphorus a problem?

Phosphorus promotes algal growth. When algae die, the decomposition process depletes oxygen in the lake affecting the aquatic ecosystem and releasing additional phosphorus from lake sediments. Algae also impact water quality taste and odor and add to water treatment costs. Some types of algae are toxic and can cause health issues for swimmers and pets.

The City of Bellingham and Whatcom County have been working together for over a decade to protect Lake Whatcom and reduce phosphorus loading to the lake by:

- Adopting stormwater and land use regulations to reduce phosphorus pollution.
- Constructing, operating, and maintaining stormwater treatment facilities.
- Providing residential retrofit programs to reduce phosphorus pollution from existing developed lots.
- Preserving land in the watershed that might otherwise be susceptible to development or other land disturbance activities.

The city and county are required to make continued progress toward TMDL targets through their National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permits. The current permits are in effect from August 1, 2019 – July 31, 2024 and include specific actions that the city and county are required to complete during this permit cycle.

These required actions have been incorporated into this work plan and noted with (TMDL REQUIRED). **See the table on pages 30-31 for a complete listing of TMDL required activities with a timeline.**

What about Bacteria?

While phosphorus in stormwater entering the lake is a focus of many efforts of the LWMP, addressing bacteria flowing into streams that lead to the lake is also an important compononent of watershed protection and restoration.

Bacteria levels have been found to exceed water quality standards in eleven tributaries to Lake Whatcom, many of which flow through developed areas. The Department of Ecology tests for specific types of bacteria that are commonly associated with residential areas, from sources like leaking septic systems, sewer system overflows, and pet and livestock waste left exposed to rainfall. The TMDL requires that the city and county address the sources of these pollutants to protect public health in and around these streams and their outlets.

Fortunately, many of the practices employed to reduce phosphorus also help to reduce bacteria entering the streams or the lake. These include improvements that filter stormwater, encouraging residents to manage animal waste at home and in public spaces, and educating homeowners about proper maintenance of septic systems.

Program Development & Accomplishment Timeline

1992 - 1999

1992: Joint Resolution adopted to establish common goals for Lake Whatcom watershed

1992: City stormwater capital improvement program began

1993: Sudden Valley Community Association began density reduction program to remove 1,400 potential dwelling units

1998: Lake Whatcom Management Program (LWMP) established by Interlocal Agreement

1998: Lake Whatcom placed on Washington's list of polluted water bodies due to low dissolved oxygen levels; Tributary creeks listed for high bacteria levels; Total Maximum Daily Load (TMDL) process began.

1999: County Water Resource Protection Overlay District and Stormwater Special District established

1999: LWMP 1999 Work Plan adopted

2000 - 2004

2000: LWMP 2000-2004 Work Plan adopted

2000: City stormwater capital improvement program expands to address phosphorus

2000: Interjurisdictional Coordinating Team (ICT) created to coordinate activities and programs between jurisdictions

2001: City adopted first land use regulations for new development on properties that drain to Basin 1 (Lake Whatcom Reservoir Regulatory Chapter [BMC 16.80])

2001: City stormwater utility established; provided funding for Lake Whatcom protection

2001: City Lake Whatcom Property Acquisition Program began

2001: Watershed Advisory Board established

2002: County rezone reduced 1,800 potential dwelling units

2005 - 2009

2005: LWMP 2005-2009 Work Plan adopted

2005: City and county passed phosphorus fertilizer ban

2005: City and county banned boats with carbureted 2-stroke engines

2006: County stormwater capital improvement program with focus on phosphorus treatment began

2008: Lake Whatcom Policy Group formed

2008: City Residential Stormwater Retrofit Program began

2009: City amended the Lake Whatcom Reservoir Regulatory Chapter

2010 - 2014

2010: LWMP 2010-2014 Work Plan adopted

2011: Homeowner Incentive Program launched

2012: Aquatic Invasive Species Prevention Program began

2013: County amended Title 20 to create the Lake Whatcom Watershed Overlay District to reduce impacts from development and land use activities

2014: Sudden Valley Community Association joined Policy Group

2014: Department of Natural Resources (DNR) finalized reconveyance of 7,800 acres in the watershed to Whatcom County Parks

2015 - 2019

2015: LWMP 2015-2019 Work Plan adopted

2016: Lake Whatcom TMDL for phosphorus and fecal coliform approved by Environmental Protection Agency (EPA)

2016: New phosphorus loading model developed

2017: Homeowner Incentive Program revised and expanded

2019: Began update of lake response model

2019: County Lake Whatcom stormwater utility established to provide funding for Lake Whatcom protection

2019: City and county National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permits issued (TMDL response requirements included in the new permit)

Reporting Metrics

Reporting metrics are data Lake Whatcom Management Program (LWMP) partners use to track the progress of programs and on-the-ground activities or to quantify communication and outreach efforts. Reporting metric updates will be provided in annual progress reports and the five-year accomplishments report.

Work plan reporting metrics are not intended to provide an overall evaluation of Lake Whatcom watershed health or water quality trends. This type of long-term evaluation occurs separately through efforts such as Western Washington University's Institute for Watershed Studies Lake Whatcom Monitoring Project.

Different program areas measure progress in different ways. A comprehensive Lake Whatcom Watershed Baseline Survey was established in 2018 to help evaluate the effectiveness of outreach efforts and to inform future work plan priorities. This survey will be repeated every five years and the results will provide information on watershed residents' attitudes, knowledge and behaviors. When applicable to specific activities included in this work plan, key metrics from this survey are also included as reporting metrics. Examples include:

- The proportion of watershed residents who have used alternative methods of transportation in the past year.
- The proportion of watershed residents who are knowledgeable about proper hazardous materials disposal.
- The proportion of watershed residents who are knowledgeable about AIS and compliance with inspection requirements.

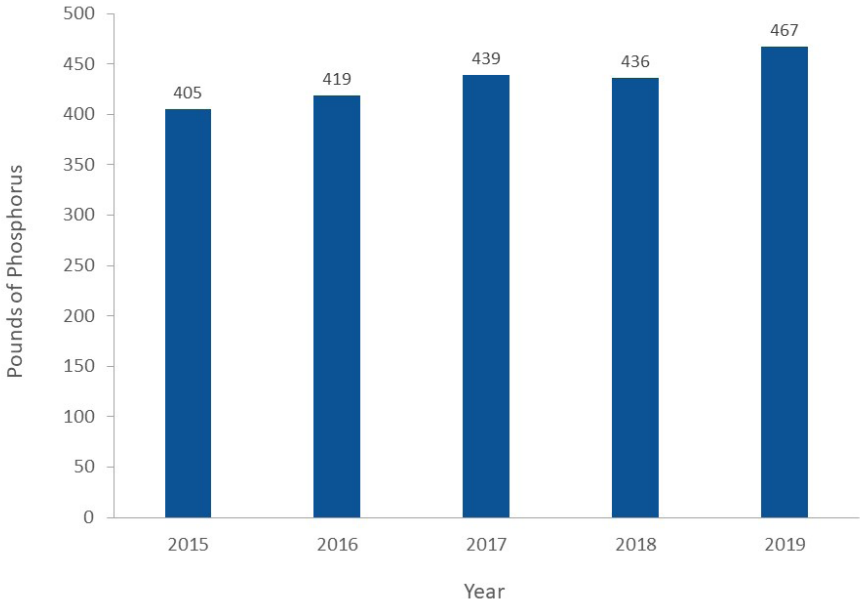
Progress made in our stormwater program area is demonstrated by tracking efforts by the City of Bellingham and Whatcom County to meet Total Maximum Daily Load (TMDL) targets for reducing phosphorus and bacteria loading to the lake. Cumulative efforts to date (2004 to 2019) have resulted in a reduction of approximately 467 pounds of phosphorus per year entering Lake Whatcom (14% of current TMDL target amount of 3,150 pounds of phosphorus per year by 2066*). Over the next five years, the activities outlined in this plan will accomplish additional phosphorus reductions while also reducing bacteria levels in tributaries.

*Target is subject to change pending modeling results.

Several new reporting metrics have been included in this work plan to better quantify progress or to provide more information regarding on-the-ground activities or changes in the Lake Whatcom watershed. One of these new metrics will estimate the water quality benefits from land preservation efforts by providing an estimate of the maturity of vegetation on each of the protected parcels. The functional status of protected watershed properties will be assigned to one of three categories based on the maturity of the site's vegetation: early succession (first nine years of restoration), mid-succession (10 to 30 year forested), or mature forest function (beyond 30 years).

Other metrics have been carried over from the last work plan and aim to provide us with ongoing information regarding trends in the watershed. Some of these trends inform work plan priorities while others provide interesting information regarding the changes in the watershed. Examples include our ongoing efforts to reduce the number of pounds of phosphorus entering Lake Whatcom (Figure 1) and the number of watercraft inspections for aquatic invasive species that have been conducted between 2015 and 2019.

Figure 1: Pounds of phosphorus reduced per year (cumulative)



Program Areas and Objectives

The Lake Whatcom Management Program (LWMP) focuses efforts in ten program areas. The 2020-2024 Work Plan uses the same program areas as the previous five-year plan. As LWMP partners, the City of Bellingham, Whatcom County, and the Lake Whatcom Water and Sewer District are the leads responsible for accomplishing the work described in this plan.

Additional partners play important roles to help achieve work plan goals. Key partners include: Sudden Valley Community Association, Washington State Departments of Ecology and Natural Resources, WSU Whatcom County Extension, Watershed Advisory Board members, Western Washington Institute for Watershed Studies, Whatcom Conservation District, and Whatcom Land Trust.

1. Land Preservation

Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

2. Stormwater

Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

3. Land Use

Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

4. Monitoring & Data

Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

5. Hazardous Materials

Prevent water quality impacts associated with improper storage and handling of hazardous materials, and ensure that spill prevention and response programs adequately protect water quality.

6. Recreation

Provide access to recreational opportunities that are consistent with water quality goals.

7. Aquatic Invasive Species

Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts associated with established invasive species.

8. Utilities & Transportation

Prevent water quality and quantity impacts from water, sewer, and transportation systems.

9. Education & Engagement

Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

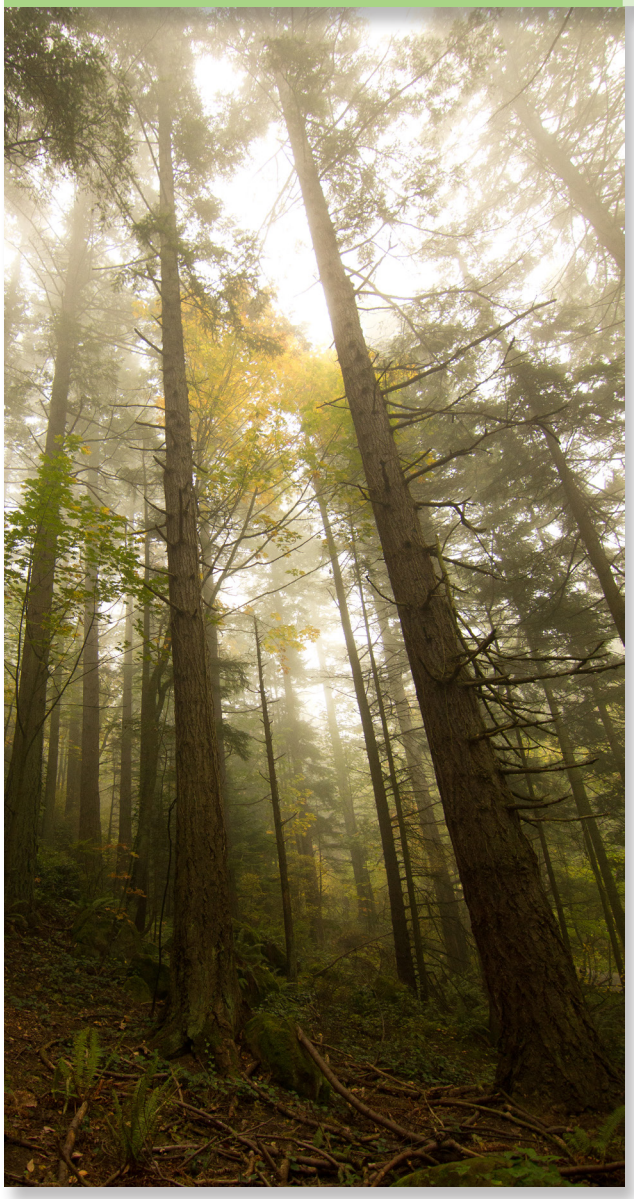
10. Administration

Implement the Lake Whatcom Management Program Work Plan and provide opportunities for public input.

Land Preservation

OBJECTIVE: Preserve and restore land that might otherwise be susceptible to development or other land disturbance to protect water quality and fish and wildlife habitat.

2020-2024 Estimated Investments: $19.5 million



Misty Arboretum | Photo by T. Calderon, 2013

The Land Preservation and Recreation program areas share two important objectives: protection of the watershed's water quality and provision of recreational opportunities in the watershed. These objectives are front and center for both of the program areas; however, each has a different emphasis. Land Preservation actions primarily seek to protect water quality, with an additional objective of providing for passive recreational opportunities where appropriate.

1.1 Property Protection

Purchase property or use other measures to prevent development and other land use disturbances that degrade the natural functions of the watershed.

1.1.1. Purchase watershed properties based on evaluation criteria and availability.

1.2 Property Management

Manage watershed properties to improve the watershed's natural functions that protect water quality and fish and wildlife habitat.

1.2.1. Implement management plans that address forestry, recreation (facilities, trails, roads), and vegetation (planting and maintenance) management needs for all city and county properties.

Reporting Metrics:

- Number of development units removed from the watershed per year
- New acres acquired or otherwise protected per year
- Total cumulative acres in protected status updated annually
- Acres in early succession (0-9 years old), in mid-succession (10-30 years old), and mature forest (>30 years old) updated every five years

Stormwater

OBJECTIVE: Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

2020-2024 Estimated Investments: $16.9 million

Agate Bay Project | Photo by Whatcom County, 2018

The Lake Whatcom Management Program (LWMP) addresses stormwater pollution by working with landowners throughout the watershed and experts in the fields of engineering and water chemistry. Strategies include preventing pollution at its source, filtering it though native soils and vegetation, and treating it using engineered stormwater facilities and other emerging technologies.

2.1 Capital Improvements

Construct and retrofit capital facilities to reduce water quality and quantity impacts associated with stormwater runoff.

2.1.1. Construct capital stormwater facilities in accordance with capital improvement plans adopted by the City of Bellingham and Whatcom County as part of ongoing watershed-scale planning efforts (TMDL REQUIRED).

2.1.2. Complete an evaluation of the effectiveness of built stormwater treatment and flow control facilities, and an assessment of overall performance in reducing phosphorus and bacteria (TMDL REQUIRED).

2.1.3. Develop retrofit plans for existing facilities and program projects for design and construction in accordance with resources, budget, and need (TMDL REQUIRED).

2.1.4. County will complete two subwatershed master plans to identify specific strategies for target areas.

2.1.5. Update capital improvement project list annually (TMDL REQUIRED).

2.1.6. Pursue funding opportunities, including grants, for projects identified in capital or retrofit list(s).

2.2 Residential Stormwater Solutions

Address unmanaged runoff and phosphorus from private properties around Lake Whatcom.

2.2.1 Provide technical and/or financial assistance for residential-scale retrofits of private property that result in phosphorus- or flow-limiting projects through the Homeowner Incentive Program (HIP) or similar programs that encourage voluntary stewardship by landowners.

2.2.2 Evaluate and develop neighborhood-scale retrofit projects in public rights-of-way and community space.

Stormwater

OBJECTIVE: Protect and restore water quality in Lake Whatcom and its tributaries by using best practices to collect, treat, and manage stormwater runoff from developed areas throughout the watershed.

2020-2024 Estimated Investments: $16.9 million

HIP homeowners| Photo by G. Mednick, 2019

2.2 Residential Stormwater Solutions (continued)

Address unmanaged runoff and phosphorus from private properties around Lake Whatcom.

2.2.3. Provide inspections and/or technical assistance to owners of private stormwater facilities and document performance toward water quality improvements for properly maintained systems.

2.2.4. Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (TMDL REQUIRED).

2.2.5. Develop and disseminate watershed-specific education and outreach messaging that encourages residents to act to protect water quality.

2.3 Public Stormwater Facilities and Infrastructure

Operate, inspect, and maintain all public stormwater facilities and infrastructure.

2.3.1. Conduct regular inspection and maintenance of public stormwater facilities (TMDL REQUIRED).

2.3.2. Conduct infrastructure maintenance activities and research and evaluate water quality benefits for activities that may include, but are not limited to, enhanced street sweeping, catch basin cleaning, and permeable pavement sweeping.

2.4 Integrate Water Quality Improvements Across Program Areas

Provide assistance to other program areas to achieve water quality improvement goals.

2.4.1. Provide technical assistance and consulting to other program areas and estimate water quality benefits gained through combined efforts and partnerships.

Reporting Metrics:

- Pounds of phosphorus reduced per year through activities in the following categories (TMDL REQUIRED):
  - Phosphorus treatment and flow control capital projects
  - Homeowner Incentive Program (HIP) improvements
  - Land use regulations
  - Operations and maintenance activities

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

2020-2024 Estimated Investments: $1.8 million

Home construction | Photo by Pixabay, 2016

The Lake Whatcom Management Program (LWMP) uses development regulations and assessments of forestry activities to minimize water quality impacts from development and logging.

3.1 Development

Use development regulations to protect water quality.

3.1.1. Coordinate with Lake Whatcom partners when developing or revising development regulations.

3.1.2. Track all building and development activities in the watershed and make information accessible to agencies and the public through the Annual Buildout Report.

3.1.3. Monitor properties, including Native Vegetation Protection Areas (NVPA), to ensure performance standards are met.

3.1.4. Provide outreach to watershed residents to increase understanding of and compliance with land use and stormwater regulations.

3.2 Forestry

Assess forestry activities to verify that adverse water quality impacts are minimized.

3.2.1. Review reports written by the Interjurisdictional Committee on Department of Natural Resources (DNR) forestry activities.

3.2.2. Review and comment on private forest practice applications.

Land Use

OBJECTIVE: Prevent water quality and quantity impacts from new development, redevelopment, and forest practices.

2020-2024 Estimated Investments: $1.8 million

No Trespassing in the Fog | Photo by W. Dennis, 2015

3.2 Forestry (continued)

Assess forestry activities to verify that adverse water quality impacts are minimized.

3.2.3. Engage with private forest landowners to achieve consistency with the Lake Whatcom Landscape Plan.

3.2.4. Track permitted forest practice activities (including harvests, replanting, road building and abandonment, and herbicide spraying).

3.2.5. Collaborate with the DNR to improve mapping of forest practice activities in GIS to improve tracking capabilities.

Reporting Metrics:

- Acres of native vegetation protected as forest in perpetuity as a result of land use regulations
- Acres of developed surface treated by phosphorus-limiting Best Management Practices (BMPs) installed to meet requirements of land use regulations
- Proportion of watershed residents who are knowledgeable of phosphorus-neutral development regulations measured every five years through the Lake Whatcom Watershed Baseline Survey
- Acres of timber harvested and replanted on forest lands per year
- Miles of road constructed/abandoned on forest lands per year
- Acres of land treated with herbicides on forest lands per year

Monitoring and Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

2020-2024 Estimated Investments: $3.4 million

Lake Whatcom monitoring | Photo by WWU, 2019

The Lake Whatcom Management Program (LWMP) works to implement studies, conduct monitoring, and improve modelling programs to further understand water quality and pollution sources in the Lake Whatcom watershed. Key efforts include lake and tributary monitoring, evaluating effectiveness of existing Best Management Practices (BMPs), updating load and response models, assessing on-site sewage (OSS) systems and managing data.

4.1 Lake Whatcom Monitoring

Continue long-term baseline water quality monitoring in Lake Whatcom.

4.1.1. Contract with Western Washington University Institute for Watershed Studies to provide annual report regarding water quality and trends in Lake Whatcom and tributaries.

4.1.2. Evaluate monitoring results and receive updates on water quality trends.

4.2 Tributary Monitoring

Continue long-term baseline monitoring of Lake Whatcom tributaries including the collection of data on total suspended solids, phosphorus and fecal coliform concentrations.

4.2.1. Provide annual data input for loading and response models.

4.2.2. Oversee and refine tributary monitoring contracts to improve hydrologic model.

4.2.3. Evaluate tributary monitoring results and determine policy implications.

4.3 Stormwater Monitoring

Conduct monitoring to evaluate stormwater facilities for their effectiveness at removing phosphorus and fecal coliform.

4.3.1. Use data to develop recommendations to improve removal of phosphorus and fecal coliform by stormwater facilities; update Best Management Practices (BMPs) as needed.

Monitoring and Data

OBJECTIVE: Collect and manage data to increase our understanding of water quality and pollution sources, reduce uncertainty in the Lake Whatcom loading and response models, and guide management decisions.

2020-2024 Estimated Investments: $3.4 million

Tributary monitoring | Photo by WWU, 2015

4.4 Phosphorus Loading and Response Models

Continue to support data collection needed to improve accuracy of phosphorus loading and lake response models.

4.4.1. Update and recalibrate the phosphorus loading model with additional data and incorporate recommendations from third party review (TMDL REQUIRED).

4.4.2. Continue to collect high quality streamflow, water quality, and weather data.

4.4.3. Update lake response model to better define phosphorus reduction goals.

4.5 On-Site Sewage System Impact Assessment

Conduct monitoring to assess on-site sewage systems (OSS, also called septic systems) in the watershed.

4.5.1. Conduct follow-up investigation to assess impacts on Lake Whatcom water quality.

4.5.2. Evaluate study results and discuss policy implications.

4.6 Baseline Data

Manage and develop summaries of monitoring data and reports.

4.6.1. Review and summarize monitoring studies and reports to determine water quality trends and policy implications, and make information easily accessible to the public.

4.6.2. Maintain and update data catalog.

4.6.3. Track the status of Ecology-approved Quality Assurance Project Plans (TMDL REQUIRED).

Reporting Metrics:

- Number of lake water quality samples collected per year
- Number of tributary water quality samples collected per year
- Number of samples exceeding water quality standards

Hazardous Materials

OBJECTIVE: Prevent water quality impacts associated with improper storage and handling of hazardous materials and ensure that spill prevention and response programs adequately protect water quality.

2020-2024 Estimated Investments: $225,000

Barrel o'Gunkies | Photo by J. Owen, 2007

The Lake Whatcom Management Program (LWMP) promotes the proper management of hazardous materials to prevent pollution from entering stormwater systems. These efforts are especially important in the Lake Whatcom watershed to protect our community's drinking water source.

5.1 Hazardous Materials

Facilitate removal of hazardous materials from watershed residences.

5.1.1. Conduct hazardous materials collection event at locations in the watershed (TMDL REQUIRED).

5.1.2. Promote and provide education on proper use, storage and disposal of hazardous materials.

5.2 Spill Prevention and Response

Protect water quality by providing adequate spill prevention, response and disposal programs.

5.2.1. Continue to detect and remediate illicit discharges, connections, and improper disposal, including spills into the City of Bellingham stormwater system or Lake Whatcom Water and Sewer District sewer system.

5.2.2. Educate watershed residents and visitors on how to prevent and report spills.

5.2.3. Continue to record and respond to calls regarding illicit discharges or spills received via the stormwater hotline number.

5.2.4. Review spill response procedures and reporting protocols.

5.2.5. Conduct ongoing field staff training regarding spill prevention and response.

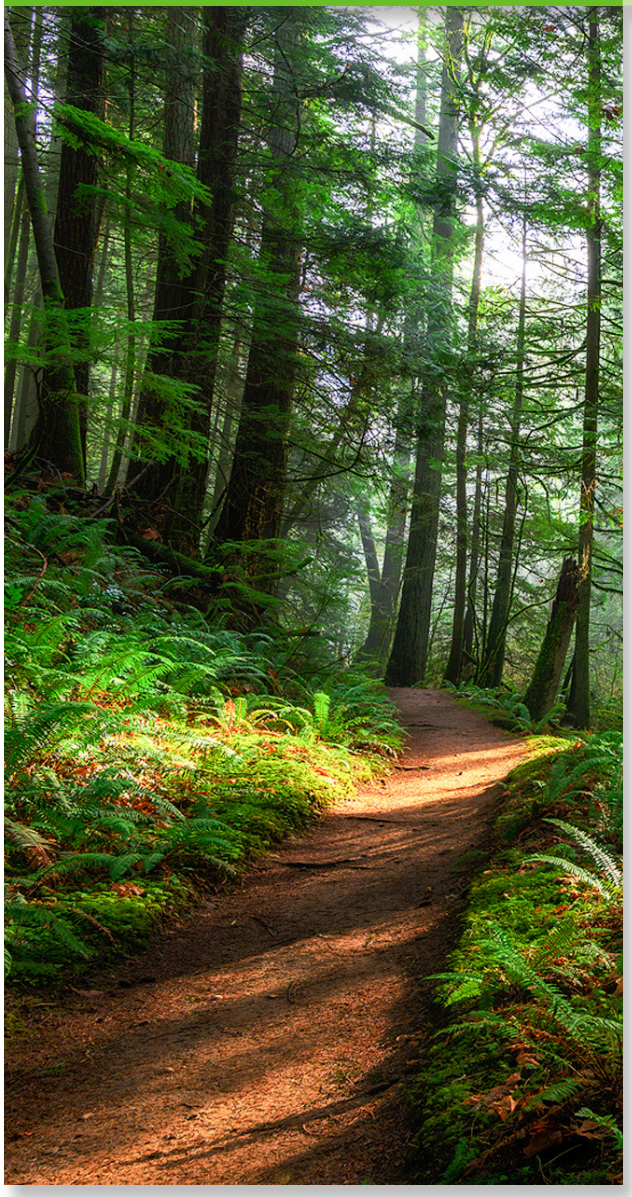
Reporting Metrics:

- Pounds of all hazardous materials collected from watershed residents per collection event(s) (TMDL REQUIRED)
- Pounds of phosphorus-containing materials collected from watershed residents per collection event(s) (TMDL REQUIRED)
- Number of spills, illicit discharges, or hazardous material incidents reported in the watershed
- Proportion of watershed residents who are knowledgeable about proper hazardous materials disposal measured every five years through the Lake Whatcom Watershed Baseline Survey
- Proportion of watershed residents who are knowledgeable about how to report spills measured every five years through the Lake Whatcom Watershed Baseline Survey

Recreation

OBJECTIVE: Provide access to recreational opportunities that are consistent with water quality goals.

2020-2024 Estimated Investments: $6.5 million



Golden Path | Photo by S. Melnick, 2015

The Recreation and Land Preservation program areas share two important objectives: protection of the watershed's water quality and provision of recreational opportunities in the watershed. These objectives are front and center for both of the program areas; however, each has a different emphasis. Recreation program area activities are focused on the nexus between recreational activities and facilities and watershed stewardship.

6.1 Recreational Facilities

Develop or improve recreational facilities to support recreational opportunities while reducing impacts to lake water quality.

6.1.1. Operate and maintain existing recreational amenities (including parking, signage, picnic sites, shelters, information kiosks, trash and pet waste receptacles, and restrooms) and explore options for providing these amenities at facilities where they do not currently exist.

6.1.2. Create low maintenance nutrient- and pesticide-free landscapes in public parks.

6.1.3. Infiltrate or treat stormwater following stormwater Best Management Practices (BMPs).

6.1.4. Ensure recreational opportunities offered through third-party vendors are in line with water quality goals.

6.2 Trails

Develop or improve trails and park roads to reduce impacts to water quality.

6.2.1. Build and maintain trails and park roads in accordance with appropriate BMPs to prevent erosion and ensure runoff is infiltrated and/or treated before reaching a water body.

6.2.2. Remove trails and roads that were not constructed using BMPs, where feasible.

6.2.3. Connect trails to other parks, trails, facilities and transportation networks.

6.2.4. Provide trailhead amenities such as restrooms, pet waste stations, and information kiosks, where appropriate.

6.2.5. Install directional signs on trails to discourage off-trail usage.

Recreation

OBJECTIVE: Provide access to recreational opportunities that are consistent with water quality goals.

2020-2024 Estimated Investments: $6.5 million

Chanterelle trail overlook | Photo by S. Duling, 2017

6.3 Public Access

Provide low impact public access opportunities.

6.3.1. Provide public access using existing parks, launches, and trails whenever possible.

6.3.2. Explore ways to improve bike lanes and transit services to recreational facilities.

6.3.3. Maintain and develop access to key viewpoints in the watershed.

6.4 Public Information and Stewardship

Provide watershed stewardship information to recreational users.

6.4.1. Educate watershed residents and visitors about recreational practices that protect water quality.

6.4.2. Engage recreational user groups (e.g. mountain bikers, horseback riders, boaters, etc.) in practices that protect water quality.

Reporting Metrics:

- Miles of user built trails decommissioned per year
- Miles of forest roads maintained in accordance with Forest Practices Act requirements per year
- Number of pet waste stations maintained in the watershed per year
- Estimated number of individuals using parks/trails in the watershed per year
- Number of interpretive/informational exhibits installed or maintained per year

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts assocated with established invasive species.

2020-2024 Estimated Investments: $2.8 million

AIS inspection at Bloedel Donovan | Photo by COB staff, 2018

The Lake Whatcom Management Program (LWMP) launched the Aquatic Invasive Species (AIS) Prevention Program in 2012 with the goal of preventing the introduction of zebra and quagga mussels and other aquatic invasive species to Lake Whatcom. Program elements that are highlighted in this section include education and outreach, watercraft inspection and decontamination, and monitoring and response.

7.1 Prevention

Implement prevention programs to minimize introduction and spread of AIS into Lake Whatcom and nearby waterbodies.

7.1.1. Implement mandatory watercraft inspection and decontamination program at Lake Whatcom and Lake Samish.

7.1.2. Inform watershed residents, boaters and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections.

7.2 Early Detection and Monitoring

Implement comprehensive aquatic invasive species monitoring program for Lake Whatcom and nearby waterbodies.

7.2.1. Conduct regular zebra/quagga mussel monitoring events in Whatcom County waters.

7.2.2. Detect new introductions and monitor the extent and density of established aquatic invasive species through activities such as: aquatic plant surveys, shoreline monitoring events, trapping and water sampling.

7.2.3. Develop a voluntary AIS monitoring and reporting program for Lake Whatcom.

Aquatic Invasive Species

OBJECTIVE: Prevent new aquatic invasive species (AIS) introductions to Lake Whatcom and minimize impacts assocated with established invasive species.

2020-2024 Estimated Investments: $2.8 million

Asian clams | Photo by COB staff, 2018

7.3 Management and Response

Establish effective plans for managing and responding to new infestations in a timely manner.

7.3.1. Develop AIS Rapid Response Plan for Lake Whatcom.

7.3.2. Identify all current management tools and Best Management Practices (BMPs) that could be implemented in Lake Whatcom to address any potential species of concern.

7.3.3. Coordinate and collaborate with staff from state and regional agencies/organizations when developing and implementing control and mitigation strategies.

Reporting Metrics:

- Number of new AIS introductions per year
- Number of watercraft inspections conducted per year
- Number of watercraft decontaminations conducted per year
- Number of people who completed online AIS Awareness Course per year
- Number of non-boating visitors interacted with at check stations per year
- Proportion of watershed residents who are knowledgeable about AIS and compliance with inspection requirements measured every five years through the Lake Whatcom Watershed Baseline Survey

Utilities and Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

2020-2024 Estimated Investments: $8.9 million

The Lake Whatcom Management Program (LWMP) supports responsible management of public infrastructure that serves watershed residents, which is critical in mitigating impacts to Lake Whatcom's water quality. Proactive maintenance of water, sewer, and road infrastructure within the watershed, coupled with effective water supply management and public education, can reduce development-related impacts.

8.1 Water

Manage water supply systems to minimize water quality and quantity impacts.

8.1.1. Conduct water audits to detect and repair water system leaks.

8.1.2. Encourage water-use efficiency through outreach and rebate programs.

8.2 Sewage

Reduce water quality degradation from sanitary sewer and on-site sewage (OSS or septic) systems.

8.2.1. Provide sewer service to areas with OSS systems when justified.

8.2.2. Maintain and replace sewer infrastructure to reduce the potential of sewage overflows.

8.2.3. Enforce OSS system operation and maintenance regulations, maintain OSS database and respond to failing systems.

Utilities and Transportation

OBJECTIVE: Prevent water quality and quantity impacts from water, sewer, and transportation systems.

2020-2024 Estimated Investments: $8.9 million

Alternative transportation | Photo by G. Boone, 2011

8.3 Roads and Transportation

Inform watershed residents and visitors about alternative transportation opportunities and design and develop transportation systems to protect water quality.

8.3.1. Employ road design standards to reduce impacts to water quality.

8.3.2. Perform enhanced maintenance actions (i.e. additional street sweeping, more frequent cleaning of catchbasins, more frequent replacement of stormwater filters, etc.) to reduce impacts to water quality.

8.3.3. Inform watershed residents and visitors about alternative transportation opportunities in the watershed.

8.3.4. Examine opportunities to improve bike and pedestrian mobility, including signage, to encourage and promote the use of alternative transportation.

8.3.5. Work with Whatcom Transit Authority to preserve and promote public transit routes.

Reporting Metrics:

- Number of bike and pedestrian mobility improvements made per year
- Proportion of watershed residents who have used alternative methods of transportation in the past year measured every five years through the Lake Whatcom Watershed Baseline Survey
- Estimated gallons of water conserved in the City of Bellingham and Lake Whatcom Water and Sewer District service areas per year
- Number of OSS system failures reported in the watershed per year
- Number of sewer overflows into Lake Whatcom per year
- Proportion of watershed residents who are knowledgeable of water conservation concerns in regards to water supply from Lake Whatcom measured every five years through the Lake Whatcom Watershed Baseline Survey

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

2020-2024 Estimated Investments: $825,000

Kids learn to inspect kayak at Public Works Fair | Photo by COB, 2016

The Lake Whatcom Management Program (LWMP) educates and engages community members in the protection of Lake Whatcom. Education and engagement (i.e., outreach) work plan components are divided into three types. **General Lake Whatcom** outreach activities are designed to reach a general audience and provide a broad array of information about the Lake Whatcom watershed. **Program area-specific** outreach activities apply to a specific target audience and often include assistance or incentives to help community members take a specific action to protect Lake Whatcom. Outreach activities are listed both in relevant program areas and in the Education and Engagement section. **Community-wide** outreach activities are incorporated into education and engagement efforts that target a broader, community-wide audience, but which also may benefit Lake Whatcom.

9.1 General Lake Whatcom Education and Engagement

Provide education and outreach to watershed residents, property owners, visitors, and the community about Lake Whatcom and the Lake Whatcom Management Program.

9.1.1. Provide information about Lake Whatcom and its watershed as well as Lake Whatcom Management Program activities and programs to watershed residents, property owners, visitors, community members and elected officials (TMDL REQUIRED).

9.1.2. Maintain and enhance up-to-date information and resources online.

9.1.3. Measure watershed residents' understanding of watershed issues and adoption of stewardship practices at least once every five years and use the results to adapt programs and direct resources more effectively (TMDL REQUIRED).

9.1.4. Provide education and engagement for program-specific activities included in this work plan, in addition to those specified under 9.2. Due to the large number of programmatic activities, this outreach support may constitute a large body of work. For example, efforts may include outreach to support the Homeowner Incentive Program (HIP), other stormwater retrofit projects, and water quality and AIS monitoring programs.

Reporting Metrics:

- Number of households (new and existing) sent informational materials per year (TMDL REQUIRED)
- Number of unique visitors to Lake Whatcom Management Program website per year
- Level of watershed residents' knowledge of and participation in key stewardship practices measured every five years through the Lake Whatcom Watershed Baseline Survey

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

2020-2024 Estimated Investments: $825,000

Waldorf School native planting project | Photo by Ann Neal Levi, 2017

9.2 Program Area-Specific Education and Engagement

The following program area-specific education and engagement activities are also listed under their respective program areas. Any reporting metrics for these activities can be found under the respective program areas.

Stormwater

2.2.4. Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (TMDL REQUIRED).

2.2.5. Develop and disseminate watershed-specific education and outreach messaging that encourages residents to act to protect water quality.

Land Use

3.1.4. Provide outreach to watershed residents to increase understanding of and compliance with land use and stormwater regulations.

Hazardous Materials

5.1.1. Conduct a hazardous materials collection event at locations in the watershed (TMDL REQUIRED).

5.1.2. Promote and provide education on proper use, storage and disposal of hazardous materials.

5.2.2. Educate watershed residents and visitors on how to prevent and report spills.

Recreation

6.4.1. Educate watershed residents and visitors about recreational practices that protect water quality.

6.4.2. Engage recreational user groups (e.g. mountain bikers, horseback riders, boaters, etc.) in practices that protect water quality.

Aquatic Invasive Species

7.1.2. Inform watershed residents, boaters and other lake visitors about AIS issues and engage them in prevention activities through informational materials, online education tools, community events and public meetings, and in-person conversations during inspections.

Education and Engagement

OBJECTIVE: Educate and engage watershed residents and visitors to promote and facilitate the adoption of behaviors that protect water quality.

2020-2024 Estimated Investments: $825,000

Water School program | Photo by P. Conrad, 2019

9.2 Program Area-Specific Education and Engagement (continued)

The following program area-specific education and engagement activities are also listed under their respective program areas. Any reporting metrics for these activities can be found under the respective program areas.

Utilities and Transportation

8.1.2. Encourage water-use efficiency through outreach and rebate programs.

8.3.3. Inform watershed residents and visitors about alternative transportation opportunities in the watershed.

9.3 Community-Wide Education and Engagement with Lake Whatcom Benefit

The following community-wide education and engagement activities target a broader, community-wide audience but may also benefit Lake Whatcom.

9.3.1. Pet waste: city- and county-wide programs that support pet waste pick up at home and in parks

9.3.2. Vehicle leaks: city-wide awareness campaign that uses advertising (e.g. print, bus and movie theater ads) to prompt vehicle owners to check leaks and fix them.

9.3.3. Car washing: city-wide awareness campaign that uses advertising (e.g. print, bus and movie theater ads) to prompt vehicle owners to wash their vehicles at a car wash.

9.3.4. Yard care: city- and county-wide workshops to educate and encourage residents to use sustainable yard care practices.

9.3.5. On-site sewage (OSS) system maintenance: county-wide program to support proper maintenance of OSS systems (septic systems).

9.3.6. School program: city-wide program to educate Bellingham School District students about Bellingham's water treatment systems and water conservation principles.

Administration

OBJECTIVE: Implement the Lake Whatcom Management Program (LWMP) Work Plan and provide opportunities for public input.

2020-2024 Estimated Investments: $700,000

Bellingham City Hall | Photo by W. P. Holeman, 2009

The Lake Whatcom Management Program (LWMP) facilitates collaboration between the City of Bellingham, Whatcom County, the Lake Whatcom Water and Sewer District, and other partners. Meeting facilitation, reporting, budget development, and other administrative activities are all critical to the success of the program.

10.1 Meeting Coordination

Coordinate and provide staff support for LWMP meetings and information-sharing opportunities.

10.1.1. Hold meetings of the Lake Whatcom Watershed Advisory Board to discuss management program issues and receive citizen comments and suggestions.

10.1.2. Hold monthly meetings of the Data Management Team to address issues related to monitoring, modeling, Total Maximum Daily Load (TMDL) requirements and other data management.

10.1.3. Hold meetings of the Interjurisdictional Coordinating Team to oversee work plan implementation efforts and work product development.

10.1.4. Hold meetings of the Lake Whatcom Joint Policy Group to discuss Lake Whatcom policy topics and provide guidance and direction to staff.

10.1.5. Hold annual Joint Councils and Commission meeting to discuss LWMP Work Plan and accomplishments.

10.1.6. Hold Lake Whatcom Management Committee meetings as needed to provide staff with administrative direction.

10.2 Public Information

Coordinate education and engagement efforts by LWMP staff and partners. Inform the community about opportunities for involvement in public meetings, comment periods and decision making processes.

10.2.1. Provide notice of public meetings and other opportunities for public involvement on the LWMP website.

10.2.2. Provide periodic updates to the Bellingham City Council, Whatcom County Council, and Lake Whatcom Water and Sewer District Board of Commissioners.

10.2.3. Conduct public presentations as needed.

Administration

OBJECTIVE: Implement the Lake Whatcom Management Program (LWMP) Work Plan and provide opportunities for public input.

2020-2024 Estimated Investments: $700,000

Whatcom County Civic Center | Photo by T. Ward, 2020

10.3 Work Plans and Reports

Support development of work plans, presentations and reports.

10.3.1. Oversee the development of the Lake Whatcom Management Program five-year work plan and annual Lake Whatcom Management Program progress and monitoring reports.

10.3.2. Oversee performance measure tracking and reporting.

10.3.3. Develop 2024-2029 Lake Whatcom TMDL Implementation Tasks (TMDL REQUIRED).

10.3.4. Develop watershed-specific operational plan for managing public areas (TMDL REQUIRED).

10.4 Funding

Establish work plan funding needs and strategy to support work plan implementation.

10.4.1. Seek funding necessary to implement LWMP programs.

10.4.2. Identify and pursue grant funding as opportunities arise.

10.4.3. Manage stormwater fee rolls and watershed protection fund.

10.5 Regulatory Agencies

Support work plan implementation by communicating with agencies.

10.5.1. Communicate with regulatory agencies regarding Lake Whatcom water quality, natural resources and land use activities in the watershed.

10.6 Contracts

Oversee a variety of consultant and contractor projects, contracts and work products.

10.6.1. Manage and oversee all contracts with consultants and contractors.

TMDL Required Actions

This table lists activities required under the 2019-2024 NPDES stormwater permits. To download a copy of Appendix 2: https://ecology.wa.gov, search for "Western Washington Phase II Municipal Stormwater Permit", look under "current permit documents".

TMDL Required Actions from the Western Washington Phase II Municipal Stormwater Permit Appendix 2

Program Area	Responsible Party	Activity and/or Reporting Metric	Due Date *submitted with NPDES Annual Report for work completed previous year*
Stormwater	City of Bellingham Whatcom County	Construct capital stormwater facilities in accordance with capital improvement plans adopted by the City of Bellingham and Whatcom County as part of ongoing watershed-scale planning efforts (Activity 2.1.1.).	Annually on March 31*
Stormwater	City of Bellingham Whatcom County	Complete an evaluation of the effectiveness of built stormwater treatment and flow control facilities, and an assessment of overall performance in reducing phosphorus and bacteria (Activity 2.1.2.).	March 31, 2021*
Stormwater	City of Bellingham Whatcom County	Develop retrofit plans for existing facilities and program projects for design and construction in accordance with resources, budget and need (Activity 2.1.3.).	March 31, 2024*
Stormwater	City of Bellingham Whatcom County	Update capital improvement projects list annually (Activity 2.1.5.).	Annually on March 31*
Stormwater	Whatcom County	Conduct annual private stormwater facility maintenance workshops to instruct owners about system needs and maintenance requirements (Activity 2.2.4.).	Annually on March 31*
Stormwater	City of Bellingham Whatcom County	Conduct regular inspection and maintenance of public stormwater facilities (Activity 2.3.1.).	Annually on March 31*
Stormwater	City of Bellingham Whatcom County	Pounds of phosphorus reduced per year through (Reporting Metric): (1) Treatment and flow control capital projects (2) Homeowner Incentive Program BMPs (3) Land use regulations (4) Operation and maintenance activities	Annually on March 31*
Monitoring and Data	City of Bellingham Whatcom County	Update and recalibrate the loading model with additional data and incorporate recommendations from third party review (Activity 4.4.1.).	March 31, 2024*

TMDL Required Actions

TMDL Required Actions from the Western Washington Phase II Municipal Stormwater Permit Appendix 2

Program Area	Responsible Party	Activity and/or Reporting Metric	Due Date **submitted with NPDES Annual Report for work completed previous year*
Monitoring and Data	City of Bellingham Whatcom County	Track the status of Ecology-approved Quality Assurance Project Plans (Activity 4.6.4.).	Annually on March 31*
Hazardous Materials	Whatcom County	Conduct a hazardous materials collection event at locations in the watershed (Activity 5.1.1.).	March 31, 2024*
Hazardous Materials	Whatcom County	Pounds of all hazardous materials collected from watershed residents per collection event(s) (Reporting Metric)	March 31, 2024*
Hazardous Materials	Whatcom County	Pounds of phosphorus-containing materials collected from watershed residents per collection event(s) (Reporting Metric)	March 31, 2024*
Education and Engagement	City of Bellingham	Provide information about Lake Whatcom and its watershed as well as Lake Whatcom Management Program activities and programs to watershed residents, property owners, visitors, community members and elected officials (Activity 9.1.1.).	July 31, 2024 (end of permit)
Education and Engagement	City of Bellingham	Number of households (new and existing) sent informational materials per year (Reporting Metric)	Annually on March 31*
Education and Engagement	City of Bellingham	Measure watershed residents' understanding of watershed issues and adoption of stewardship practices at least once every five years and use the results to adapt programs and direct resources more effectively (Activity 9.1.3.).	December 31, 2023 (five-year cycle started in 2018)
Administration	City of Bellingham Whatcom County	Develop 2024-2029 Lake Whatcom TMDL Implementation Tasks (Activity 10.3.3.).	December 31, 2023
Administration	City of Bellingham	Develop a watershed-specific operational plan for managing public areas (Activity 10.3.4.).	March 31, 2024*

2020-2024 Work Plan – Cost Estimates

2020-2024 Work Plan Cost Estimates				
Program Area	**Staff Costs**	**Capital Costs**	**Other Costs**	**5-Year Total**
1. Land Preservation	$1,125,000	$18,000,000	$400,000	$19,525,000
2. Stormwater	$2,680,574	$9,410,000	$4,863,500	$16,954,074
3. Land Use	$1,875,000	–	–	$1,875,000
4. Monitoring & Data	$513,497	–	$2,931,775	$3,445,272
5. Hazardous Materials	$160,545	–	$65,000	$225,545
6. Recreation	$1,557,560	$4,887,000	$93,650	$6,538,210
7. Aquatic Invasive Species	$2,292,082	–	$574,041	$2,866,123
8. Utilities & Transportation	$2,531,760	$4,560,000	$1,834,000	$8,925,760
9. Education & Engagement	$686,845	–	$139,500	$826,345
10. Administration	$602,500	–	$100,000	$702,500
LWMP Work Plan Total	**$14,100,362***	**$36,857,000**	**$11,001,466****	**$61,958,828**

*Staff costs include actual budgeted staff costs for each program area (including benefits).

**Other costs include supplies, materials, equipment, consultant fees, interfund charges, taxes, bank charges, and procedural costs.

2020-2024 Work Plan – Funding Sources

Program Area	Partner	Funding Sources
1. Land Preservation	Whatcom County	Conservation Futures Fund
	City of Bellingham	Lake Whatcom Property Acquisition Fees
	Lake Whatcom Water and Sewer District	Not Applicable
2. Stormwater	Whatcom County	Real Estate Excise Taxes, Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund, Grants
	City of Bellingham	Stormwater Utility Fees, Portion of Lake Whatcom Property Acquisition Fees, Grants
	Lake Whatcom Water and Sewer District	Utility Fees
3. Land Use	Whatcom County	Development Fees, General Fund
	City of Bellingham	Development Fees, General Fund
	Lake Whatcom Water and Sewer District	Not Applicable
4. Monitoring & Data	Whatcom County	Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
5. Hazardous Materials	Whatcom County	Solid Waste Excise Taxes, Flood Control Zone District, Road Fund, Grants
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Not Applicable
6. Recreation	Whatcom County	Conservation Futures Fund, General Fund, Real Estate Excise Taxes, Parks Special Revenue Fund
	City of Bellingham	Greenways Taxes, General Fund
	Lake Whatcom Water and Sewer District	Not Applicable
7. Aquatic Invasive Species	Whatcom County	Flood Control Zone District Taxes
	City of Bellingham	Water Utility Fees, Boat Inspection Fees
	Lake Whatcom Water and Sewer District	Utility Fees
8. Utilities and Transportation	Whatcom County	Road Fund
	City of Bellingham	Street Funds, Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
9. Education and Engagement	Whatcom County	Flood Control Zone District Taxes, Stormwater Utility Fees, Road Fund
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees
10. Administration	Whatcom County	Flood Control Zone District Taxes, Road Fund, Stormwater Utility Fees
	City of Bellingham	Stormwater Utility Fees, Water Utility Fees
	Lake Whatcom Water and Sewer District	Utility Fees

Resources

Land Preservation

Lake Whatcom Property Acquisition Program
cob.org/services/environment/lake-whatcom/pages/lw-property-acquisition-program.aspx

Whatcom County Parks & Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Protected Property in the Lake Whatcom Watershed Map
cob.org/documents/pw/lw/acquisition-land-map.pdf

Stormwater

Lake Whatcom Management Program Capital Improvement Projects
lakewhatcom.whatcomcounty.org/our-programs/capital-projects

City of Bellingham 2007 Comprehensive Stormwater Plan
cob.org/documents/pw/storm/2007-stormwater-comp-plan.pdf

Whatcom County 2008 Lake Whatcom Comprehensive Stormwater Plan
whatcomcounty.us/1022/Lake-Whatcom-Comprehensive-Stormwater-Pl

Whatcom County Lake Whatcom Capital Project Plan Update
whatcomcounty.us/DocumentCenter/View/30912

Homeowner Incentive Program
lakewhatcomHIP.org

Land Use

Bellingham Municipal Code (BMC) 16.80 (Lake Whatcom Reservoir Regulatory Chapter), 15.42 (Stormwater Regulations), 16.55 (Critical Areas Ordinance), Title 22 (Shoreline Master Program) codepublishing.com/wa/bellingham/

Whatcom County Code (WCC) 20.51 (Lake Whatcom Watershed Overlay District & Stormwater Regulations), 16.16 (Critical Areas Ordinance), Title 23 (Shoreline Management Program) codepublishing.com/wa/whatcomcounty/

Lake Whatcom Watershed Annual Build-Out Analysis Reports
lakewhatcom.whatcomcounty.org/resources

Monitoring and Data

Lake Whatcom Monitoring Reports
cedar.wwu.edu/lakewhat_annualreps/

Lake Whatcom Data Catalog
Copies of documents are available at the Whatcom County Public Works Water Resources Library and the Bellingham Public Library

Hazardous Materials

Whatcom County Emergency Management Plan
whatcomready.org/wp-content/uploads/2012/06/Whatcom-County-CEMP-2008.pdf

Whatcom County Disposal of Toxics
whatcomcounty.us/833/Disposal-of-Toxics-Facility

Stormwater Hotline: (360) 778-7979
cob.org/services/environment/stormwater/pages/stormwater-report-form.aspx

Recreation

Whatcom County Parks and Recreation—Reconveyance
whatcomcounty.us/625/Lake-Whatcom-Reconveyance

Lookout Mountain Forest Preserve and Lake Whatcom Park Recreational Trail Plan
whatcomcounty.us/DocumentCenter/View/23920

Whatcom County Comprehensive Parks, Recreation and Open Space Plan
whatcomcounty.us/DocumentCenter/View/14547

City of Bellingham Comprehensive Parks, Recreation and Open Space Plan
cob.org/documents/parks/development/pro-plan/pro-plan-full.pdf

Resources

Aquatic Invasive Species

Lake Whatcom Aquatic Invasive Species Program Annual Reports and Documents
lakewhatcom.whatcomcounty.org/resources

Whatcom Boat Inpections
whatcomboatinspections.com

Aquatic Invasive Species Awareness Course
whatcomboatinspections.com/ais-awareness-course

2019 Inspection Results Story Map
whatcomboatinspections.com/2019-story-map

Whatcom Boat Inspections Hotline: (360) 778-7975

Utilities and Transportation

City of Bellingham Drinking Water Quality Reports
cob.org/services/environment/lake-whatcom/pages/water-quality.aspx

Lake Whatcom Water and Sewer District Consumer Confidence Reports
lwwsd.org/for-customers/quality-consumer-confidence-reports/

City of Bellingham Water Conservation Resources
cob.org/conserve

Whatcom County On-Site Sewage System Program, WCC 24.05
whatcomcounty.us/documentcenter/view/2053

Lake Whatcom Water and Sewer District 2018 Water System Comprehensive Plan
lwwsd.org/resources/water-system-comprehensive-plan/

Lake Whatcom Water and Sewer District 2014 Sewer Comprehensive Plan
lwwsd.org/resources/comprehensive-sewer-plan/

Whatcom Smart Trips
whatcomsmarttrips.org/

Community Energy Challenge
sustainableconnections.org/energy/energychallenge

Education and Engagement

Lake Whatcom Management Program
lakewhatcom.whatcomcounty.org

City of Bellingham Lake Whatcom Stewardship
cob.org/services/environment/lake-whatcom/pages/stewardship-solutions.aspx

WSU Whatcom County Extension Sustainable Landscaping
whatcom.wsu.edu/ch/sustainable.html

Homeowner Incentive Program
lakewhatcomHIP.org

Lake Whatcom Watershed Baseline Survey 2018
lakewhatcom.whatcomcounty.org/LakeWhatcomWatershedBaselineSurvey
Findings2018_Final.pdf

Administration

1992 Lake Whatcom Joint Resolution
lakewhatcom.whatcomcounty.org/1992JointResolution.pdf

Lake Whatcom Management Program Work Plans and Progress Reports
lakewhatcom.whatcomcounty.org/resources

Lake Whatcom Meetings and Agendas
lakewhatcom.whatcomcounty.org/news

Lake Whatcom Management Program Contacts
lakewhatcom.whatcomcounty.org/contacts

View from Bloedel Donovan | Photo by T. Ward, 2018

Lake Whatcom Management Program Contacts:

City of Bellingham Public Works—Natural Resources
Clare Fogelsong, (360) 778-7900, cfogelsong@cob.org

Whatcom County Public Works
Gary Stoyka, (360) 778-6230, gstoyka@co.whatcom.wa.us

Lake Whatcom Water and Sewer District
Justin Clary, (360) 734-9224, justin.clary@lwwsd.org

LAKE WHATCOM COOPERATIVE MANAGEMENT

www.lakewhatcom.whatcomcounty.org

AGENDA BILL Item 5.C		**Combo - Vacuum Truck Purchase**		
DATE SUBMITTED:	February 6, 2020	MEETING DATE:	February 12, 2020	
TO: BOARD OF COMMISSIONERS		FROM: Rich Munson, ETSO		
GENERAL MANAGER APPROVAL				
ATTACHED DOCUMENTS		1. Owen Equipment Bid 2. Seattle Pump Bid 3. Total cost spreadsheet		
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☐	INFORMATIONAL /OTHER ☒

BACKGROUND / EXPLANATION OF IMPACT

During development of the 2020 Budget, District operations and engineering staff identified the current combination sewer vacuum truck is coming to end of its life. Staff has had three different vacuum truck manufacturers bring and demonstrate their equipment.

O&M staff deliberated on the pros and cons of each manufacturer's truck and came to the conclusion that the Vactor 2100i Single Fan was the best option for the District. The District also requires jetting nozzles to flush and clean sewer mains. Since they are not included in the purchase of the truck, Seattle Pump quoted the District on those nozzles.

FISCAL IMPACT

Total projected cost of $524,682.70 is within the Board-approved 2020 budget.

RECOMMENDED BOARD ACTION

Review/discuss/consider the Owen Equipment bid for a Vactor 2100i.

PROPOSED MOTION

No action is necessary.


VACTOR
2100i
T680

Owen Equipment Presents a Proposal Summary

of the

2100 Plus

Combination Single Engine Dual Stage Sewer Cleaner with Hydrostatic Driven Vacuum System Mounted on a Heavy Duty Truck Chassis

for

Lake Whatcom Water and Sewer District
1220 Lakeway Drive
Bellingham, WA 98229
Vactor Sourcewell NJPA Contract #122017-FSC

Peter Blaikie
Tel: 253-243-4665

List Summary

Order Qty	Part Number	Description	List Price
1	2112-SE2-PLUS	2100i Single Engine Fan, Dual Stage, 12 yrd Debris, Combo	$257,550.00
1	2018P	Additional Water, 1500 Gal Total (12 yrd)	$4,111.00
1	3002PSTD	Vacuum, Single Engine - Dual Stage Fan	$0.00
1	5002PA	80 GPM/2500 PSI	$0.00
1	009PSTD	Control Panel Box	$0.00
1	011PSTD	Aluminum Fenders	$0.00
1	012PSTD	Mud Flaps	$0.00
1	014PSTD	Electric/Hydraulic Four Way Boom	$0.00
1	016PSTD	Color Coded Sealed Electrical System	$0.00
1	019PASTD	Intuitouch Electronic Package	$0.00
1	020PSTD	Double Acting Hoist Cylinder	$0.00
1	025PASTD	Handgun Assembly	$0.00
1	026PSTD	Ex-Ten Steel Cylindrical Debris Tank	$0.00
1	030PSTD	Flexible Hose Guide	$0.00
1	032PSTD	(3) Nozzles with Carbide Inserts w/Rack	$0.00
1	045PSTD	Suction Tube Storage - 4 Pipe	$0.00
1	046PSTD	1" Nozzle Pipe	$0.00
1	048PSTD	10' Leader Hose	$0.00
1	1001PSTD	Flat Rear Door w/Hydraulic Locks	$0.00
1	1005PSTD	Dual Stainless Steel Float Shut Off System	$0.00
1	1024PSTD	Debris Body Vacuum Relief System	$0.00
1	1031PSTD	Debris Deflector Plate	$0.00
1	1033PSTD	60" Dump Height	$0.00
1	2001PSTD	Low Water Alarm with Water Pump Flow Indicator	$0.00
1	2011PSTD	3" Y-Strainer at Passenger Side Fill	$0.00
1	2022PSTD	Additional Water Tank Sight Gauge	$0.00
1	2023PSTD	Liquid Float Level Indicator	$0.00
1	3019PSTD	Digital Water Pressure Gauge	$0.00
1	4006PSTD	Joystick Boom Control	$0.00
1	4010PSTD	Boom Hose Storage, Post	$0.00
1	4022PSTD	Telescopic Boom Elbow, Standard	$0.00
1	5010PSTD	Rodder System Accumulator - Jack Hammer on/off Control w/ manual valve	$0.00
1	5011PSTD	3" Y-Strainer @ Water Pump	$0.00
1	5012PSTD	Performance Package	$0.00
1	5014PSTD	1" Water Relief Valve	$0.00
1	5015PSTD	Midship High Pressure Coupling	$0.00
1	5022PSTD	Side Mounted Water Pump	$0.00
1	6005PDSTD	Digital Hose Footage Counter	$0.00
1	6007PSTD	Hose Reel Manual Hyd Extend/Retract	$0.00
1	6009PSTD	Hose Reel Chain Cover	$0.00
1	6020PBSTD	Hydraulic Extending 15", Rotating Hose Reel, 1" x 800' Capacity	$0.00
1	6017PSTD	Hydraulic Tank Shutoff Valves	$0.00
1	7001PSTD	Tachometer/Chassis Engine w/Hourmeter	$0.00

1	7003PSTD	Water Pump Hour Meter	$0.00
1	7004PSTD	PTO Hour Meter	$0.00
1	7005PSTD	Hydraulic Oil Temp Alarm	$0.00
1	8000PSTD	Circuit Breakers	$0.00
1	8025PSTD	LED Lights, Clearance, Back-up, Stop, Tail & Turn	$0.00
1	9002PSTD	Tow Hooks, Front	$0.00
1	9002PSTD	Tow Hooks, Rear	$0.00
1	9003PSTD	Electronic Back-Up Alarm	$0.00
1	S390ASTD	8" Vacuum Pipe Package	$0.00
1	S560STD	Emergency Flare Kit	$0.00
1	S590STD	Fire Extinguisher 5 Lbs.	$0.00
1	1003P	Debris Body Washout	$1,546.00
1	1008PB	6" Rear Door Drain Port w/Fixed Basket Screen, 6:00 position	$579.00
1	1009PD	Full Rear Door Swinging Screen	$788.00
1	1014P	Centrifugal Separators (Cyclones)	$5,405.00
1	1015P	Folding Pipe Rack, Curbside, 8" Pipe	$1,072.00
1	1015PA	Folding Pipe Rack, Streetside, 8" Pipe	$1,072.00
1	1022P	Rear Door Splash Shield	$1,574.00
1	1023P	Lube Manifold	$2,337.00
1	1023PA	Plastic Lube Chart, included with Lube Manifold	$0.00
1	1026P	Debris Body Vibrator, Electric	$2,750.00
1	1053P	Stainless Steel Water Barrel for Jet Rodder Pump	$3,070.00
1	2006P	Air Purge	$1,324.00
1	3020P	Digital Water Level Indicator	$688.00
1	3021P	Debris Body Level Indicator	$922.00
1	4015P	180 deg. 10ft Telescoping Boom	$15,646.00
1	4011PA	Wireless Controls w/2-way communication and LED Display.(excludes hose reel controls)	$2,412.00
1	4013P	Rotatable Boom Inlet Hose, Telescoping Boom	$579.00
1	5021PC	Hydro Excavation Kit - Includes Lances, Nozzles, Storage Tray, and Vacuum Tubes	$3,936.00
1	5023P	Fan Flushout System	$510.00
1	6002PB	600' x 1" Piranha Sewer Hose 2500 PSI in lieu of STD	$927.00
1	6004PB	Hose Wind Guide (Dual Roller), Auto, Indexing with Pinch Roller	$5,209.00
1	6008P	Hose Reel Manual Rewind	$524.00
1	6014P	High Pressured Hose Reel	$1,494.00
1	6019P	Rodder Pump Drain Valves	$500.00
1	6026P	Washington State DOT Legal Front Hose Reel	$0.00
1	8007PC	Strobe Light, LED, Rear, Federal Signal, Amber	$1,072.00
1	8020PL	14 Light Package, 14 Federal Signal Strobe Lights, LED	$3,295.00
1	8028P	Worklights (2), LED, Telescoping Boom	$805.00
1	8029P	Worklights (2), LED, Rear Door	$654.00
1	8029PA	Worklight, LED, Operators Station	$657.00
1	8029PB	Worklight, LED, Hose Reel Manhole	$657.00
1	8029PC	Worklight, LED, Curb Side	$328.00
1	8029PD	Worklight, LED, Street Side	$328.00
1	8030P	Hose Reel Wrapped for Delivery	$0.00
1	9021PB	Camera System, Front, Rear and Both Sides	$1,213.00

1	9023P	Safety Cone Storage Rack - Drop in Style	$165.00
1	9072PB	Toolbox, Driver Side Chassis Frame, 24w x 24h x 24d	$1,612.00
1	9075PA	Toolbox, Driver Side Subframe, 60w x 20h x 12d	$1,333.00
1	P112STD	Module Paint, DuPont Imron Elite - Sanded Primer Base	$0.00
1	P124STD	Vactor 2100i Body Decal, Standard	$0.00
1	LOGO-APPL.	Vactor/Guzzler Logos - Applied	$0.00
2	500655B-30	2 Total Vactor Standard Manuals and USB Version - Plus Dealer	$150.00
1	500655-30	1 Printed Full Vactor Manual	$150.00
1	89957A-30	(1) 8" x 3'-0" Higbee C/B Nozzle Assembly	$803.97
1	Chassis- Mod	Chassis Modifications Charges	$1,600.00
		Factory Price:	**$331,347.97**

NJPA Sourcewell Discount:….. ($9,940.44)

Vactor Total:….$321,407.53

Open Market Items

HXX Reel mounted on passenger side front bumper behind boom post facing curb……**N/C**
Left Front Bumper Basket Aluminum……**$750.00**
Debris Body painted silver to match cab as close as possible……**N/C**

Pricing From Previous 2018 WSDOT Contract 01912

Kenworth T880, Tandem Rear Axle, Dual Air Ride Seats with vinyl covering……**$125,361.00**

KW Chassis upgrades

PACCAR Engine MX13 455HP Allison 4000RDS 6 Speed, Aluminum Wheels, Silver Paint, Engine Brake at All Speeds, Steering Stops Adjusted to Max……**$12,689.00**

Delivery: $4,600.00

Sub Total: $464,807.53

Sales Tax 10.3%: $47,875.17

Total: $512,682.70

Price valid for 60 Days from date of 2/5/2020

PROPOSAL DATE: 2/5/2020
QUOTE NUMBER: 2020-35370
Price List Date: 7/1/2019
PO NUMBER:
QTY: _____ Customer Initials:_____

PAYMENT TERMS:

PROPOSAL NOTES:

1. Multiple unit orders will be identical to signed proposal. Changes or deviations to any unit of a multiple unit order will requires a new signed proposal.
2. Chassis specifications and data codes for customer supplied chassis must be submitted to and approved by Vactor Manufacturing prior to submittal of customer purchase order
3. All prices quoted are in US Dollars unless otherwise noted.

SIGNED BY:

_____ Date: _____

LIMITED WARRANTY

Limited Warranty. Each machine manufactured by VACTOR/GUZZLER MANUFACTURING (or, "the Company") is warranted against defects in material and workmanship for a period of 12 months, provided the machine is used in a normal and reasonable manner and in accordance with all operating instructions. In addition, certain machines and components of certain machines have extended warranties as set forth below. If sold to an end user, the applicable warranty period commences from the date of delivery to the end user. If used for rental purposes, the applicable warranty period commences from the date the machine is first made available for rental by the Company or its representative. This limited warranty may be enforced by any subsequent transferee during the warranty period. This limited warranty is the sole and exclusive warranty given by the Company.

STANDARD EXTENDED WARRANTIES (Total Warranty Duration)

2100 Series, HXX, Series and Jetters	10 years against water tank leakage due to corrosion. nonMettalic water tanks are covered for 5 yrs against any factory defect in material or workmanship.
2100 Series and HXX only	5 years against leakage of debris tank, centrifugal compressor or housing due to rust-through.
2100 Series and Jetters	2 years - VactorRodder Pump on all unit serial numbers starting with 13##V#####.

Exclusive Remedy. Should any warranted product fail during the warranty period, the Company will cause to be repaired or replaced, as the Company may elect, any part or parts of such machine that the Company's examination discloses to be defective in material or factory workmanship. Repairs or replacements are to be made at the selling Vactor/Guzzler distributor's location or at other locations approved by the Company. In lieu of repair or replacement, the Company may elect, at its sole discretion, to refund the purchase price of any product deemed defective. The foregoing remedies shall be the sole and exclusive remedies of any party making a valid warranty claim.

This Limited Warranty shall not apply to (and the Company shall not be responsible for):

1. Major components or trade accessories that have a separate warranty from their original manufacturer, such as, but not limited to, trucks, engines, hydraulic pumps and motors, tires and batteries.
2. Normal adjustments and maintenance services.
3. Normal wear parts such as, but not limited to, oils, fluids, vacuum hose, light bulbs, fuses, gaskets.
4. Failures resulting from the machine being operated in a manner or for a purpose not recommended by the Company.
5. Repairs, modifications or alterations without the express written consent of the Company, which in the Company's sole judgment, have adversely affected the machine's stability, operation or reliability as originally designed and manufactured.
6. Items subject to misuse, negligence, accident or improper maintenance.

NOTE The use in the product of any part other than parts approved by the Company may invalidate this warranty. The Company reserves the right to determine, in its sole discretion, if the use of non-approved parts operates to invalidate the warranty. Nothing contained in this warranty shall make the Company liable for loss, injury, or damage of any kind to any person or entity resulting from any defect or failure in the machine.

THIS WARRANTY SHALL BE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND TO THE EXTENT PERMITTED, CONFERRED BY STATUTE, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY AGAINST FAILURE OF ITS ESSENTIAL PURPOSE, ALL OF WHICH ARE DISCLAIMED.

This warranty is in lieu of all other obligations or liabilities, contractual and otherwise, on the part of the Company. For the avoidance of doubt, the Company shall not be liable for any indirect, special, incidental or consequential damages, including, but not limited to, loss of use or lost profits. The Company makes no representation that the machine has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the machine. No person or affiliated company representative is authorized to alter the terms of this warranty, to give any other warranties or to assume any other liability on behalf of the Company in connection with the sale, servicing or repair of any machine manufactured by the Company. Any legal action based hereon must be commenced within eighteen (18) months of the event or facts giving rise to such action.

The Company reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

VACTOR/GUZZLER MANUFACTURING

1621 S. Illinois Street
Streator, IL 61364

Seattle Pump AND EQUIPMENT CO.
2222 15TH AVENUE WEST
SEATTLE, WA 98119
Ph: 800-863-7867 Fx: 206-284-8638

Quote

Quote Valid for 30 Days.

Quote Number : 210316-0
Customer# : 104073
Quote Date : 01/23/2020
Quoted To :
Entered By : John Scott
Salesperson : John Scott
Terms : NET 30 DAYS
Ship Via :
Ship Acct# :
Job/Rel# :

Bill to: LAKE WHATCOM WATER and SEWER DISTRI
1220 LAKEWAY DRIVE
BELLINGHAM, WA 98229

Phone: (360) 734-9224 Fax: (360) 738-8250

Ship to: LAKE WHATCOM WATER and SEWER DISTRI
1220 LAKEWAY DRIVE
BELLINGHAM, WA 98229

Phone: (360) 734-9224 Fax: (360) 738-8250

Line	Qty	U/M	Item #	Description	Price	Extension
0001	1	EA	ENZ.36.100	1" ENZ ROTODRILL NOZZLE 1F/6R JETS FOR 6"-10" PIPE PIERCING NOZZLE	615.00	615.00
0002	1	EA	ENZ.50.100G	1" ENZ BULLDOZER NOZZLE 1F/8R JETS FOR 12"-60" PIPE CLEANING WHATCOM 3/4D. GRAVEL	4,745.00	4745.00
0003	1	EA	ENZ.404.080HS-150	1" ENZ BULLDOG NOZZLE 1F/6S/6R JETS FOR 6"-16" PIPE W/ 6" SKID CLEANING MAINS	3,430.00	3430.00
0004	1	EA	ENZ.18.020190	1/4" ENZ TURBO-JET NOZZLE HYDRO-X NOZZLE, BUSHING NEEDED EFFICIENCY	325.00	325.00
0005	1	EA	ST.DBR-8	8" DEBRIS BASKET WITH 25' ROPE DON'T HAVE	249.00	249.00
0006	1	EA	ST.DBR-6	6" DEBRIS BASKET WITH 25' ROPE DON'T HAVE	238.00	238.00

SubTotal	9,602.00
Tax	835.37
Total USD	10,437.37

Signature: _____

Page: 1

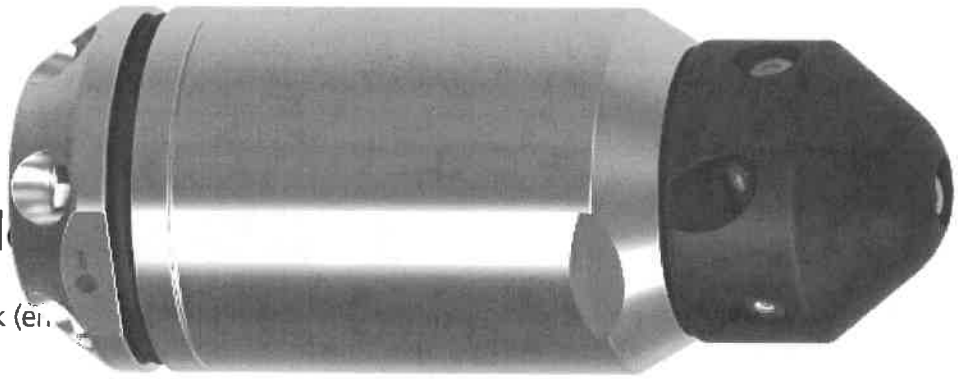
WWW.SEATTLEPUMP.COM

Thank you! Have a nice day!

CALIBRATION TUBE

2,300.00
& 12,737.37

Bulldog® 3/4" - 1"



Bulld

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Close

Product description

The enz® Bulldog® rotating nozzle has been designed for operation with recycling water and fresh water. The cleverly built sliding bearing allows the use of every kind of recycled water. An integrated oil-free braking system results in a low wear and tear operation and in controlled numbers of rotation. In this way a most efficient and economic pipe cleaning is achieved. The bore of the nozzle insert determines the admissible size of the dirt particles up to a maximum Ø 0.05 inch.

Transport and water costs are noticeably reduced.

Characteristics

- Easy to handle
- The tool is practically maintenance-free

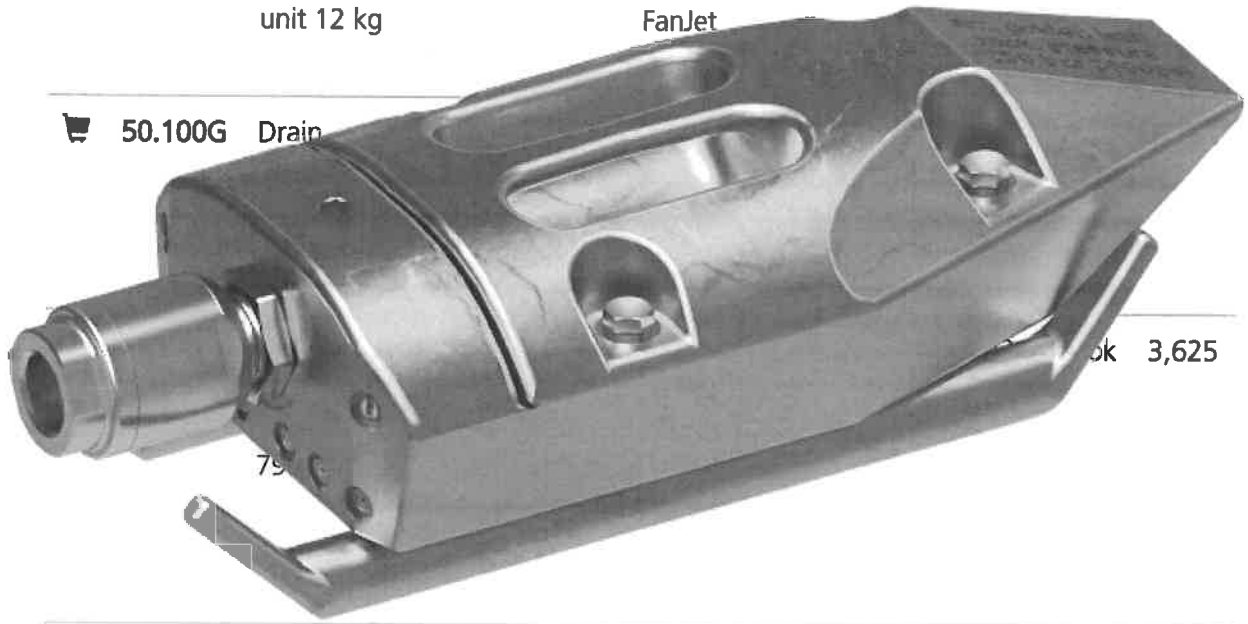
Applications

- To remove fat, roots and harder incrustations
- For operation with recycling water and fresh water

Bulldog® low flow 1/4" NPT - 1/2"

enz®-Bulldozer 3/4" - 1 1/4"

50.075G	Drain scraper unit 12 kg	3/4"	8 - 20	26	4 x M10, 2 x FanJet	1 x M10	15.8 x 5.9	26.46	ok	3,625
50.100G	Drain									



ok 3,625

enz®-Bulldozer 1 1/2"

Close

50.150	Drain scraper unit lbs 99.2	1 1/2"	20 - 177	106	8 x M10, 2 x FanJet M10	1 x M10	27.8 x 11.8 x 6.7	119.05	ok	3,625

Accessory and wearing parts enz®-Bulldozer

0050.1253G		Skid for Scraper 1 1/4"		9.68
0050.0753G		Skid for Scraper 3/4"		2.59

Rotodrill™ 3/8" NPT - 1"

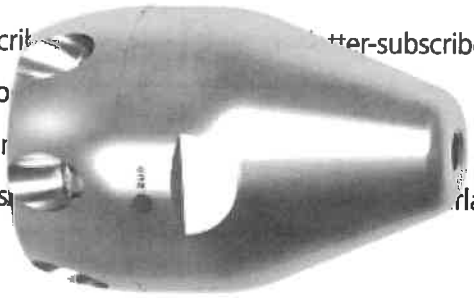
CONNECT

Newsletter Subscribe/Unsubscri...tter-subscribeunsubscribe/)

YouTube (https://www.youtub...

LinkedIn (https://www.linkedi...

Customer Service Team (en-us...rland/)



LEGAL INFORMATION

Disclaimer (en-us/legal-information/disclaimer/)

Terms & condition (en-us/legal-information/terms-condition/)

Imprint (en-us/legal-information/imprint/)

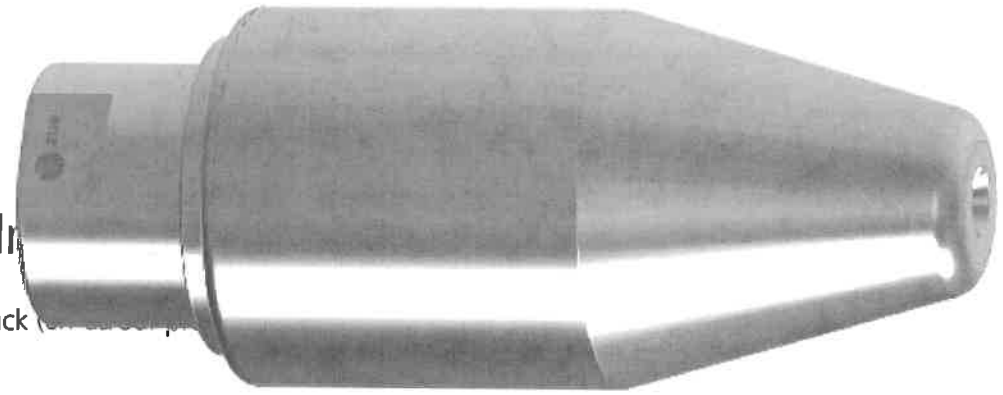
Close

CONTACT

enz® technik ag
Schwerzbachstrasse 10
CH-6074 Giswil

Tel.: +41 (0) 41 676 77 66
Fax: +41 (0) 41 676 77 67
E-Mail: info[at]enz.com

MJ4 HYDRO-X NOZZLE



Hydr

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Close

Product description

Enz has a very strong range of monojet nozzles. The HydroX nozzle of enz has a very strong performance due to its unique tip. The water jet is very concentrated, resulting in minimal wear. The repair kit is very user friendly, thus allowing a simple repair.

HydroX 3/8" NPT - 1/2"

36.038HE235N	Rotodrill Hydroexcavation	3/8" NPT	7	-	2.35	-	7°	1.3 x 2.2	.57	-	5,000
36.050HE235	Rotodrill Hydroexcavation	1/2"	7	-	2.35	-	7°	1.3 x 2.2	.57	-	5,000

DEBRIS BASKET WITH 25' ROPE

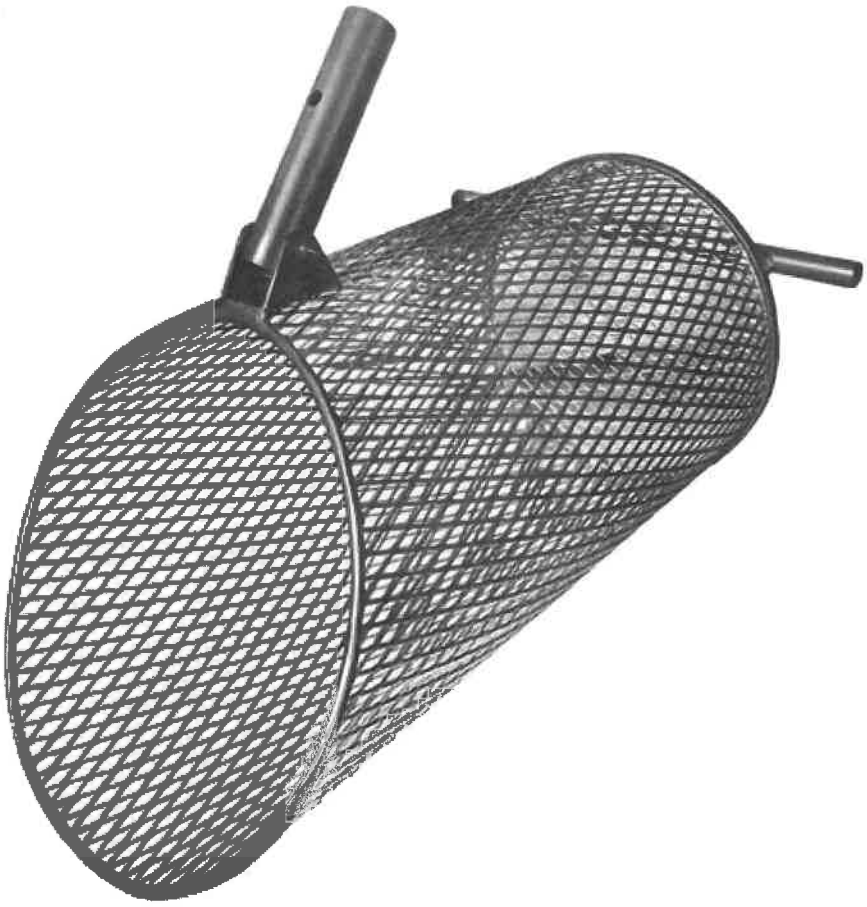
CALL FOR PRICING AND AVAILABILITY

Debris Basket With 25' Rope

Available in:

Southland Tool

Part#	Description:	Type:
DBR-6	Debris Basket 6" With Rope	6" Diameter
DBR-8	Debris Basket 8" With Rope	8" Diameter
DBR-10	Debris Basket 10" With Rope	10" Diameter



DEBRIS BASKET TO USE WITH FIBERGLASS POLES

CALL FOR PRICING AND AVAILABILITY

Debris Basket (Round) To Use With Fiberglass Poles

Available in:

Southland Tool Part#	Description:	Type:
DB-6	Debris Basket 6" for Fiberglass Poles	6" Diameter
DB-8	Debris Basket 8" for Fiberglass Poles	8" Diameter
DB-10	Debris Basket 10" for Fiberglass Poles	10" Diameter

Vactor 2100i

Base		$331,347.97	
NJPA Sourcewel Discount	3%	$9,940.44	
Vactor Subtotal			**$321,407.53**
Add on Items			$750.00
Chassis / Engine		$125,361.00	
Upgrade Engine & Transmission (425 HP)		$12,689.00	
Chassis / Engine Subtotal			**$138,050.00**
Delivery			$4,600.00
Tax			$47,875.17
Vactor 2100i			**$512,682.70**
Flush Nozzles			$12,000.00
Complete Vactor			**$524,682.70**

AGENDA BILL Item 7.A.	**General Manager's Report**			
DATE SUBMITTED:	February 6, 2020	MEETING DATE:	February 12, 2020	
TO: BOARD OF COMMISSIONERS		FROM: Justin Clary		
GENERAL MANAGER APPROVAL				
ATTACHED DOCUMENTS		1. General Manager's Report		
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☐	INFORMATIONAL /OTHER ☒

BACKGROUND / EXPLANATION OF IMPACT

Updated information from the General Manager in advance of the Board meeting.

FISCAL IMPACT

None.

RECOMMENDED BOARD ACTION

None required.

PROPOSED MOTION

None.

LAKE WHATCOM WATER AND SEWER DISTRICT

General Manager's Report

Upcoming Dates & Announcements

Regular Meeting – Wednesday, February 12, 2020 – 6:30 p.m.

Important Upcoming Dates

Lake Whatcom Water & Sewer District			
Regular Board Meeting	Wed Feb 26, 2020	8:00 p.m.	Board Room
Employee Staff Meeting	Thu Feb 13, 2020	8:00 a.m.	Board Room Commissioner Ford to Attend
Investment Comm Meeting	Wed Apr 29, 2020	10:00 a.m.	Small Conference Room
Safety Committee Meeting	Tue Feb 18, 2020	3:00 p.m.	Small Conference Room
Lake Whatcom Management Program			
Data Group Meeting	Thu Feb 13, 2020	9:00 a.m.	City of Bellingham PW Offices 2221 Pacific Street
Policy Group Meeting	Wed Jun 17, 2020	3:00 p.m.	City of Bellingham Fireplace Room 625 Halleck Street
Joint Councils Meeting	Wed Mar 25, 2020	6:30 p.m.	Bellingham City Council Chamber 210 Lottie Street
Other Meetings			
WASWD Section III Meeting	Tue Mar 10, 2020	6:15 p.m.	Bob's Burgers, 8822 Quil Ceda Pkwy, Tulalip, WA
Whatcom Water Districts Caucus Meeting	Wed Feb 19, 2020	1:00 p.m.	Board Room
Whatcom County Council of Governments Board Meeting	Wed May 13, 2020	3:30 p.m.	Council of Governments Offices 314 E Champion Street

Committee Meeting Reports

Safety Committee:

- No meeting has been held since last board meeting.

Investment Committee:

- Committee met on January 29 to review the District's investment policy, investment portfolio, the 2020-2021 rate structure and debt summary, and to discuss development of a community assistance program. Based upon the discussion, staff will bring forward for the board's consideration revision to the investment policy to change the maximum maturity date for investments from two to five years, and staff will develop a community assistance program for board discussion/consideration.

Upcoming Important Board Meeting Topics

- Sudden Valley Area Z Developer Extension Agreement Project Acceptance (February 26)
- Design and Construction Standards adoption (February 26)
- Community Assistance Program discussion (February 26)

2020 Initiatives Status

Administration and Operations

Level-of-Service Analysis

- Facilitate Board development of level-of-service standards for District operations.
  Staff have begun the initial stages of framing the policy conversation.

Six-Year Business Plan

- Develop department-specific business plans that define staffing, facility, and equipment needs necessary to meet level-of-service standards over the six-year planning horizon.
  To be initiated following completion of the level-of-service analysis.

Rate Study

- Conduct rate study for the water and sewer utilities for the five-year planning horizon.
  To be initiated following completion of the 2020 Comprehensive Sewer Plan, the Sudden Valley Water Treatment Plant Facility Improvement Plan, and the Six-Year Business Plan.

Biennial Budget

- Facilitate Board consideration of shifting from an annual to a biennial budget.
  Staff plans to complete in late spring/early summer.

Bond Rating Review

- Pursue a higher bond rating.
  Staff plans to complete in late spring/early summer.

Staffing Succession Plan

- Develop a staffing succession plan to address anticipated retirements over the next five years.
  Staff plans to complete this summer.

Job Description Review

- Update all District job descriptions that have not been revised in the last three years.
  Staff plans to complete this fall.

Emergency Response/System Security

Risk and Resilience Assessment

- Develop an America's Water Infrastructure Act-compliant Risk and Resilience Assessment.
  Plan is underdevelopment with assistance from the Whatcom County Sheriff's Office under the District's interlocal agreement for emergency planning services.

Cybersecurity Assessment

- Conduct a cybersecurity assessment of the District's IT infrastructure.
  Through the District's insurance provider, implemented ongoing staff/board cybersecurity training platform in November 2019.
  As part of the AWIA Risk and Resilience Assessment, staff have begun mapping the District's IT system.

Emergency Vendor Contracts

- Pursue contracts with applicable vendors for on-call contracts, including contracts for support during periods of emergency response.
  A public works contract template specific to unit-priced contracting is under development.

Community/Public Relations

General

- Website
  The District's web content is being updated on a regular basis.
- Social Media
  Posts are being made to District Facebook and LinkedIn pages periodically; Nextdoor is regularly monitored for District-related posts.
- Press Releases
  No releases have been issued year-to-date; releases will be issued as applicable.

Intergovernmental Relations

- *J. Clary attended the Whatcom Water Alliance meeting on January 30.*
- *J. Clary, B. Hunter, and R. Munson participated in the Washington Water Regional Resiliency Assessment Program stakeholder meeting on February 3.*

EnviroStars Certification

- Gain EnviroStars Green Business certification.
  District is registered in the program; staff are completing initial stages of the certification process.

Lake Whatcom Water Quality

Management Program

- Attend meetings of Lake Whatcom Management Program partners.
  J. Clary attended a joint councils preparatory meeting on February 4, Policy Group meeting on February 5, executive committee preparatory meeting on February 6, and is scheduled to meet with Mayor Fleetwood and Executive Sidhu on February 12 (executive committee meeting).

Onsite Septic System Impact Assessment

- Lead effort in water quality monitoring to assess the impacts of septic systems on the lake.
  A quality assurance project plan (QAPP), which will guide the 2020 water quality monitoring effort, is nearing completion
  The District has submitted an application to the Washington State Department of Health for a Source Water Protection grant—all communication with DOH has indicated that the District will receive a $30,000 grant supporting the impact assessment.

Onsite Septic System Conversion Program

- Pursue connection of septic-served parcels within 200 feet of District sewer system.
  Of the three properties noticed in 2019, one connected on January 7, one has been in contact with the District (fall 2019), and one has not responded to-date. Based upon Board authorization, the two remaining properties have until August 2021 to connect.
  Based upon Board direction, staff are developing a white paper to facilitate discussion pertaining to amending the septic conversion policy in ways that assist in sewer connection.