

LAKE WHATCOM WATER & SEWER DISTRICT

1220 Lakeway Drive Bellingham, WA, 98229 (360) 734-9224 Fax 738-8250

# MEMORANDUM

Date: December 21, 2020

From: Lake Whatcom Water & Sewer District

RE: Meeting Procedures During the Covid-19 Emergency

Lake Whatcom Water & Sewer District continues to operate under adjusted procedures in order to provide continuous service to our customers. That said, we are taking precautions in an effort to protect the health and safety of our staff, commissioners, and customers. Our lobby is currently closed to the public, and we are practicing social distancing guidelines as suggested by Governor Inslee and the CDC.

For the foreseeable future, Commissioners will be attending regular meetings by phone. Per Governor Inslee's <u>Proclamation No. 20-28.3</u> amending his Stay Home, Stay Health proclamation, the District will provide access to interested public via phone/internet utilizing the GoToMeeting platform.

If you would like to attend the December 30 regular meeting, details can be found below. In this evolving climate, we are committed to doing everything possible to provide opportunity for public comment as well as promote health and safety. As such, the District requests that if possible, public submit comments in written form by noon the day before a scheduled meeting for inclusion in the meeting discussion.

We appreciate your understanding and patience during these uncertain times. If you have any questions, please contact Administrative Assistant Rachael Hope at <u>rachael.hope@lwwsd.org</u> or 360-734-9224.

### December 30 Regular Board Meeting

Wed, Dec 30, 2020 8:00 AM - 10:00 AM (PST)

Please join my meeting from your computer, tablet or smartphone. https://global.gotomeeting.com/join/720206837

You can also dial in using your phone. United States: <u>+1 (669) 224-3412</u>

Access Code: 720-206-837

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# REGULAR MEETING OF THE BOARD OF COMMISSIONERS AGENDA December 30, 2020

8:00 a.m. – Regular Session

- 1. CALL TO ORDER
- 2. ROLL CALL
- 3. CONFIRMATION OF COMPLIANCE WITH REMOTE MEETING ATTENDANCE PROTOCOLS
- 4. PUBLIC COMMENT OPPORTUNITY At this time, members of the public may address the Board of Commissioners. Please state your name prior to making comments.
- 5. ADDITIONS, DELETIONS, OR CHANGES TO THE AGENDA
- 6. CONSENT AGENDA
- 7. SPECIFIC ITEMS OF BUSINESS
  - A. Presentation—Sudden Valley Water Treatment Plant Alternative Analysis
  - B. Agate Heights Water Treatment Plant Upgrade Public Works Contract Award
- 8. OTHER BUSINESS
- 9. STAFF REPORTS
  - A. General Manager
  - B. Engineering Department
  - C. Finance Department
  - D. Operations Department
- **10. PUBLIC COMMENT OPPORTUNITY**
- 11. ADJOURNMENT

AG whatcom whatcom the whatcom the whatcom the the the the the the the the the the	iENDA BILL em 6	Consent Agenda				
DATE SUBMITTED:	December 23, 2020	MEETING DATE: December 30, 2020				
TO: BOARD OF COMM	ISSIONERS	FROM: Rachael Hope				
GENERAL MANAGER A	PPROVAL	Sotollay				
ATTACHED DOCUMEN	TS	1. See below				
TYPE OF ACTION REQU	ESTED	RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER		

\*\*TO BE UPDATED 12.29.2020\*\*

## **BACKGROUND / EXPLANATION OF IMPACT**

- Minutes from the November 25, 2020 Regular Board Meeting
- Payroll for Pay Period #25 (11/28/2020 through 12/11/2020) totaling \$47,270.72
- Payroll Benefits for Pay Period #25 totaling \$49,847.51
- 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

# November 25, 2020

Board President Laura Abele called the Regular Session to order at 8:00 a.m.

Attendees:	Commissioner Laura Abele	General Manager Justin Clary
	Commissioner Todd Citron	District Engineer/Assistant GM Bill Hunter
	Commissioner Bruce Ford	Finance Manager/Treasurer Debi Denton
	Commissioner Leslie McRoberts	Operations & Maintenance Manager Brent Winters

Excused Absences: Commissioner John Carter

Also present were District Engineering Technician/Safety Officer Rich Munson, Melanie Mankamyer of Wilson Engineering, and Keith Stewart and Russ Porter of Gray & Osborne.

All attendees participated remotely by phone or video conferencing.

### Roll Call

General Manager Justin Clary performed a roll call to identify those in attendance, and then verbally confirmed that the meeting was noticed in accordance with Resolution No. 859 allowing remote meeting attendance as well as in compliance with current statutory requirements. It was confirmed that all participants were able to be heard and hear each other clearly.

### Consent Agenda

### Action Taken

Citron moved, Ford seconded, approval of:

- Minutes for the November 12, 2020 Regular Board Meeting
- Payroll for Pay Period #23 (10/31/2020 through 11/13/2020) totaling \$50,700.44
- Payroll Benefits for Pay Period #23 totaling \$54,577.31
- Motion passed.

### Sudden Valley Water Treatment Plant Alternatives Analysis Briefing #2

Hunter recalled that Gray & Osborne was contracted after an initial condition assessment in July 2020, to perform an alternatives analysis of work to be done at the District's Sudden Valley Water Treatment Plant.

The assessment identified high and low priority items which were subsequently broken down by major system.

The major systems as written in the scope of work agreement are:

- Pump Performance Test (Presented to Board 9/30/2020, Briefing #1)
- Chemical Systems Analysis (Presented to Board as part of this agenda item)
- Disinfection Systems Analysis
- Backwash Systems Analysis
- Filtration System Analysis
- Tier 2/3 Seismic and Structural Analysis (Presented to Board as part of this agenda item)
- Structural/Arch Workspace Analysis
- NACE III Coating Inspection (Presented to Board 9/30/2020, Briefing #1)

For this meeting, Gray & Osborne completed the Tier 2/3 Seismic and Structural Analysis and the Chemical Systems Analysis. Keith Stewart and Russ Porter of Gray & Osborne provided a presentation to summarize their findings and recommendations and collect Board comments. Discussion followed.

### **Utility Rate Study Personal Services Agreement Approval**

Denton explained that every 5 years the District reviews its rates and fees in order to ensure that we address both inflationary and projected operating and capital costs into the future. District rates were last reviewed during the summer of 2014 with an update performed in the fall of 2016. The approved rate/fee structure scheduled annual adjustments with the last adjustment of this cycle to go into effect on January 1, 2021.

With this study, the District aims to develop a long-range financial forecast that funds each utility on a standalone basis, considering its operating and maintenance expenditures, debt service, fiscal policy achievement, and capital project needs. FCS Group was the sole responder to the Request for Proposals issued by the District to three firms in September 2020. This rate study will determine the 5-year rate structure for 2022-2027. Discussion followed.

### Action Taken

McRoberts moved, Ford seconded, to award the 2020 Water and Sewer Rate Study project to FCS Group and authorize the general manager to execute a personal services agreement for a cost not to exceed the amount of \$45,785 as presented. Motion passed.

### Draft 2021 Budget Presentation

Denton presented the latest revisions to the proposed 2021 Budget, which included adjusting the employee COLA and updating some fund carryovers and estimates. There were no other changes since the Board's review of the draft budget at the November 12 Board meeting.

Using projected revenues based upon prior Board-adopted rate increases (4% and 2.5% water and sewer rates, respectively), actual 2020 operating expenses and projects defined in the District's water and sewer capital improvement plans, District staff developed the presented draft budget for Board discussion focused on the capital improvement portion. Discussion followed.

#### **Disposal of Surplus Property**

Clary recounted that, several years ago during the first on-site sewage system assessment completed by Herrera Consulting, the District purchased an optical brighter probe and data logger that Herrera used to gather data. The equipment has been kept at Herrera since and was used to some degree in this year's study. At the conclusion of the study, as the District has no staff trained in operation of the device nor a regular need for its use, staff recommended surplussing the item. Herrera previously communicated interest in purchasing the equipment. The Board discussed the item, and no action was taken as they agreed to postpone further discussion to the December 9, 2020, regular Board meeting.

#### **General Manager's Report**

Clary updated the Board on several topics, including the District's continued response to the Covid-19 pandemic, the City of Bellingham's Biosolids Handling facility plan progress, and contact regarding a potential cell tower on 1010 Lakeview property. Discussion followed.

### Engineering Department Report

Hunter highlighted several projects, including the status of the Dellesta and Edgewater sewer lift stations improvements, the Euclid sewer lift station improvements, and the Agate Heights water treatment plant improvements (scheduled for bid in early December). Discussion followed.

### Finance Department Report

Denton reported that revenues and expenditures are still tracking well. She also highlighted impacts to revenue due to the Covid-19 pandemic, which have been minimal. Discussion followed.

### **Operations & Maintenance Department Report**

Winters gave a brief report on ongoing projects and development in the Operations Department, including close of the watershed construction window, continued focus on safety, and sewer cleaning along Lake Whatcom Boulevard. Discussion followed.

### Executive Session Per RCW 42.30.110(1)(g) General Manager Performance Evaluation - 30 Minutes

Abele recessed the Regular Session to Executive Session at 9:58 a.m. It was estimated that the Executive Session would take about 30 minutes. The purpose of the Executive Session was for considering issues related to evaluating the performance of a public employee. Abele recessed the Executive Session and reconvened the Regular Session at 10:03 a.m.

### Action Taken

Citron moved, McRoberts seconded, to increase the General Manager's salary by \$2,000 per year effective January 1, 2021. Motion passed.

With no further business, Abele adjourned the Regular Session 10:04 a.m.

Recording Secretary, Rachael Hope

Date Minutes Approved

Laura Abele

Todd Citron

John Carter

Bruce Ford

Leslie McRoberts



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

# REGULAR SESSION OF THE BOARD OF COMMISSIONERS

# Minutes

# December 09, 2020

Board President Laura Abele called the Special Session to order at 6:30 p.m.

Attendees: Commissioner Laura Abele Commissioner Todd Citron Commissioner Bruce Ford Commissioner Leslie McRoberts Recording Secretary Rachael Hope General Manager Justin Clary District Engineer/Assistant GM Bill Hunter Finance Manager/Treasurer Debi Denton Operations Manager Brent Winters

Excused Absences: Commissioner John Carter

Also in attendance were Catherine Moore of Carmichael Clark, and Melanie Mankamyer and Brian Smith of Wilson Engineering. All attendees participated remotely by phone or video conferencing.

### Roll Call

General Manager Justin Clary performed a roll call to identify those in attendance, and then verbally confirmed that the meeting was noticed in accordance with Resolution No. 859 allowing remote meeting attendance as well as in compliance with current statutory requirements. It was confirmed that all participants were able to be heard and hear each other clearly.

### Consent Agenda

### Action Taken

Citron moved, McRoberts seconded, approval of:

- Accounts Payable Vouchers totaling \$122,072.41
- Payroll for Pay Period #24 (11/14/2020 through 11/27/2020) totaling \$45,144.17
- Payroll Benefits for Pay Period #24 totaling \$50,851.19
- Accounts Payable Vouchers totaling \$64,025.02

Motion passed.

### Hydraulic Analysis of the Lake Whatcom Boulevard Interceptor

Hunter introduced Brian Smith of Wilson Engineering to provide an update on the hydraulic analysis of the Lake Whatcom Boulevard Interceptor (LWBI). A Supplemental Hydraulic Sewer Model Analysis included in the 2020 Comprehensive Sewer Plan noted that "Lower sewer flows are supported by successful implementation of infiltration and inflow (I&I) reduction and water conservation programs. The capacity of LWBI should be

monitored as development occurs. Also, it is recommended that the average daily sewer flows and build out capacity used in the model be re-evaluated and that the modeling analysis be updated during the next Comprehensive Sewer Plan update, or prior to any significant development that may occur." Smith explained that refined assumptions were used to calculate the peaking factor of wastewater flow rates during wet weather I&I events have resulted in a reduced design flow rate. The net result is cure-in-place-pipe (CIPP) rehabilitation is projected to provide sufficient capacity to serve full system build-out flow rates without use of the Sudden Valley detention basin.

Following the presentation, Winters explained that the District's Operations staff is looking at what can be done now to improve the flow capacity. This includes sewer main flushing and camera inspection work completed in 2020 for the entire gravity sewer main section from Strawberry Point to Cable Street Sewer Pump Station. Discussion followed.

### Adoption of Fiscal Year 2021 Budget

Denton summarized that the first draft of the Fiscal Year 2021 Budget was presented to the Board in October, along with expenditures and revenues through the end of September. The Draft Budget was revised in November and an updated version incorporating October revenues and expenditures and an in depth look at capital projects was presented to the Board in November. Staff presented the final draft of the Fiscal Year 2021 Budget for adoption. Discussion followed.

### Action Taken

Citron moved, McRoberts seconded, to adopt the Fiscal Year 2021 Budget, as presented. Motion passed.

### 2021 Non-represented Staff Cost-of-Living-Adjustment

Clary explained that traditionally the non-represented employees have received the same annual cost-of-living adjustment (COLA) increase as the represented (union) employees. Non-union employees include the General Manager, District Engineer/Assistant General Manager, Finance Manager/Treasurer, Operations & Maintenance Manager, and Administrative Assistant. For 2020 the represented employees' COLA will be 2.1%, which is equal to the Consumer Price Index for all urban consumers (CPI-U) for the Seattle metropolitan area), as reported in October 2020 for the prior year.

### Action Taken

Ford moved, McRoberts seconded, to approve a salary adjustment for all non-represented District staff that is equal to an increase of 2.1% and effective January 1, 2021. Motion passed.

### 2021 Wilson Engineering Rates

Clary stated that Wilson Engineering provides on-call engineering services to the District through a professional services agreement executed on August 8, 2016, and effective through July 31, 2021. Per Section 7.4 of the agreement, Wilson Engineering may annually request revision to the approved rates to accommodate inflation and market conditions. A letter from Wilson Engineering was presented, dated December 3, 2020, requesting revision to its rates and fees for 2021. The proposed rates are anticipated to increase modestly and relatively consistent with inflationary and marketplace values.

### Action Taken

Ford moved, Citron seconded, to approve rates and fees to be effective January 1, 2021, for professional services performed by Wilson Engineering under the existing on-call professional

# services contract with the District, as presented in the December 3, 2020 letter from Wilson Engineering. Motion passed.

#### **On-site Sewage System Policy Discussion**

Clary reminded the board that together with the city of Bellingham (City) and Whatcom County (County), the District formed a partnership in 1990 to develop a joint management strategy for the Lake Whatcom watershed. The resulting Lake Whatcom Management Program guides actions by the three entities to protect the quality of Lake Whatcom water. Herrera Consulting staff provided a presentation to the Board on the results and conclusions of the 2020 monitoring effort during the Board's September 9, 2020, meeting, as well as to the Lake Whatcom Management Program Policy Group during its September 23 meeting. Since that time, Commissioner Ford has developed a letter regarding septic systems on the north shore. The Board discussed the assessment findings, Commissioner Ford's letter, the District's policy/direction regarding the existing septic systems. The Board requested that the discussion be continued during a future regularly scheduled meeting of the Board in which all five commissioners are anticipated to be present.

#### **General Manager's Report**

Clary updated the Board on several topics, including the District's continued response to the COVID-19 pandemic, looking ahead to logistics and planning for vaccinations when available, and discussion at the Lake Whatcom Management Program meeting regarding various urban growth areas of the City of Bellingham located in the Lake Whatcom Watershed. He also updated the Board on staff progress for the previously requested agenda item regarding policy discussion of the District's rate structure. The agenda item is scheduled for the January 13, 2021 board meeting. Discussion followed.

With no further business, Abele adjourned the Regular Session 8:25 p.m.

Recording Secretary, Rachael Hope

Date Minutes Approved

Laura Abele

Todd Citron

Bruce R. Ford

Leslie McRoberts

John Carter

# Lake Whatcom W-S District MCAG #: 2330

# **CHECK REGISTER**

# PAYROII 12/14/2020

Page:

1

Time: 10:42:31 Date: 12/17/2020 To: 12/17/2020

Trans	Date	Туре	Acct #	Chk #	Claimant	Amount	Memo
3822	12/17/2020	Payroll	5	EFT		329.29	11/28/2020 - 12/11/2020 PR 26
3823	12/17/2020	Payroll	5	EFT		353.07	11/28/2020 - 12/11/2020 PR 26
3824	12/17/2020	Payroll	5	EFT		353.07	11/28/2020 - 12/11/2020 PR 26
3825	12/17/2020	Payroll	5	EFT		4,026.77	11/28/2020 - 12/11/2020 PR 26
3826	12/17/2020	Payroll	5	EFT		2,947.57	11/28/2020 - 12/11/2020 PR 26
3827	12/17/2020	Payroll	5	EFT		2,509.89	11/28/2020 - 12/11/2020 PR 26
3828	12/17/2020	Payroll	5	EFT		4,224.35	11/28/2020 - 12/11/2020 PR 26
3830	12/17/2020	Payroll	5	EFT		2,626.01	11/28/2020 - 12/11/2020 PR 26
3832	12/17/2020	Payroll	5	EFT		1,189.76	11/28/2020 - 12/11/2020 PR 26
3833	12/17/2020	Payroll	5	EFT		2,861.26	11/28/2020 - 12/11/2020 PR 26
3834	12/17/2020	Payroll	5	EFT		2,007.79	11/28/2020 - 12/11/2020 PR 26
3835	12/17/2020	Payroll	5	EFT		4,262.87	11/28/2020 - 12/11/2020 PR 26
3836	12/17/2020	Payroll	5	EFT		2,371.35	11/28/2020 - 12/11/2020 PR 26
3837	12/17/2020	Payroll	5	EFT		2,062.67	11/28/2020 - 12/11/2020 PR 26
3838	12/17/2020	Payroll	5	EFT		353.07	11/28/2020 - 12/11/2020 PR 26
3839	12/17/2020	Payroll	5	EFT		2,431.66	11/28/2020 - 12/11/2020 PR 26
3840	12/17/2020	Payroll	5	EFT		1,514.54	11/28/2020 - 12/11/2020 PR 26
3841	12/17/2020	Payroll	5	EFT		1,741.75	11/28/2020 - 12/11/2020 PR 26
3842	12/17/2020	Payroll	5	EFT		2,144.65	11/28/2020 - 12/11/2020 PR 26
3843	12/17/2020	Payroll	5	EFT		2,746.44	11/28/2020 - 12/11/2020 PR 26
3844	12/17/2020	Payroll	5	EFT		2,476.19	11/28/2020 - 12/11/2020 PR 26
3829	12/17/2020	Payroll	5	11089		353.07	11/4/2020 11/12/2020 11/25/220
3831	12/17/2020	Payroll	5	11090		1,383.63	11/28/2020 - 12/11/2020 PR 26
		401 Water	Fund			14,681.75	
		402 Sewer	Fund			32,588.97	
						47,270.72	Payroll: 47,270.72

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 12/15/2020

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

# BENEFITS

Lake	Whatcom V	W-S District				Time: 10:	49:14	Date:	12/14/2020
MCA	G #: 2330			1	2/17/2020 To: 12/17/2020			Page:	I
Trans	Date	Type A	cct #	Chk #	Claimant	Amount	Memo		
3845	12/17/2020	Payroll	5	EFT	UNITED STATES TREASURY	15,924.10	941 De	posit for F 020 - 12/	Pay Cycle(s) 17/2020
3846	12/17/2020	Payroll	5	EFT	WA ST SUPPORT ENFORCEMENT REGISTERY	208.34	Pay Cy 12/17/2	cle(s) 12/1 2020 - SUI	7/2020 To P ENF
3847	12/17/2020	Payroll	5	11091	AFLAC	354.85	Pay Cy 12/17/2 Pay Cy 12/17/2	cle(s) 12/1 020 - AFI cle(s) 12/1 020 - AFI	7/2020 To LAC Pre-Tax; 7/2020 To LAC Post-Tax
3848	12/17/2020	Payroll	5	11092	AFSCME LOCAL	363.24	Pay Cy 12/17/2 Cycle(s 12/17/2	cle(s) 12/1 020 - Uni ) 12/17/20 020 - Uni	7/2020 To on Dues; Pay 020 To on Fund
3849	12/17/2020	Payroll	5	11093	DEPARTMENT OF RETIREMENT SYSTEMS	4,070.03	Pay Cy 12/17/2	cle(s) 12/1 020 - DC	7/2020 To P
3850	12/17/2020	Payroll	5	11094	HRA VEBA TRUST (PAYEE)	590.00	Pay Cyc 12/17/2	cle(s) 12/1 020 - VEI	7/2020 To BA
3851	12/17/2020	Payroll	5	11095	VANTAGEPOINT TRANSFER AGENTS - 306798	100.00	Pay Cyc 12/17/2	cle(s) 12/1 020 - ICM	7/2020 To 1A
3852	12/17/2020	Payroll	5	11096	WA ST HEALTH CARE AUTHORITY	14,819.62	Pay Cyd 12/17/2 Cycle(s 12/17/2 Pay Cyd 12/17/2 Surchar 12/17/2	cle(s) 12/1 020 - PEE ) 12/17/20 020 - PEE cle(s) 12/1 020 - PEE ge; Pay C 020 To 12	7/2020 To BB Medical; Pay 020 To BB ADD LTD; 7/2020 To BB SMK ycle(s) /17
3853	12/17/2020	Payroll	5	11097	WA ST PUBLIC EMP RET PLAN 2	10,319.83	Pay Cyc 12/17/2	cle(s) 12/1 020 - PER	7/2020 To 8 <b>S</b> 2
3854	12/17/2020	Payroll	5	11098	WA ST PUBLIC EMP RET PLAN 3	3,097.50	Pay Cyc 12/17/2	cle(s) 12/1 020 - PER	7/2020 To 2S 3
		401 Water Fun 402 Sewer Fur	nd nd			36,755.19 13,092.32			

**CHECK REGISTER** 

49,847.51 Payroll:

49,847.51

				CHECK REGISTER				
Lake Whatcom	W-S Dist	rict			Time	10:49:14	Date:	12/14/2020
MCAG #: 2330				12/17/2020 To: 12/17/202	0		Page:	2
Trans Date	Туре	Acct #	Chk #	Claimant	A	mount Mem	0	

DENEFITS

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.

Date 12/15/2020 Sign

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

whatcom by lite	GENDA Sudden BILL em 7.A	Valley Wat Alternativ Briefi	er Treatmen es Analysis ng #3	it Plant	
DATE SUBMITTED:	December 17 , 2020	MEETING DATE: December 30, 20		0, 2020	
TO: BOARD OF COMM	IISSIONERS	FROM: Bill Hunter, Assist. GM/District Engineer			
GENERAL MANAGER	APPROVAL	Sister Clay			
ATTACHED DOCUMEN	ITS	<ol> <li>Draft Technical Memorandum – Filtration System</li> </ol>			
TYPE OF ACTION REQ	JESTED	RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER	

## **BACKGROUND / EXPLANATION OF IMPACT**

The existing Sudden Valley Water Treatment Plant (SVWTP) is located along Morning Beach Drive near the shores of Lake Whatcom and was constructed in 1972. The treatment plant utilizes chemical coagulation, flocculation, rapid media filtration, chemical pH adjustment, and gas chlorine disinfection prior to temporary storage within a 225,000gallon reservoir also located at the site.

In July 2020, Gray & Osborne (G&O) completed a condition assessment in which engineers evaluated the SVWTP from a process, structural/architectural, mechanical, and electrical perspective. The assessment identified both high and low priority items that should be completed to maintain current and reliable function of the SVWTP into the future.

Following the condition assessment, G&O was contracted to perform an alternatives analysis to help the District select and prioritize specific short- and long-term improvements to the treatment equipment and processes currently in use. The work has been broken down by major systems. For each system, G&O will develop alternatives and document each in the form of a technical memorandum. The results from each system analysis will be presented to the Board at regularly scheduled board meetings.

All of the technical memoranda will ultimately be attached and summarized in an Alternatives Analysis Report. The Report will include comparisons and rankings, recommendation on modifications to system, cost estimates, figures to relay relative space requirements, and more.

The major systems as written in the scope of work agreement are:

- Pump Performance Test (Presented to Board 9/30/2020, Briefing #1)
- Chemical Systems Analysis (Presented to Board 11/25/2020, Briefing #2)

- Disinfection Systems Analysis
- Backwash Systems Analysis
- Filtration System Analysis
- Tier 2/3 Seismic and Structural Analysis (Presented to Board 11/25/2020, Briefing #2)
- Structural/Arch Workspace Analysis
- NACE III Coating Inspection (Presented to Board 9/30/2020, Briefing #1)

G&O has completed the Filtration System Analysis. The draft technical memorandum is attached. The consultant will summarize explored alternatives in a presentation, and collect Board comments or questions.

During District staff review and discussions of the preliminary draft of the Filtration System Analysis, several key long-term goals and objectives were identified in the process of trying to select a recommended filtration alternative. Staff struggled with selecting a recommended alternative at this point in time. At the end of that effort both staff and G&O all agreed that recommending a filtration alternative is premature until the remaining systems are analyzed. Alternatives developed in the Filtration System Analysis are the puzzle pieces that will be used to create the best whole solution that takes into account all various systems, long-term goals, objectives, and system investment costs.

Below is list of key long-term goals and objects developed by staff while trying to select a recommended alternative. Staff invites the Board and interested public to consider these goals, maybe edit/refine them, or suggest additional ones. As the District begins evaluating the numerous combinations of subsystem alternatives of a whole solution, this list will help highlight the best ones. In no particular priority the key long-term goals and objectives so far are:

- Enough space, efficient layout, and redundancy so that all major systems and components can be replaced or rehabilitated over many decades beyond the 20-year planning horizon. Current space and layout prohibit this.
- Plant capacity for full build-out of system.
- Any equipment or process changes continue to deliver some of the best drinking water quality in the state of Washington. The District has been one of four plants to receive the Department of Health's Platinum Award for 15 or more years of consecutive years of optimization, and staff would like to continue meeting this high standard.

## FISCAL IMPACT

This presentation is for discussion only; it is too early in the planning process to estimate fiscal impacts of plant improvements.

## **APPLICABLE EFFECTIVE UTILITY MANAGEMENT ATTRIBUTE(S)**

Product Quality Operational Optimization Infrastructure Strategy and Performance Water Resource Sustainability

# **RECOMMENDED BOARD ACTION**

No action is recommended at this time.

# PROPOSED MOTION

Not applicable.





# **TECHNICAL MEMORANDUM 20434-5**

TO:	BILL HUNTER, P.E., ASSISTANT GENERAL
	MANAGER/DISTRICT ENGINEER
FROM:	KEITH STEWART, P.E.
	RUSSELL PORTER, P.E.
DATE:	DECEMBER 22, 2020
SUBJECT:	SUDDEN VALLEY WTP FILTRATION
	SYSTEM ANALYSIS
	LAKE WHATCOM WATER & SEWER
	DISTRICT, WHATCOM COUNTY,
	WASHINGTON
	G&O #20434.00

# INTRODUCTION

In 2019, the Lake Whatcom Water and Sewer District (District) contracted with Gray & Osborne to perform a condition assessment of their existing Sudden Valley Water Treatment Plant (WTP) as part of a larger effort to analyze the District's water treatment facilities in order to prioritize funds for rehabilitation, modification, and/or replacement projects. The goal of the assessment and subsequent analysis is to identify potential improvements for the existing structures and treatment processes in an attempt to maximize treatment efficiency and extend the operational life of these facilities. The reports and technical memoranda generated as part of this assessment project will be used to develop a strategy for prioritizing modifications to the WTP to ensure it can efficiently and cost-effectively continue to provide clean potable water for existing and projected customers for decades to come.

This memo summarizes the assessment of the existing filtration system at the WTP, provides alternatives for water filtration, and provides a recommendation for modifications to the existing filter equipment.

# **BACKGROUND AND EXISTING FACILITIES**

The District operates three Group A water systems – South Shore (DOH 95910), Eagleridge (DOH 08118), and Agate Heights (DOH 52957) – all of which are in and around the shores of Lake Whatcom, which lies southeast of Bellingham in Whatcom County, Washington. The District serves approximately 3,900 residential and commercial water system connections with a residential population of approximately 10,000 people.



The South Shore system is the largest of the three systems and is supplied wholly by water treated at its Sudden Valley WTP. In addition to the WTP, the District also owns and maintains surface water source, storage, and distribution system facilities. The distribution system includes multiple pressure zones, four booster stations, and approximately 2.8 million gallons (MG) of storage in five reservoirs. The District also maintains a secondary intertie with the City of Bellingham Water System (DOH 50600) that is used only during emergency situations.

The existing WTP is a rapid-rate, direct filtration plant with a rated capacity of 2.0 million gallons per day (MGD), which is equivalent to approximately 1,400 gallons per minute (gpm), but currently operates at a reduced flow of 1.0 MGD (700 gpm). The maximum allowable water right for this source is 1,526 gpm; however, the equipment and components listed in the alternatives below will be sized to accommodate up to the rated flow of 1,400 gpm. This design flow is suitable to serve the projected buildout water demand of 1.3 MGD as listed in the District's 2018 Water System Comprehensive Plan.

Historically, the plant has performed well and provides high-quality finished water with turbidities of less than 0.1 nephelometric turbidity units (NTU). Raw water is collected from the adjacent Lake Whatcom from an outfall located at a depth of approximately 80 feet and approximately 350 feet from the typical shoreline. Lake Whatcom is a large lake that is moderately developed on the northern and western shores but is largely undeveloped on its eastern shore. Raw water quality from the Lake Whatcom source is fairly consistent with turbidity below 1.0 NTU for most of the year. Turbidity increases during the spring and fall runoff season, but typically remains below 5.0 NTU during these periods. Raw water pH is typically between 7.5 and 7.7 and raw water temperature varies between 6 and 8 degrees Celsius.

The WTP is housed in a partially below-grade concrete building located on Morning Beach Drive approximately 1 mile northeast of the intersection of Lake Whatcom Boulevard and Marigold Drive. The facility was constructed in 1972 and has undergone several minor improvements since that time, but was most recently upgraded in 1992. Prior to filtration, two centrifugal raw water pumps pump water from the Lake Whatcom intake to the WTP where alum coagulant is injected. After mixing with coagulant, water enters the flocculation basin before entering the filter distribution trough and the mixed-media filters. Water proceeds through the filters into the underdrain system, is combined with soda ash for pH adjustment, then proceeds to the below-grade clearwell. Two transfer pumps located in the WTP move water from the clearwell to the chlorine contact basin, which is a welded steel reservoir located adjacent to the WTP that provides additional chlorine contact time. From the chlorine contact



basin, four finished water pumps pump water to the District's storage reservoirs and distribution system for consumption. Additional information on the coagulation, flocculation, and filtration systems – which are the primary subject of this memorandum – are provided below.

### **Coagulation and Flocculation**

The District adds potassium aluminum sulfate (alum) to their raw water upstream of the existing flocculation basin to optimize their removal by coagulation of particles prior to direct filtration. The District purchases alum from a commercial vendor and has it delivered to the WTP. Coagulant is stored within a polyethylene storage tank and then injected to the raw water upstream of the flocculation tank. The existing alum storage tank has a capacity of 1,900 gallons, is a fully molded style, was originally installed in 1992, and does not have any seismic bracing or restraints. The existing alum metering pump is a PULSAtron diaphragm metering pump with a capacity of 44 gallons per day (gpd) at 100 pounds per square inch (psi).

Once alum is injected, raw water flows into the flocculation tank. The flocculation tank is a painted, welded steel tank with a diameter of 13.5 feet, a height of 8.6 feet, and a nominal volume of 9,000 gallons. The tank is divided into three equal sections and water flows through the tank in an over-under-over pattern. WTP staff drain and clean the flocculation tank and static mixer annually and any solids accumulated in the tank are disposed of as refuse. The staff typically remove up to 5 gallons of solids from this cleaning effort. The flocculation tank feeds the filter equalization trough, which in turn diverts water to each of the four filters described below.

The Sudden Valley WTP Assessment Report (Assessment Report) completed by Gray & Osborne in 2019 noted that the alum storage tank is old, in fair/poor condition, is beyond its recommended useful life, lacks seismic restraints or tiedowns, does not have direct line of sight from the parking lot during filling, does not contain level sensing equipment, and is adjacent to electrical equipment including Motor Control Center (MCC) 2. The Assessment Report also noted that the chemical metering pump must be calibrated on a daily basis by removing the injection fittings from the raw water piping which requires additional effort by the staff to maintain optimal chemical feed.

The Assessment Report also noted that the existing flocculation tank shows some localized areas of corrosion and coating fatigue – especially at the base, is undersized for the current and maximum operational flows (according to theoretical design values), is located in the center of the WTP Main Building which restricts access to other treatment components, and contributes to elevated moisture within the building which can lead to damage and/or corrosion of the electrical equipment.



### Filtration

Water leaves the flocculation tank via 12-inch diameter ductile iron piping and is conveyed by gravity to the equalization trough. At the trough, water is evenly distributed between two separate filter structures. Filters 1 and 2 are contained within a welded and coated steel vessel while Filters 3 and 4 are contained within a marine-grade aluminum vessel. Both vessels sit atop concrete equipment pads. Each filter vessel contains two filter units and each unit consists of an inlet trough, filter media, underdrain system, surface wash and backwashing equipment, and filtered water piping.

Design criteria and technical information on filter media are listed in Table 1. The surface loading rate for all four filters of 2.4 gpm per square foot (gpm/sf) is within the maximum allowable rate listed by the Washington State Department of Health (DOH) for a multimedia filter (6 gpm/sf). The surface loading rate using only two filters is 4.8 gpm/sf (700 gpm/144 sf), which suggests that the WTP can operate at the typical flow rate with only two filters (one vessel) in service. Typically, the WTP operates for 10 to 16 hours each day, and often longer during warm summer months when water demand is high.

For comparison with the current rated capacity of the WTP (1,400 gpm), all of the filtration alternatives described later in this memorandum will be capable of providing filtration/treatment up to 1,400 gpm, even though the WTP currently operates at a flow of only 700 gpm. Providing filtration capacity up to 1,400 gpm now will allow the District, if desired, the flexibility to address/expand the components that currently limit their flows to 700 gpm. The WTP is physically limited to a flow of 1,000 gpm based on directive from DOH. This restriction is based on the level of CT they can provide with their existing system. The staff operates the WTP at 700 gpm in order to incorporate an additional factor of safety into their operations.



# TABLE 1

## WTP Filter Media Summary

Parameter	Value
Туре	Gravity, Rapid-Rate Direct Filtration
Vessel Dimensions (ft, L x W x H)	8 x 9 x 8
Filter Area (sf)	288 (4 filters at 72 sf each)
Rate of Filtration @ 700 gpm (gpm/sf)	2.4
Rate of Filtration @ 1,000 gpm (gpm/sf)	3.5
Rate of Filtration @ 1,390 gpm (gpm/sf) <sup>(1)</sup>	4.8
Rate of Filtration @ 1,526 gpm (gpm/sf) <sup>(2)</sup>	5.3
Rate of Backwash (gpm/sf)	18.0
Design Media Depth (inches)	
#1A Anthracite (1.0 mm–1.1 mm)	18
F16 Sand (0.45 mm–0.55 mm)	9
#50 Garnet Sand (0.28 mm–0.38 mm)	4.5
#12 Garnet Gravel (1.46 mm–1.56 mm)	4.5
#3 Gravel (0.375 in.–0.1875 in.)	3
#2 Gravel (0.75 in.–0.375 in.)	3
#1 Gravel (1.50 in.–0.75 in.)	10

(1) Value is based on the WTP rated capacity of 2.0 MGD.

(2) Value is based on current South Shore Water System water right.

During normal filter operation, water is distributed evenly to all four cells and flows through the filter media and into the respective underdrain chambers. As it passes through the filter media, flocculated sediment and small particles are trapped and removed by the media, while filtered water passes into the underdrain system and on through the discharge piping to the clearwell. The discharge piping at each filter consists of isolation valves, flow control valves, chemical injection fittings, sample taps, and flow meters to ensure consistent operation.

As additional particles are adsorbed onto the filter media, the head loss through the filter media, the turbidity of the filtered water, and the water level within the filter vessel increases. To remove these trapped particles from the filter media, each filter bed is backwashed daily prior to operation. During the backwash of a filter cell, water from the distribution system served by the Division 7 Reservoir flows upward through the filter at approximately 1,300 gpm (18.0 gpm/sf). The backwash flow rate is measured by a magnetic flow meter on the backwash line located on the south wall of the WTP. At this flow rate, the media bed is fluidized to remove the accumulated sediment particles and the particle-laden backwash water flows into the filter cell waste trough and then to the



backwash storage basin. Each filter also includes a surface wash system that consists of two supply arms with nine nozzles on each side (18 total nozzles). The pressure and flow of backwash water through these nozzles causes the arms to rotate and disperse spray that agitates the media surface. Spray from these nozzles only occurs during backwash and helps to prevent the formation of mudballs on the media bed. The complete backwash sequence includes the following steps:

- 4.0 minutes of surface wash only
- 2.5 minutes of surface wash and filter backwash
- 5 minutes of filter backwash
- Up to 20 minutes settling, equalization, and drainage
- 15 minutes of filter to waste

After this backwash sequence, the filters return to normal operation and water flows through the filters and into the clearwell. According to WTP staff, the entire backwash process for all four filters typically takes 120 to 160 minutes.

The backwash storage basin is located underground between the WTP Main Building and the Finished Water Pump Building. The basin has a volume of approximately 16,000 to 17,000 gallons and provides an opportunity for settling of the removed particles. Backwash water within the basin is pumped via submersible pumps several times during each backwash sequence to the residential sewer system where water proceeds to the City of Bellingham's Post Point Wastewater Treatment Plant (WWTP) for treatment. Overflow from the backwash basin is directed back to Lake Whatcom. An assessment of the backwash system and options for handling backwash wastewater will be addressed as part of this project, but will be discussed in a separate memorandum.

The existing flocculation tank, filter vessels, filters, and filter discharge piping are shown on Figures A-1, A-2, A3, and A-4 in Exhibit A.

The Assessment Report noted that the filters appear to be performing adequately and do not show a noticeable decrease in performance, filter run times, or rebound after backwashing within the past several years. Furthermore, the WTP meets all of the DOH Treatment Optimization Program (TOP) requirements, which set higher standards for monitoring and surface water treatment plant performance.

The Assessment Report did note that access to the filter discharge piping is very restricted due to spatial limitations, each filter vessel is accessible only via a single vertical ladder mounted to the side of the filter vessel, and the Filters 1 and 2 vessel does show some minor signs of corrosion and/or coating fatigue which has allowed localized corrosion of the steel.



The next section provides a brief description of some filtration alternatives for the District's consideration.

# ALTERNATIVES ANALYSIS

The five alternatives listed below are provided to help the District determine the best course of action for their filtration system. Any modifications to the filtration equipment should be considered in the context of other changes that are recommended or desired for the WTP.

The goal for these alternatives is to address the findings for the flocculation tank and filter system listed in the Assessment Report and to continue to provide high-quality water to the District's customers for the next decades.

# Alternative F1 – Continued Use of Existing Mixed Media Rapid Rate Direct Filtration Equipment

### General

This alternative includes continuing to use the existing flocculation and filtration equipment with minimal modifications. Per our discussions with WTP operations staff, the existing equipment performs adequately and shows no noticeable decrease in performance.

## **Filtration**

For this alternative, there are no recommended modifications to the existing operation of the filters or the filter discharge piping. The operations staff would continue to provide regular maintenance of the existing filters which includes maintaining an operable surface wash system, regular replacement or replenishment of filter media, visual observation of filter operation, recordkeeping of filter performance, and monitoring filter run times and post-backwash turbidity.

Based on the findings listed in the Assessment Report, we recommend that an additional ladder be provided at each filter vessel to improve access and safety, and to provide a secondary path of egress from the filter platform in the event that one of the paths is blocked. Additional ladders should be installed in the northeast corner of Filters 1 and 2, and in the northwest corner of Filters 3 and 4. These ladders can be welded or bolted to the filter vessels and will provide secondary access to the tops of the filter vessels.



Ladder materials should be painted steel and aluminum to match the materials for the respective filter vessels.

Additionally, we recommend that the coating system on Filters 1 and 2 be repaired in locations where corrosion is evident. Areas where repair is needed are mostly located along the baseplate around the perimeter of the filter vessel. For this repair, the corroded areas should be prepared using machine tool cleaning to bare metal (SSPC-SP11) and should be coated with two coats of high-grade, NSF 61-certified, epoxy coating system from Tnemec, Sherwin Williams, Ameron, or equal. It should be noted that during the WTP assessment, the filter's interior coating system could not be inspected because the filter was in operation. Given the relatively minor corrosion visible on the exterior and the fact that there is no visual evidence of significant corrosion or coating damage/deterioration on the steel exposed to view on the filter vessel, it is not anticipated that significant corrosion or coating damage exists below the media/water surface. If this alternative is selected, we recommend removing enough media to allow for an inspection of the filter's interior coating and if the coating is found to be damaged, repairing/replacing the damage with new coating materials.

Additionally, there are other modifications that could be done to improve the filters and ensure their longevity. The condition of the filter underdrain system is not known since it is inaccessible. The filter underdrains may require replacement with an updated system. The new underdrains would likely be modular with a media support deck and a collector system for the filtered water. It may be possible to retrofit the existing filter vessels with access ports to allow inspection of the underdrain system, a feature that is currently not available.

Another modification that could improve backwash performance is the addition of air scour. It may be possible to add a blower and an air scour system to improve the removal of particles during backwash. Most new installations include air scour. If air scour is added, it might be possible to remove the existing surface wash equipment. Plant staff have indicated that the surface wash equipment is maintenance intensive.

Lastly, we recommend that the flocculation tank coating system be repaired and/or replaced to prevent further corrosion and/or deterioration of the steel. Given the size of the tank, we recommend that the entire tank be prepared and recoated, even though corrosion is most evident above the existing water surface and at the baseplate/wall interface. Preparation and recoating of the flocculation tank will require that the tank be removed from service. We estimate that draining, drying, preparation, recoating, curing, and filling the tank can be accomplished in 2 to 4 weeks. During this period, temporary piping or tankage could be used to either bypass the existing flocculation tank or provide temporary flocculation volume. During this period, special attention should be given to



operation of the WTP to ensure that the equalization trough does not overflow. Furthermore, if the District proceeds with this recommendation, we suggest that this work be completed during periods of low demand between December and March in order to minimize the duration of WTP operation.

An alternative to preparation and recoating the existing flocculation tank is to replace the tank with a plastic (fiberglass reinforced plastic [FRP] or high-density polyethylene [HDPE]) tank. Such a tank could be fabricated to mimic the existing tank and could be installed onto the existing concrete pad. An FRP tank would last for 20 to 30 years, would not be subject to corrosion, and could include a molded lid which would reduce ambient moisture within the WTP Main Building. This option would also decrease the downtime for the WTP. We estimate that draining the existing flocculation tank, removing the tank, installing a new plastic tank, reconnecting various components, and refilling the tank could be completed in 3 to 4 days. During this time, the WTP staff could provide temporary piping from the raw water pumps to the equalization basin trough or could elect to not operate the WTP if sufficient storage is available to serve system demands. Because the only access to the WTP is via a 3.5-foot wide single door, installation of a new plastic tank would require that the existing storefront windows be removed temporarily. In addition to these requirements, we recommend that if this option is selected, the District complete this replacement during periods of low system demand (December through March).

### Building and Other

For this alternative, there are no recommended modifications to the existing WTP Main Building, WTP site, HVAC system, or Supervisory Control and Data Acquisition (SCADA) systems.

Furthermore, there are no recommended modifications to the existing WTP electrical equipment for the filters. Technical Memorandum 20434-1 provides some recommendations for existing MCC 1, MCC 2, and MCC 3 as well as the associated pumping equipment. It is anticipated that the capacity of the existing electrical service is sufficient to accommodate the recommendations for this alternative.

While this alternative does have a low capital cost, it does not adequately address the space restrictions in the WTP Main Building, or address the proximity of chemical storage and moisture to the existing electrical gear.

It is anticipated that the level of effort and time needed to operate and maintain the equipment included in this alternative is consistent with the current requirements.



# Cost Estimate

The estimated cost to provide two new ladders, spot repair the coating on Filters 1 and 2, and prepare and recoat the flocculation tank is \$90,000 including contingency (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent). A budgetary cost estimate for this alternative is provided in Exhibit B. The estimated cost to modify the existing filters as described above but replace the existing steel flocculation tank with a new plastic tank is \$170,000 including contingency (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent). A budgetary cost estimate for this alternative is provided in Exhibit B. These costs represent a minimal project cost. If the condition of the underdrains proves sufficiently bad to require replacement or if the District decides to upgrade the filters with the optional features, such as air scour, to ensure filter system longevity and minimize operation and maintenance effort, the cost of this alternative could increase significantly. The extent of these modifications will depend upon the total scope so the cost at this time is speculative but could be in the range of \$1 million.

# Alternative F2 – Modified Use of Existing Mixed-Media Rapid-Rate Direct Filtration Equipment with New Flocculation Equipment

## General

This alternative includes continuing to use the existing mixed-media direct-filtration systems, construction of a new separate building, removing the existing flocculation tank from service, installing stand-alone pretreatment equipment upstream of the existing filters within a new building, relocating the existing chemical systems to the new building, construction of an enclosed electrical room within the WTP Main Building, and rehabilitating the WTP Main Building to include additional work/laboratory and storage space.

### **Filtration**

This alternative includes replacement of the existing flocculation tank with a new pretreatment system that could be a new flocculation tank, adsorption clarifier, or a dissolved air flotation unit. The new flocculation tank would be sized to optimize coagulation and flocculation.

An adsorption clarifier allows for coagulation and flocculation and also provides prefiltration of the flocculated particles and reduces the particle load on the filters, which can extend filter run times. Adsorption clarifiers use a raw water flush and air scour so backwashing with finished water is minimized. For this alternative, two adsorption



clarifiers would be used, both of which are installed within a single vessel. The clarifiers would be operated in parallel and each clarifier would be capable of filtering up to 700 gpm. Clarifiers will be provided with level sensors, alarm floats, and control valves as required to provide successful pretreatment of the source water.

The clarifiers would require blowers to provide air for the air scour during the flush cycle. Typically, a single blower is sufficient; however, a redundant blower may be provided in the event that the primary blower is taken offline for maintenance. Given the residential and recreational nature of the site, the building may need to have features to attenuate the blower noise such as acoustical louvers or a dedicated blower room.

A third possible type of pretreatment is dissolved air flotation (DAF). DAF clarifies source water by injecting air into the flocculated water. The released air forms tiny bubbles which adhere to the flocculated particles causing the floc to float to the surface where it may be removed by a skimming device. DAF equipment is available in package units that include all of the components, equipment, controls, and tankage. Photo examples of DAF units are included as Figure A-10 in Appendix A. DAF technology was installed at the City of Bellingham water treatment plant.

With this alternative, the operations staff would continue to provide regular maintenance of the existing filters as described in Alternative F1. For this alternative, there are no recommended modifications to the existing operation of the filters or the filter discharge piping. We recommend that additional ladders be provided for the filters and that the existing coating system on Filters 1 and 2 be repaired as described in Alternative F1.

Liquid alum will continue to be added to the raw water supply upstream of the pretreatment and mixing will be provided by a static mixer in line with the raw water piping, downstream of the raw water pumps. The existing raw water pumps have a capacity of approximately 1,400 gpm at 25 feet total dynamic head (TDH), which should be sufficient to feed the proposed pretreatment and existing filter equipment.

Currently, the WTP adds a small amount of chlorine prior to the existing flocculation tank upstream of the filter vessels. This chlorine is not used for disinfection but is added to help reduce algae growth in the flocculation tank and filter vessels. Chlorine injection upstream of the filter vessels will be maintained in this alternative.

### Building and Other

While the proposed pretreatment might physically fit within the existing WTP Main Building, installation would require significant effort due to the presence of existing treatment equipment and piping. Installation within the WTP Main Building would



require the removal of the existing flocculation tank, chemical systems, piping, and storefront windows. Furthermore, it is not feasible to maintain WTP operation and produce water during the removal of the existing flocculation equipment and installation of a new system. Since replacement of the existing flocculation tank with pretreatment equipment in 1 to 2 days is not feasible, placing the new equipment in a separate building is the only feasible way to add pretreatment. Additionally, a new structure should be large enough to accommodate new alum equipment and relocated soda ash equipment as recommended in Technical Memorandum 20434-4. Providing additional space for the chemical addition systems in the proposed building will separate the chemical system from the electrical systems, thus reducing the potential for corrosion and/or damage. Furthermore, a new building to house the pretreatment and chemical systems would provide extra space in the existing WTP Main Building for a separate enclosed electrical room as well as laboratory and storage space. Approximately 1,800 square feet (sf)  $(57' \times 33')$  is suitable to provide space for the new pretreatment equipment, chemical equipment, access clearances, piping, and a future pretreatment vessel as needed to accommodate future demands. The building could be constructed from a variety of materials, including wood truss/CMU, and would include several rollup doors for clarifier installation, maintenance, and removal. A proposed site/building plan is provided as Figure A-5. The figure shows an adsorption clarifier as the pretreatment technology.

Site improvements associated with the proposed building include asphalt paving to provide access to the facility. New facilities will be subject to all applicable stormwater requirements for construction of new buildings and the addition of new asphalt pavement. The construction of a new building adjacent to the existing WTP would be subject to the stipulations listed by Whatcom County for the Lake Whatcom Watershed. These requirements will include the need to provide either full infiltration on site or advanced treatment for phosphorous removal. Design of the required stormwater facilities will be provided once the building footprint and paving have been finalized, but a budget estimate for the anticipated requirements has been included with the alternative cost estimate included in Exhibit B. In addition, it should be noted that these regulations restrict clearing of the site so that only 35 percent of the existing tree canopy can be cleared.

The additional process treatment equipment recommended in this alternative will increase the electrical load on the facility by 10 to 20 horsepower (hp) to accommodate the proposed air scour blower(s). In addition to this new load, the proposed building will require additional heating, ventilation, and dehumidifier equipment. Furthermore, the proposed electrical room within the WTP Main Building will require separate ventilation and cooling equipment to maintain an appropriate temperature for the motor starters and other electronic components. For the purposes of this analysis, it is assumed that the



existing electrical service to the site is sufficient to accommodate the proposed loads and that a new electrical supply will be sub-fed from the existing Finished Water Pump Building. A formal electrical analysis should be completed once the size of the proposed electrical loads are defined to confirm this assumption.

This alternative will include a new heating and ventilation system for the proposed building addition and new ventilation and cooling equipment for the proposed electrical room.

This alternative will require modifications to the District's existing SCADA system. New control set points, monitoring information, and alarms will be required to successfully operate the new clarifier equipment. The new signals can be incorporated into the District's existing SCADA system and will allow for monitoring and control of the new system per the District's protocols.

It is anticipated that the level of effort and time needed to operate and maintain the equipment included in this alternative is consistent with the current requirements.

This alternative successfully addresses spacing issues within the WTP, removes the flocculation tank as a source of moisture from the WTP Main Building, and along with relocation of the chemical delivery equipment, provides sufficient space to expand the WTP Main Building storage/laboratory space and construct an enclosed electrical room in order to protect the electrical equipment from exposure to moisture and chemicals. This alternative does represent a significantly higher capital cost when compared to Alternative F1.

## Cost Estimate

The estimated cost to provide the items described above using an adsorption clarifier is \$3,583,000 including contingency (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent). A budgetary cost estimate for this alternative is provided in Exhibit B.

# Alternative F3 – Installation of New Mixed-Media Rapid-Rate Direct Filtration Equipment

## General

This alternative includes removing the existing filters from service, construction of a new separate building, installation of new package filtration units that include a contact adsorption clarifier in the new building, relocating the existing chemical systems to the



new building, construction of an enclosed electrical room within the WTP Main Building, and rehabilitating the WTP Main Building to include additional work/laboratory and storage space.

### **Filtration**

Even though the existing filters were installed in 1972, rapid-rate mixed-media filtration technology has not changed significantly since that time. Current package filtration technology functions similarly to the WTP's existing filters, but can also include a pre-sedimentation basin (PSB), and/or a contact adsorption clarifier (CAC) upstream of the filter media. Package filtration units typically include a single vessel with separate sections for a PSB (if desired), a CAC, and the filter media. The units also include instrumentation and controls to ensure successful equipment operation as well as a control panel used to monitor and optimize the treatment process. PSBs accept raw water combined with coagulant and promote rapid settling and removal of the coagulated particles prior to introduction to the CAC. However, because raw water quality from the Lake Whatcom source is consistently less than 5 NTU and does not show significant seasonal variation, a PSB is not recommended for this application and will not be considered further. CACs provide prefiltration of coagulated particles and reduce the particle load on the media bed which can improve filter performance and extend filter run times. After the CAC, water flows to the filtration media where smaller particles are removed. Technical information for a typical package filtration with a CAC is provided in Exhibit C.

In addition to mixed-media filtration, there are other configurations of media that will successfully provide filtration for the District. The most notable of these is deep-bed monomedia filtration. In this configuration, a thicker volume of media with a consistent gradation is used to remove coagulated particles. The primary advantage of monomedia filtration is that longer filter run times can be achieved if filter rates are maintained below 6 gpm/sf. Additional benefits, including higher filtration rates, are possible with this technology if a media depth between 56 and 72 inches can be provided. For monomedia filtration, the diameter of the media particles should be between 1.2 and 1.5 millimeters (mm) and the depth of the media should be at least 60 inches in order to achieve the recommended bed depth-to-media particle diameter ratio of 1,300 (*Integrated Design and Operation of Water Treatment Facilities*, 2<sup>nd</sup> Edition, Kawamura, 2000).

Deep-bed monomedia is not usually available with steel package vessels because of the geometry of the units. For example, the existing filters have 52 inches of media including support gravels. Consequently, the existing filters just do not have the depth in the filter chamber to hold the 56 to 72 inches of media required for a deep bed. If this additional media were added to existing filters, the upper portion would be washed out



during backwash. Deep-bed filtration is usually used in filter plants with deep cast concrete basins such as the City of Everett rather than package plants.

This alternative includes two 700 gpm package filters which would allow the WTP to operate with only one filter in service and provide filter capacity for up to the WTP's current rated capacity of 1,400 gpm. The proposed package filtration units will include CACs and are each roughly  $28' \times 9' \times 9' (L \times W \times H)$ . A cross section of the proposed unit is provided on Figure A-6.

Filters will be provided with a control panel, level sensors, high-level alarm floats, and control valves as required to provide successful treatment of the source water.

The proposed mixed-media filters require blowers to provide air for the air scour mode of the backwash cycle. Typically, a single blower is sufficient; however, a redundant blower will be provided in the event that the primary blower is taken offline for maintenance.

Liquid alum will continue to be added to the raw water supply upstream of the filter unit and mixing will be provided by a static mixer in line with the raw water piping downstream of the raw water pumps. The existing raw water pumps have a capacity of approximately 1,400 gpm at 25 feet TDH, which should be sufficient to feed the proposed filtration equipment.

Currently, the WTP adds a small amount of chlorine to their existing flocculation tank upstream of the filter vessels. This chlorine is not used for disinfection, but is added to help reduce algae growth in the flocculation tank and filter vessels. Chlorine injection upstream of the filter vessels will be maintained in this alternative.

## Building and Other

While the proposed filter units would physically fit within the existing WTP Main Building, installation would require significant coordination due to the presence of existing treatment equipment and piping. Installation at the current filter location would require the removal of the existing flocculation tank, chemical systems, existing piping, existing storefront windows, as well as reorganization of the existing backwash discharge trench drain that conveys water from the filter discharge piping to the buried backwash storage tank located adjacent to the WTP. Furthermore, any modifications will require significant coordination and/or planning to ensure that the WTP can remain functional during execution of the work. Since replacement of the existing filters in 1 to 2 days is not feasible, a second option is to install new components in a different location, connect them to the treatment system, and then remove the existing components. As such, we



recommend that the District construct a separate building to house the new filter equipment. Additionally, a new structure should be large enough to accommodate new alum equipment and relocated soda ash equipment. Providing additional space for the chemical addition systems in the proposed building will separate the chemical system from the electrical systems, thus reducing the potential for corrosion and/or damage. Furthermore, a new building to house the filters and chemical systems would provide extra space in the existing WTP Main Building for a separate enclosed electrical room as well as laboratory and storage space. Approximately 3,300 sf (78' x 42') is required to provide suitable space for the new filter equipment, access clearances, piping, and a future third filtration package. The building could be constructed from a variety of materials, including wood truss/CMU, and would include several rollup doors to facilitate clarifier installation, maintenance, and removal. A proposed site/building plan is provide as Figure A-7.

After the new filter units are operational and the existing flocculation tank and filter vessels have been removed from the WTP Main Building, the existing building can be modified to provide for expanded laboratory/workspace as well as an enclosed electrical room.

Site improvements associated with the proposed building include asphalt paving to provide access to the facility. Stormwater facilities for this alternative would be similar to Alternative F2.

The additional process treatment equipment recommended in this alternative will increase the electrical load on the facility by 20 to 40 hp to accommodate the proposed air scour blowers. In addition to this new load, the new space will require additional heating, ventilation, and dehumidifier equipment. Furthermore, the proposed electrical room in the WTP Main Building will require separate ventilation and cooling equipment to maintain an appropriate temperature for the motor starters and other electronic components. For the purposes of this investigation, it is assumed that the existing electrical service to the site is sufficient to accommodate the proposed loads and that a new electrical supply will be sub-fed from the existing Finished Water Pump Building. A formal electrical analysis should be completed once the size of the proposed electrical loads are defined to confirm this assumption.

This alternative will include new heating and ventilation system for the proposed building addition, and new ventilation and cooling equipment for the proposed electrical room.

This alternative will require modifications to the District's existing SCADA system. New control set points, monitoring information, and alarms will be required to successfully operate the new filtration equipment. Typically, package filtration systems



are provided with a control panel that allows the WTP operations staff to monitor and control the function of the filter system. This control panel can be incorporated into the District's existing SCADA system and will allow for monitoring and control of the new system per the District's protocols.

It is anticipated that the level of effort and time needed to operate and maintain the equipment included in this alternative is consistent with the current requirements.

This alternative successfully addresses spacing issues within the WTP, removes the flocculation tank as a source of moisture from the WTP, and along with relocation of the chemical delivery equipment, provides sufficient space to expand the WTP Main Building storage/laboratory space and construct an enclosed electrical room in order to protect the electrical equipment from exposure to moisture and chemicals. This alternative does represent a significantly higher capital cost when compared to Alternatives F1 and F2.

## Cost Estimate

This alternative is estimated to cost \$5,876,000, including contingency (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent). A budgetary cost estimate for this alternative is provided in Exhibit B.

## Alternative F4 – Installation of New Membrane Filtration Equipment

### <u>General</u>

This alternative includes removing the existing filters from service, construction of a new separate building, installation of new membrane filtration equipment in the new building, relocating the existing chemical systems to the new building, construction of an enclosed electrical room within the WTP Main Building, and rehabilitating the WTP Main Building to include additional work/laboratory and storage space.

### **Filtration**

Although still a relatively new technology, membrane filtration is now used more frequently for municipal water treatment. The process utilizes manufactured membranes of various materials (ceramics, polymers) under pressure to remove solids, turbidity, and to provide a 3-log reduction of *Giardia* and 2-log reduction of *Cryptosporidium*. In some membrane applications, specifically in ultra- and/or nano-filtration applications, additional credits can be provided for 1.5-log removal of waterborne viruses. Most



membranes used for municipal water treatment are cylindrical, hollow-fiber materials and provide filtration via outside/in water flow.

For membrane filtration, raw water is treated via a 200 micrometer ( $\mu$ m) prefilter for removal of larger debris. As the membrane surface accumulates filtered particles, they must occasionally be cleaned via backwashing and air scouring. For this, filtered water is sent to a backwash supply tank, where the backwash cycle removes accumulated foulants through a reverse inside/out flow approximately every 20 to 60 minutes. Air scouring is provided during this phase to optimize the backwash process. A drain or filter-to-waste step is used to remove any additional accumulated material. Membrane integrity testing is conducted automatically once every 24 hours and this integrity test is capable of detecting a single fiber break. Maintenance cleans, chemically enhanced backwashes, and/or clean-in-place procedures are automated chemical cleaning processes used to recover membrane permeability and typically occur every 1 to 4 weeks, depending on the cleaning process.

For the purposes of this analysis, the proposed membrane filtration system will consist of the following components:

- Two skid-mounted, hollow-fiber membrane modules
   30 filter cartridges on each skid for a total of 60 cartridges
- Two prefilter water feed pumps
  - Pumps shall be approximately 1,600 gpm at 100 feet TDH
- One backwash pump

0

- Pump shall be approximately 900 gpm at 90 feet TDH
- Two prefiltration units
- One compressed air system
  - Pneumatically operated valves
  - One regenerative blower
  - One airflow meter and transmitter
- Two turbidimeters
  - HACH TU5300sc
- Two flow meters
  - Magnetic flow meter with integral transmitter



- Pressure gauges as required for system monitoring
- One electrical control panel
- Two tanks
  - One feed supply equalization tank
  - One backwash supply tank
- One clean-in-place chemical cleaning skid
  - Sodium hypochlorite
  - Citric acid

The equipment listed above would allow the WTP to operate with only one membrane skid in service but would provide filter capacity for up to 1,400 gpm and would require an additional membrane skid in order to provide complete redundancy. Although only two filters are proposed for this alternative, space should be provided for a future third membrane skid unit. Each membrane skid has a footprint of approximately 150 sf  $(25' \times 6')$  and an example of a typical membrane filtration unit is shown on Figure A-8. Typically, the filtration equipment is provided as a skid-mounted system that is ready for connection to the inlet and outlet piping reduces installation time and provides a clear definition for components to be provided by the equipment manufacturer and the contractor performing the installation.

Given that the existing filters are located at the rear of the WTP Main Building and because the proposed membrane filter skids are longer than the existing filters, it is not feasible to install the proposed membrane skids in the location of the existing filter vessels. As such, we recommend that the District install the membrane skids in a new building, connect them to the existing treatment system, then remove the existing filters and supporting equipment.

Given the raw water quality parameters of the Lake Whatcom source, liquid alum is not needed prior to membrane filtration. Removal of this equipment will increase the available space in the proposed building.

Although the existing raw water pumps have sufficient capacity for the current treatment equipment, membrane filtration equipment operates at a significantly higher pressure. New supply pumps will be installed to push water through the membrane cartridges in accordance with the manufacturer's recommendations.

The backwash system has specific flow and pressure requirements to ensure successful membrane filtration and the existing backwash system cannot meet these new



requirements. A new backwash pump and backwash supply tank are provided for this alternative and will be sized per the membrane manufacturer's design criteria.

The backwash system for the membranes is automatic and based on filter run times and/or pressure drop across the filter membrane. The total water wasted between both the backwash and flow-to-waste cycles for the membrane system is approximately 45,000 gpd. Given the current filter wash cycle and flow-to-waste cycles, approximately 50,000 gallons is wasted. Thus, the use of membranes may reduce the total volume of water wasted by approximately 10 percent. This is of particular interest to the District since they pay municipal rates for all water wasted to the City of Bellingham's municipal wastewater treatment system, and any reduction in wastewater volume from the WTP will reduce operational costs.

Additional chemical cleaning equipment is required to maintain successful function of the filters. These systems are typically provided with the membrane filtration package, and include both sodium hypochlorite and citric acid storage and dosing equipment. These systems should be located in the proposed building addition described below.

Lastly, given that this alternative represents a "new" filtration technology for the District, it is likely that some form of pilot testing must be completed in order to demonstrate that the proposed technology is feasible for the Lake Whatcom source.

## Building and Other

Due to space and project sequencing limitation, we recommend that the District construct a separate building to accommodate the new membrane equipment. A proposed site/building plan is provided as Figure A-9. This also includes relocation of the existing chemical equipment and reorganization of the existing WTP Main Building as described in Alternative F3.

Site improvements, stormwater improvements, electrical modifications, HVAC modifications, and telemetry and SCADA modifications will be similar to those described in Alternative F3.

Even though this alternative utilizes different technology than what is currently utilized, it is anticipated that the level of effort and time needed to operate and maintain the equipment included in this alternative is consistent with the current requirements.

This alternative successfully addresses spacing issues within the WTP, removes the flocculation tank as a source of moisture from the WTP, and along with relocation of the chemical delivery equipment, provides sufficient space to expand the WTP Main



Building storage/laboratory space and construct an enclosed electrical room in order to protect the electrical equipment from exposure to moisture and chemicals. This alternative does represent a significantly higher capital cost when compared to Alternatives F1 and F2.

### Cost Estimate

This alternative is estimated to cost approximately \$4,948,000, including contingency (25 percent), Washington State sales tax (9.0 percent), and design/project administration (25 percent). A budgetary cost estimate for this alternative is provided in Exhibit B.

## SUMMARY OF ALTERNATIVES AND COST ESTIMATES

The alternatives described above highlight feasible alternatives for providing water filtration for the South Shore Water System. The alternatives are further analyzed below, and a final recommendation based on this analysis and discussions with District staff is provided at the end of this section.

It is important to note that all of these alternatives will require additional design and coordination with various stakeholders, one of which includes the Sudden Valley Community Association (SVCA). The SVCA owns much of the property adjacent to the WTP and would need to be consulted prior to implementation of any of the alternatives discussed in this memorandum. Furthermore, the District must consider that the property adjacent to the WTP is a public park with waterfront access and use of this public space will likely need to be maintained at all times. Other stakeholders include neighboring residential landowners and utility providers serving the area.

### **Alternative Summary**

### Alternative F1

Alternative F1 includes modifying the existing filter vessels with ladders and rehabilitating the existing Filters 1 and 2 coating system. No building, site, electrical, HVAC, or telemetry/SCADA improvements are included with this alternative.

### Alternative F2

Alternative F2 includes removing the existing flocculation tank and installing new pretreatment equipment, either a new flocculator, adsorption clarifier, or DAF unit. The new pretreatment equipment would be installed within a new separate building that would be sized to also house new chemical dosing tanks and metering pump equipment.


Technical Memorandum 20434-5 – Sudden Valley WTP Filtration System Analysis December 22, 2020

Site improvements would include new piping and asphalt paving to provide access to the new building. Electrical, HVAC, and telemetry/SCADA improvements would be provided to equip and power the proposed building and new treatment equipment. Also, the existing WTP Main Building would be reconfigured to include additional storage/laboratory space. Finally, an electrical room will be constructed within the WTP Main Building to house the MCCs and other electrical gear, which will provide separation from the moisture associated with the treatment process.

### Alternative F3

Alternative F3 includes installation of new package filtration equipment. This new equipment would be installed within a new separate building that would be sized to also house new chemical dosing tanks and metering pump equipment. Site improvements would include new piping and asphalt paving to provide access to the new building. Electrical, HVAC, and telemetry/SCADA improvements would be provided to equip and power the proposed building and new treatment equipment. The existing filters would be removed from the WTP Main Building, which would be reconfigured to include additional storage/laboratory space. Finally, an electrical room will be constructed within the WTP Main Building to house the MCCs and other electrical gear, which will provide separation from the moisture associated with the treatment process.

### Alternative F4

Alternative F4 includes installation of new membrane filtration equipment. This new equipment would be installed within a new separate building that would be sized to also house new chemical dosing tanks and metering pump equipment. Site improvements would include new piping and asphalt paving to provide access to the new building. Electrical, HVAC, and telemetry/SCADA improvements would be provided to equip and power the proposed building and new treatment equipment. The existing filters would be removed from the WTP Main Building, which would be reconfigured to include additional storage/laboratory space. Finally, an electrical room will be constructed within the WTP Main Building to house the MCCs and other electrical gear, which will provide separation from the moisture associated with the treatment process.

### Alternative Analysis

Advantages to Alternative F1 are its low capital cost. Disadvantages to Alternative F1 are that it does not address space constraints within the WTP Main Building, does not address the moist environment partially due to the presence of the flocculation tank, and does not allow for adequate separation between the chemical and electrical components. Alternative F1 allows for continued operation but does not address the long-term space



Technical Memorandum 20434-5 – Sudden Valley WTP Filtration System Analysis December 22, 2020

and maintenance issues that would allow for assurance that the plant can continue producing high-quality water for the next decades.

Advantages to Alternative F2 are that it will provide additional space in the WTP Main Building for laboratory/storage and allow for construction of an electrical room to provide separation from a moist environment as well as treatment chemicals. Disadvantages to this alternative include a high capital cost and issues with construction of a new building near the existing WTP Main Building.

Advantages to Alternative F3 are that it will provide additional space in the WTP Main Building for laboratory/storage and allow for construction of an electrical room to provide separation from a moist environment as well as treatment chemicals. It will also replace equipment that is nearly 50 years old. Disadvantages to this alternative include a high capital cost and issues with construction of a new building near the existing WTP Main Building.

Advantages to Alternative F4 are that it will provide additional space in the WTP Main Building for laboratory/storage and allow for construction of an electrical room to provide separation from a moist environment as well as treatment chemicals. It will also replace equipment that is nearly 50 years old with new technology. Lastly, it should reduce the operation and maintenance requirements for WTP operational staff. Disadvantages to this alternative include a high capital cost and issues with construction of a new building near the existing WTP Main Building. In addition, the new system must be pilot tested prior to implementation, which will extend the project by 6 to 12 months.

It is difficult to provide a filtration recommendation without considering the other issues that are being considered at the treatment plant. For example, if the District decides to relocate the chemical feed equipment into a separate building, Alternatives F2, F3, and F4 become more favorable since the expansion of a new chemical building to house new prefiltration or filtration has an economy of scale.

Consequently, the final filtration recommendation will be deferred until the summary report is prepared that contains all of the information in the various technical memoranda to provide an optimized recommendation for the entire filter plant to ensure the District's goal of continuing to provide high-quality treated water for decades to come.

### EXHIBIT A

### PHOTOGRAPHS OF EXISTING EQUIPMENT



### **Flocculation Tank**





Filters 1 and 2





Filters 3 and 4





Filter Discharge Piping



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WesTech Trident Package Filtration System with CAC



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### WesTech Ultrafiltration Module



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**Evoqua RT Series** 



**FRC PCL Series** 



Krofta Supracell Series

### FIGURE A-10

### Package DAF System and Circular DAF Clarifier

EXHIBIT B

### **RECOMMENDED ALTERNATIVE COST ESTIMATES**

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F1 Continued Use of Existing Filters - Modified Flocculation Tank *November 10, 2020* G&O# 20434.00

<u>NO.</u>	<u>ITEM</u>	QUANTITY UNIT	UNIT	PRICE	Al	MOUNT
1	Mobilization and Demobilization	1 LS	\$	8,000	\$	8,000
2	Furnish and Install Additional Ladders	2 EA	\$	6,000	\$	12,000
3	Repair Filter 1/2 Coating	1 LS	\$	15,000	\$	15,000
4	Repair Flocculation Tank Coating	1 LS	\$	18,000	\$	18,000

Subtotal*	\$ 53,000
Contingency (25%)	\$ 13,300

- Subtotal \$ 66,300
- Washington State Sales Tax (9.0%)\*\* \$ 6,000
  - Subtotal \$ 72,300
- Design and Project Administration (25.0%)\*\*\* \$ 18,100

### TOTAL CONSTRUCTION COST \$ 90,000

\* Costs listed are in 2020 dollars

- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F1 Continued Use of Existing Filters - New FRP Flocculation Tank *November 10, 2020* G&O# 20434.00

<u>NO.</u>	<u>ITEM</u>	QUANTITY UNIT	UNIT	PRICE	Al	MOUNT
1	Mobilization and Demobilization	1 LS	\$	8,000	\$	8,000
2	Furnish and Install Additional Ladders	2 EA	\$	6,000	\$	12,000
3	Repair Filter 1/2 Coating	1 LS	\$	15,000	\$	15,000
4	Replace Existing Flocculation Tank	1 LS	\$	25,000	\$	25,000

Subtotal*	\$ 60,000
Contingency (25%)	\$ 15,000

- Subtotal \$ 75,000
- Washington State Sales Tax (9.0%)\*\* \$ 6,800
  - Subtotal \$ 81,800
- Design and Project Administration (25.0%)\*\*\* \$ 20,500

### TOTAL CONSTRUCTION COST \$ 102,000

\* Costs listed are in 2020 dollars

- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F2 Modified Use of Existing Filters *November 10, 2020* G&O# 20434.00

<u>NO.</u>	<u>ITEM</u>	<b>QUANTITY</b> UNIT	UN	NIT PRICE	A	MOUNT
1	Mobilization and Demobilization	1 LS	\$	174,000	\$	174,000
2	Minor Change	1 LS	\$	15,000	\$	15,000
3	Erosion / Sedimentation Control	1 LS	\$	15,000	\$	15,000
4	Site Improvements	1 LS	\$	20,000	\$	20,000
5	New Building	1,800 SF	\$	600	\$	1,080,000
6	Adsorption Clarifier	1 LS	\$	375,000	\$	375,000
7	Proposed Building Piping	1 LS	\$	20,000	\$	20,000
8	Chemical System Modifications	1 LS	\$	65,000	\$	65,000
9	Electrical Modifications	1 LS	\$	225,000	\$	225,000
10	HVAC Modifications	1 LS	\$	75,000	\$	75,000
11	Telemetry / SCADA Modifications	1 LS	\$	40,000	\$	40,000

Subtotal*	\$ 2,104,000
Contingency (25%)	\$ 526,000

- - Subtotal \$ 2,630,000
- Washington State Sales Tax (9.0%)\*\* \$ 236,700
  - Subtotal \$ 2,866,700
- Design and Project Administration (25.0%)\*\*\* \$ 716,700

### TOTAL CONSTRUCTION COST \$ 3,583,000

- \* Costs listed are in 2020 dollars
- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F3 New Mixed Media Package Filtration Equipment *November 10, 2020* G&O# 20434.00

NO.	ITEM	QUANTITY UNIT	UN	IT PRICE	A	MOUNT
1	Mobilization and Demobilization	1 LS	\$	285,000	\$	285,000
2	Minor Change	1 LS	\$	15,000	\$	15,000
3	Erosion / Sedimentation Control	1 LS	\$	15,000	\$	15,000
4	Site Improvements	1 LS	\$	20,000	\$	20,000
5	New Building	3,300 SF	\$	600	\$	1,980,000
6	Package Filtration Equipment	1 LS	\$	700,000	\$	700,000
7	Proposed Building Piping	1 LS	\$	30,000	\$	30,000
8	Chemical System Modifications	1 LS	\$	65,000	\$	65,000
9	Electrical Modifications	1 LS	\$	225,000	\$	225,000
10	HVAC Modifications	1 LS	\$	75,000	\$	75,000
11	Telemetry / SCADA Modifications	1 LS	\$	40,000	\$	40,000

Subtotal*	\$ 3,450,000
Contingency (25%)	\$ 862,500

- - Subtotal \$ 4,312,500
- Washington State Sales Tax (9.0%)\*\* \$ 388,100
  - Subtotal \$ 4,700,600
- Design and Project Administration (25.0%)\*\*\* \$ 1,175,200

### TOTAL CONSTRUCTION COST \$ 5,876,000

- \* Costs listed are in 2020 dollars
- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F4 New Membrane Filtration Equipment *November 10, 2020* G&O# 20434.00

<u>NO.</u>	<u>ITEM</u>	QUANTITY UNIT	UI	NIT PRICE	A	MOUNT
1	Mobilization and Demobilization	1 LS	\$	240,000	\$	240,000
2	Minor Change	1 LS	\$	15,000	\$	15,000
3	Erosion / Sedimentation Control	1 LS	\$	15,000	\$	15,000
4	Site Improvements	1 LS	\$	20,000	\$	20,000
5	New Building	2,300 SF	\$	600	\$	1,380,000
6	Membrane Filtration Equipment	1 LS	\$	775,000	\$	775,000
7	Proposed Building Piping	1 LS	\$	30,000	\$	30,000
8	Chemical System Modifications	1 LS	\$	40,000	\$	40,000
9	Electrical Modifications	1 LS	\$	225,000	\$	225,000
10	HVAC Modifications	1 LS	\$	75,000	\$	75,000
11	Telemetry / SCADA Modifications	1 LS	\$	40,000	\$	40,000
12	Filter Pilot Testing	1 LS	\$	50,000	\$	50,000

Subtotal*	\$	2,905,000
(250/)	¢	72( 200

- Contingency (25%) \$ 726,300
  - Subtotal \$ 3,631,300
- Washington State Sales Tax (9.0%)\*\* \$ 326,800
  - Subtotal \$ 3,958,100
- Design and Project Administration (25.0%)\*\*\* \$ 989,500

### TOTAL CONSTRUCTION COST \$ 4,948,000

- \* Costs listed are in 2020 dollars
- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 - Alternative F5 New Deep Bed Mono Media Package Filtration Equipment *November 10, 2020* G&O# 20434.00

<u>NO.</u>	ITEM	QUANTITY UNIT	UI	NIT PRICE	A	MOUNT
1	Mobilization and Demobilization	1 LS	\$	248,000	\$	248,000
2	Minor Change	1 LS	\$	15,000	\$	15,000
3	Erosion / Sedimentation Control	1 LS	\$	15,000	\$	15,000
4	Site Improvements	1 LS	\$	20,000	\$	20,000
5	New Building	2,500 SF	\$	600	\$	1,500,000
6	Package Filtration Equipment	1 LS	\$	775,000	\$	775,000
7	Proposed Building Piping	1 LS	\$	30,000	\$	30,000
8	Chemical System Modifications	1 LS	\$	65,000	\$	65,000
9	Electrical Modifications	1 LS	\$	225,000	\$	225,000
10	HVAC Modifications	1 LS	\$	75,000	\$	75,000
11	Telemetry / SCADA Modifications	1 LS	\$	40,000	\$	40,000
12	Filter Pilot Testing	1 LS	\$	50,000	\$	50,000

- Subtotal\*\$3,058,000Contingency (25%)\$764,500
  - - Subtotal \$ 3,822,500
- Washington State Sales Tax (9.0%)\*\* \$ 344,000
  - Subtotal \$ 4,166,500
- Design and Project Administration (25.0%)\*\*\* \$ 1,041,600

### TOTAL CONSTRUCTION COST \$ 5,208,000

- \* Costs listed are in 2020 dollars
- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

### SUDDEN VALLEY WTP ASSESSMENT AND ALTERNATIVES ANALYSIS PROJECT PRELIMINARY COST ESTIMATE

### Technical Memorandum 20434-5 New Dissolved Air Flotation Clarifier *November 10, 2020* G&O# 20434.00

<u>NO.</u>	<u>ITEM</u>	QUANTITY UNIT	UNIT	<b>PRICE</b>	A	MOUNT
1	Mobilization and Demobilization	1 LS	\$	79,000	\$	79,000
2	Minor Change	1 LS	\$	15,000	\$	15,000
3	Erosion / Sedimentation Control	1 LS	\$	15,000	\$	15,000
4	Site Improvements	1 LS	\$	30,000	\$	30,000
5	Circular Clarifier	55 CY	\$	1,200	\$	66,000
6	DAF Clarifier Equipment	1 LS	\$	600,000	\$	600,000
7	Proposed Building Piping	1 LS	\$	20,000	\$	20,000
8	Chemical System Modifications	1 LS	\$	25,000	\$	25,000
9	Electrical Modifications	1 LS	\$	100,000	\$	100,000
10	Telemetry / SCADA Modifications	1 LS	\$	10,000	\$	10,000

Subtotal*	\$ 960,000
Contingency (25%)	\$ 240,000

Subtotal \$ 1,200,000

- Washington State Sales Tax (9.0%)\*\* \$ 108,000
  - Subtotal \$ 1,308,000
- Design and Project Administration (25.0%)\*\*\* \$ 327,000

### TOTAL CONSTRUCTION COST \$ 1,635,000

- \* Costs listed are in 2020 dollars
- \*\* Current sales tax rate is 8.7%.
- \*\*\* Standard project design and administration fees are 25% of the subtotal including contingency and tax and is provided for planning purposes only.

EXHIBIT C

### SUPPORTING TECHNICAL INFORMATION

### **Trident**<sup>®</sup> Package Water Treatment System





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## The Trident<sup>®</sup> Package Water Treatment System

When Microfloc<sup>™</sup> products first introduced the Trident technology, it represented a significant advancement in water and wastewater treatment for plant owners and operators. Not only did it remove turbidity, suspended solids, color, iron, manganese, odor, taste, and pathogens such as Giardia lamblia and Cryptosporidium, but it did so at a lower capital cost than conventional systems, in a smaller space, and at higher flow rates per unit area.

Today, more than 800 Trident technology systems, large and small, are at work all across North America and the world. Our Trident systems continue to evolve as we constantly strive to find ways to produce even higher quality treated water at higher flow rates per unit area and further reduce installation and operating costs.







#### **Surface Water Treatment**

- Turbidity reduction
- Color removal
- Reduction of High TOC/DBP precursors

#### **Groundwater Treatment**

- Iron and manganese removal
- Arsenic
- Groundwater under the influence of surface water

### **Tertiary Treatment**

- Water reuse
- Phosphorus removal

#### **Industrial Process Water**

### **Trident Design Criteria**

	Raw Water	Finish Water		
Turbidity (NTU)	< 75	< 0.1		
True Color (Pt-Co Units)	< 35	< 5		
Combined Turbidity + Color	< 75			
Iron & Manganese (mg/L)	< 10	< 0.3 / 0.05		

### **Proven and Efficient**

The Trident water treatment system utilizes a two-stage configuration consisting of an up-flow buoyant bead and compressible media Adsorption Clarifier® system followed by a conventional down-flow mixed media filter to produce high quality water.

### **Filtration Mode**



The treatment process is started when chemically dosed raw water enters the Adsorption Clarifier near the bottom of the tank where an upflow treatment process combines flocculation and clarification. From the Adsorption Clarifier, flow continues over a weir into the collection trough where it is distributed into the mixed media filtration chamber, after which it is collected by the MULTIBLOCK® underdrain with Laser Shield<sup>™</sup> media retainer and exits the tank.



### **Buoyant Media Flush Mode**

The Adsorption Clarifier is engineered to automatically initiate a flush cycle once headloss indicates that cleaning is required. When the cleaning is initiated, the waste gate and air scour valves are opened as raw water continues to flow. The air/ water flush aggressively separates and removes the solids from the media. Solids are then discharged out through the waste pipe.

### **Backwash Mode**



Like the Adsorption Clarifier flush, the backwash cycle is initiated when dirty bed headloss is reached in the mixed media filter section. The Trident inlet and outlet valves are closed and the air scour valve is opened to allow an air scour cycle. Solids from the backwash are then removed by water flowing up into the collection trough and discharged out through the waste pipe. A filter-towaste sequence follows to ripen the filter media before returning the unit to service.

### Complete Package Plant



**Filter to Waste** 





#### **Adsorption Clarifier System**

Trident systems use less coagulant and polymer than conventional settling type clarifiers. Within the Adsorption Clarifier system it is not necessary to form a settleable floc, which means floc size and settling time are not factors. The buoyant media is rolled and scarified to greatly improve particulate removal. The compressible fiber media is used to capture more solids. The buoyant and compressible fiber media are NSF-61 certified and typically will last the life of the system.

#### **Mixed Media Filtration**

Microfloc pioneered mixed media technology, which has become the industry filtration standard. By using three or more granular materials of differing size and specific gravity, the progressive coarse-to-fine mixed media produces superior quality finished water.





Effluent

### **Trident Process Flow Diagram**

# Highly Efficient, Simple Operation

### MULTIBLOCK

MULTIBLOCK underdrains provide a high-quality, low-cost, engineered product that is economical and versatile. MULTIBLOCK underdrains are fitted with the unique Laser Shield media retaining system that eliminates the need for support gravel. Combined air and water backwash is provided using this system.

- Reduced profile underdrain
- Superior media retention capability
- Uniform distribution of water and air backwash
- NSF-61 approved
- Resistant to plugging and fouling









### **Trident Process Controller Including the AQUARITROL® III**

Trident package treatment units are supplied with fully automated programmable logic controls (PLC). These controls allow plant personnel to easily monitor operational parameters and control all treatment equipment and processes.

Changes in raw water characteristics and flow rate are automatically detected by the AQUARITROL III program. This PLC-based, feed-forward, loop control system monitors the filter effluent quality and continually evaluates and requlates influent chemical feed to maintain desired effluent water quality parameters. The operator sets an adjustable effluent quality setpoint and the Trident controls, utilizing the AQUARITROL III program, do the rest.

WesTech's electrical engineers and programmers can also integrate new whole plant operation or existing plant instruments into the Trident PLC controls. Complicated plant expansions are simplified by providing seamless integration of new and existing equipment.

- Optimized and flexible process controls
- Chemical usage is maximized while maintaining performance

## Get More with Microfloc

### Big Performance in a Small Water Treatment System

For lower flows, Microfloc offers the Tri-Mite® Package Water Treatment Plant. Using the same process as the Trident system, the Tri-Mite comes factory-assembled with pumps, controls, piping, valves, and an air scour blower mounted on the tank. These items are pre-plumbed and wired for simple, fast installation.

The Tri-Mite unit is available in five standard sizes as single units from 50 gpm to 350 gpm and as a two-unit system up to 700 gpm capacity. For flows less than 50 gpm, a single unit can be operated on an intermittent or reduced flow basis. These systems are perfect for new designs with future expansion in mind. The future additional tank would share the control panel, blower, and backwash pump of the first tank.

### **Equipment Upgrades and Expansions**

If your unit is more than 10 years old, or has seen changes in raw water quality, it may be worthwhile to inquire about upgrading your Trident system. Common upgrades include enhanced PLC control systems, underdrain replacement accompanied with backwash upgrade, Trident HSR integrated presedimentation systems, and replacement of up-flow media. Retrofits are also available for other package treatment systems.

### **Stretch Customization**

Some regulatory requirements may dictate a lower hydraulic loading through the filter cell. This is a simple change for the Trident system. An optional stretch filter cell is available to lower the hydraulic loading rate from 5 gpm/ft<sup>2</sup> to 4 gpm/ft<sup>2</sup>. Other filter loading rates may also be achieved through custom design.

### Standard Sizes

		Tri-Mite				Trident				
Influent Flow Rate G	iΡM	50	75	100	175	350	175 350 700 140		1400	
Tank Dimensions (Shipping)	Length	9ft0in	9ft 2 in	11 ft 2 in	13ft9in	23 ft 2in	10ft1in	14ft 6in	27 ft 10 in	39 ft 10 in
	Width	5ft8in	7 ft 10 in	7ft 8in	9ft 11 in	10ft 2 in	6 ft 11 in	8 ft 11 in	8 ft 11 in	11 ft 11 in
	Height	8ft 5in	8ft6in	8ft6in	8 ft 2 in	8ft 3in	8ft5in	8ft 5in	8ft 5 in	10ft1in
Weights	Shipping (Ibs)	6,300	8,100	9,600	9,200	14,600	7,000	10,250	17,000	34,000
	Operating (lbs)	14,000	20,000	25,000	43,000	78,000	35,000	70,000	140,000	330,000
Tank Connections	Influent	2in	3 in	3 in	4in	6 in	4in	6in	8in	12in
	Effluent	2in	3 in	3 in	4in	6 in	6in	8in	12in	16in
	Backwash Supply	3 in	4in	4 in	5 in	8 in	6in	8in	12in	16 in
	Waste/Overflow	4in	6in	6 in	8 in	10in	8in	10in	14in	20 in
	Air Wash (Clarifier)	1.5 in	2in	2in	2in	3 in	2in	3in	4in	6 in
	Air Wash (Filter)	1.5 in	2in	2 in	2in	3 in	3 in	4in	6in	8 in
Waste Production	Flushing Flow Rate (gpm)	50	75	100	175	350	175	350	700	1,400
	Flushing Volume Per Cycle (gal)	500	750	1,000	1,750	3,500	1,750	3,500	7,000	14,000
	Mixed Media Per Cycle (gal)	900	1,350	1,800	3,150	6,300	3,500	7,000	1,4000	28,000
	Filter to Waste Per Cycle (gal)	250	375	500	875	1,750	875	1,750	3,500	7,000





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### Trident<sup>®</sup> HS Multi-Barrier Package Water Treatment System







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### The Trident<sup>®</sup> HS Package Water Treatment System

The Trident HS package treatment system provides multi-barrier protection for difficult-to-treat surface water, groundwater, industrial process water, and tertiary wastewater. The multi-barrier design of the Trident HS package consists of high-rate settling, adsorption clarification, and mixed media filtration.

Individually and collectively, the multiple treatment stages of the Trident HS system maintain superior effluent performance. The multi-barrier process is extremely well-suited for:





#### Water sources with:

- High turbidity and color
- "Flashy" rivers and streams
- Reduction of High TOC/DBP precursors
- Cold waters

#### **Tertiary treatment in:**

- Water reclamation
- Phosphorus removal



Trident HS Design Criteria				
	Raw Water	Finish Water		
Turbidity (NTU)	< 400	< 0.1		
True Color (Pt-Co Units)	< 100	< 5		
Combined Turbidity + Color	< 400			
Iron & Manganese (mg/L)	< 10	< 0.3 / 0.05		
TOC (mg/L)		50 - 70% Removal		
Phosphorus (mg/L)	< 5	< 0.1		

### Multi-Barrier Protection

### Stage 1 - Chemical Conditioning / Tube Settling

Before water enters the treatment unit, coagulant and polymer are added to begin the coagulation and flocculation process. A sludge recycle flow is introduced near the coagulation point to aid in floc formation. This recycle flow also serves to maintain a steady-state solids concentration, minimizing variations in influent solids concentration.

For plants incorporating enhanced coagulation, the tube clarification stage reduces influent solids concentration prior to the Adsorption Clarifier® stage, leaving the majority of coagulated particles in the tube settler clarifier. For cold water conditions, the tube clarifier provides added detention time.

### **Stage 2 - Enhanced Clarification**

A combined bed of both compressible and buoyant bead adsorption media provides second-stage clarification. The Adsorption Clarifier media further reduces solids prior to filtration. Captured solids are periodically flushed from the clarifier using an air/water combination. Tube-clarified water is used for the flushing process.

### **Stage 3 - Mixed Media Filtration**

Mixed media filtration removes the remaining solids using a bed of anthracite, sand, and high-density garnet supported by a direct retention underdrain. For improved filtration, the media surface area per volume increases from top to bottom and the backwashing process incorporates simultaneous air/water backwashing and baffled washtroughs to prevent media loss and assure clean media.







### **Trident HS Process Flow Diagram**

### Complete Package Plant

**Sludge Removal** 

**Drive Unit** 

RN

### Mixed Media Filtration and MULTIWASH® Baffling

This Microfloc<sup>™</sup> pioneered mixed media technology has become the industry standard for filtration. By using three or more granular materials of differing size and specific gravity, the progressive coarse-to-fine mixed media produces superior quality finished water. MULTIWASH baffles retain media during the simultaneous air/water backwash process which produces unmatched backwashing capabilities for the Trident HS system.

**Ultrasonic Level Transmitter** 

Anthracite Silica Sand Garnet



**Raw Water** 

#### **Tube Clarification**

The tube clarifiers reduce plant waste volume and improve organics removal. The tube clarifier module can also be retrofitted to existing packaged clarification and filtration systems to improve process performance and reduce waste.

**Flush and Backwash** Wastewater

Adsorption Clarifier with Buoyant

**Bead and Compressible Fiber Media** 

**MULTIBLOCK** Underdriain



**Static Mixer** 

Sludge Recycle

#### **Adsorption Clarifier System**

The unique design of the Adsorption Clarifier eliminates the need for settleable floc formation. Therefore, floc size and settling time are not factors. Because of this, Trident systems, as a whole, use significantly less coagulant and polymer than conventional settling clarifiers. The buoyant media is rolled and scarified to greatly improve particulate removal. The compressible fiber media is used to capture more solids. The buoyant and compressible fiber media are NSF-61 certified and typically will last the life of the system.

Tube Settler Clarifier











### **MULTIBLOCK® Underdrain with Laser Shield™**

MULTIBLOCK underdrains offer the proven effectiveness of compensating dual lateral underdrain technology, which evenly collects filtered water. The MULTIBLOCK compensating orifice design also uniformly distributes backwash water and air to keep filters running at peak performance.

At less than one-tenth of an inch thick, the Laser Shield design reduces underdrain surface area per filter area by as much as 200 times when compared to porous bead designs, thus minimizing fouling potential.

### **Trident HS Efficiencies**



### **Space Efficient**

- The package design of the Trident HS system significantly reduces space between different treatment processes in your flow sheet, thus reducing floor space required.
- Operates at higher hydraulic loading rates than conventional systems.

### **Chemically Efficient**

- The Aquaritrol® III process controller uses inlet and outlet turbidity signals to automatically adjust chemical dosage. This results in a more efficient use of chemicals than a simple flow pacing.
- Keeps previously-reacted solids in the system to build floc in incoming water.
- Keeps a high solids inventory in the tube settler to compensate for sudden changes in raw water.
- Reuses partially-reacted chemicals.

### Waste Efficient

- MULTIWASH systems provide a sustained air/water backwash at high rates, resulting in a vigorous backwash unmatched in the market.
- Proprietary MULTIWASH troughs retain media in the system.
- Can offer cleanliness and media-loss prevention guarantees.
- Tube settler leads to longer duration between Adsorption Clarifier flush sequences, reducing waste.
- Combined tube settler sludge blowdown, Adsorption Clarifier flush, and MULTIWASH backwash will generally be <5% total waste.



### **Trident HS System Turbidity Performance**

### Trident HS Standard Sizes

Trident HS Tank Sizes					
Model	Length	Width	Height	Flow/Tank	
HS - 700	21′ 6″	9′ 0″	10′ 0″	350 gpm	
HS - 1050	25′ 7″	11′ 0″	10′ 0″	525 gpm	
HS - 1400	30′ 10″	12′ 0″	10′ 0″	700 gpm	
HS - 2100	36' 1"	15′ 0″	10′ 0″	1,050 gpm	
HS - 2800	47′ 9″	15′ 0″	10′ 0″	1,400 gpm	
Stretched models are available for applications that require larger filtration areas.					



### Standard Components Epoxy-coated steel tank Media Internals Actuated and manual valves Inlet magnetic flow meter Pressure transmitters Ultrasonic level transmitter **Turbidimeters** Automated PLC controls Backwash magnetic flow meter and control valve Blower package Transfer pump **Recirculation pump** Chemical feed packages (coagulant and polymer)

### Optional Components Integrated plant PLC controls package

Air compressor package

Interconnecting walkways and platforms

- Aluminum or stainless steel tanks
- Streaming current monitor

# Getting the Right Fit





### **Trident HS Pilot and Lab Work**

Trident HS package treatment pilots are available for onsite test work and can be used in a variety of treatment applications. Pilot testing may follow benchscale testing as the final step in determining full-scale design and projected performance. WesTech's fully equipped sedimentation/filtration lab performs testing of site-sourced water samples to help determine the appropriate treatment for any given water.





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Represented by:
# ULTRAFILTRATION MEMBRANE SYSTEMS

Versatile membrane solutions for potable and process water treatment





# SYSTEMS DESIGNED WITH YOU IN MIND

WesTech leads the way in membrane system innovation with versatile, open-platform designs, packaged preengineered systems, and solutions for challenging retrofit applications.

WesTech membranes provide potable and process water treatment solutions that are targeted to your needs. Our range of solutions include:

#### **Open-Platform Systems**

- A versatile, flexible system that is compatible with several modules from leading manufacturers
- VersaFilter™
  Open-Platform
  Membrane Technology

#### **Package Systems**

- A standarized solution that is full featured but with a compact footprint
- AltaPac<sup>™</sup> Ultrafiltration Membrane System

#### Conventional Ultrafiltration Membrane Systems

- Advanced membrane filtration technology with applications in potable and process water
- Innovative, spacesaving designs

#### Retrofits

- Creative and costconscious solutions to upgrade existing membrane or conventional systems
- Available for most manufacturers' systems

#### Containerization

- Stand-alone, skid-mounted units allow for rapid installation for mobile or temporary needs
- Permanent installations and rental options

Refer to WesTech's reverse osmosis equipment options for post-treatment solutions that work seamlessly with our ultrafiltration systems.

## MOBILE AND CONTAINERIZED ULTRAFILTRATION UNITS

## QUICK SETUP. SECURE INSTALLATION. FLEXIBLE TIME PERIOD.

## SIMPLE SOLUTIONS TO ENSURE UNINTERRUPTED SERVICE

Containerized or skid-mounted ultrafiltration units are effective solutions for your mobile or temporary needs.

## **BENEFITS**

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Minimized downtime due to emergency situations– operations back online quickly



Equipment can be contracted for as little as one month or for as long as the project requires



Smaller footprint



Installation and operations expertise provided



Minimal setup time

# OPEN-PLATFORM MEMBRANE TECHNOLOGY

VersaFilter: Better Design, More Options

Our ultrafiltration/microfiltration system featuring VersaFilter Open-Platform Membrane Technology offers more choices without increased costs. This innovative and versatile system is compatible with several modules from leading manufacturers.





than 10 UF/MF module types, including: Dow, Toray, Nanostone, Scinor, Hydranautics, and more.

## VERSATILE

## AND ADAPTABLE

Adjustable features allow for future innovation; advanced automation and controls provide for flexible operation; and ancillary equipment is sized for wide compatibility.





PRICE



FLEXIBILITY



RELIABILITY

The VersaFilter Open-Platform Membrane Technology will accommodate the best UF/MF modules now and in the future.

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#### AltaPac Ultrafiltration Package Membrane System

The WesTech AltaPac is a skid-mounted package membrane system that includes all pumps, valves, and ancillary components for rapid installation and seamless operation of the equipment. Its complete automation, remote monitoring, low cost, and compact design make it an ideal choice for industrial and municipal applications.

## **KEY ALTAPAC BENEFITS**

01 Guaranteed filtrate turbidity <0.1 NTU

02 Guaranteed SDI <3 for NF/R0 pretreatment 03 Certified 4-log for giardia, cryptosporidium

04 Flanged, single-side connections for <1 day install 05 3-sided access with low footprint



## PRE-ENGINEERED.

STANDARDIZED.

FULL-FEATURED.

**COMPACT FOOTPRINT.** 



Reduces footprint by more than 25% vs. comparable systems

# THE WESTECH ADVANTAGE

Customers have been coming to WesTech for reliable solutions for over 45 years. Our technical expertise, complete process knowledge, and strong commitment to service make WesTech the best partner to achieve a state-of-the-art treatment system.







INTEGRATED CONTROLS WITH Remote Monitoring

Our Intelligent Controls simplify your operation with remote monitoring, data analysis, automatic sequencing with alarm protections, and complete plant integration.

## WESTECH IS THE SUPERIOR CHOICE FOR:

801.265.1000

#### **01** Extensive

ultrafiltration

#### 05

Packaged, pre-engineered systems

#### 02 Long-term

customer service and support

#### 06 Eloviblo

Flexible, open flexib

#### 03 Pre and posttreatment options

07

Mobile/ containerized options

#### 04

Optimized inhouse controls

#### 80

Versatility – solutions work with existing equipment

info@westech-inc.com



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### Ultrafiltration Pilot Unit Pilot Plant R212

WesTech ultrafiltration (UF) is the solution for reliable highquality water production for potable water, wastewater, reuse, and industrial process applications. A pilot is used to demonstrate performance, test specific criteria, and verify design parameters for full-scale systems.

### **Applications:**

- Potable Water
  >99.99% Crypto/Giardia Removal
- Tertiary Wastewater
- Industrial Process Water
- Small Communities and Camps
- Sites with Footprint Constraints
- Pretreatment to RO/NF
  Filtrate SDI <3</li>

Pilot Specifications				
Flow Rate	5 - 75 gpm			
Dimensions	11'- 4" L x 4'- 10" W x 11'- 1" H			
Shipping Weight	3,500 Pounds			
Power Requirements	480 V, 3 ph, 60 Hz, 30 amp or 240 V, 1 ph, 60 Hz, 100 amp			
Connection Sizes	2″ Flange - UF Feed 2″ Flange - Filtrate 2″ Flange - Backwash waste/Drain			
<b>Operational Control</b>	Automatic			

Contact WesTech today to implement a pilot test at your facility. Our responsive engineering team will help facilitate scheduling and pilot setup of the ultrafiltration pilot plant.

### The R212 pilot plant includes:

- Feed and backwash supply tanks
- Feed and backwash supply pumps
- 200 µm pre-strainer
- Ultrafiltration membranes
- CIP and maintenance cleaning system
- Membrane integrity monitoring
- Automatic control system
- Instrumentation:
  - Feed turbidimeter
  - Filtrate turbidimeter
  - Flowmeters
  - Pressure transmitters
  - o pH transmitter
- Compressed air system



Whatcom by Ite	iENDA A BILL Trea m 7.B Public	Agate Heights Water Treatment Plant Upgrades Public Works Contact Award				
DATE SUBMITTED:	December 17, 2020	7, 2020 MEETING DATE: December 30, 2020				
TO: BOARD OF COMM	ISSIONERS	FROM: Bill Hunter, District Engineer / Assistant General Manager				
GENERAL MANAGER A	PPROVAL	Jost & Clay				
ATTACHED DOCUMEN	TS	Bid Tabulation				
TYPE OF ACTION REQU	ESTED	RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER		

#### **BACKGROUND / EXPLANATION OF IMPACT**

This project upgrades the Agate Heights Water Treatment Plant manganese water treatment equipment and associated automation and supervisory control systems. These 2021 upgrades increase the number of equivalent residential units (ERU) that can be served from 57 ERU to 81 ERU.

There are currently 44 ERU served and 5 pre-paid connection certificates for a total of 49 committed ERU. Without any upgrades the plant has capacity for 8 new ERU.

The upgrade provides capacity for future growth and extensions through developer extension agreements, utility local improvement districts, or other means. The upgrade also replaces 20+ year old automation and supervisor control systems that are in need of replacement.

The system capacity was originally limited to 30 gallons per minute (gpm) as part of an agreement between two developers to share a water right. With the transfer of the 360 gpm water right (Washington State Department of Ecology Water Right Permit No. CG1-22763P) to the Agate Heights water system well in 2010, this capacity limitation is no longer applicable. The Board previously established policy that the District plan for future demand by incrementally increasing treatment plant capacity in three phases.

• Phase 1a (this 2021 construction project) - Upgrade the manganese water filtration plant, replace telemetry and controls, and improve existing source pump capacity. The new manganese treatment package plant will have a 60 gpm capacity, but be operated initially at the maximum capacity of the existing source pumps (34 gpm when the flow-restricting pressure sustaining valve is removed).

- Phase 1b (future project, not scheduled) Replace source package pump skid increasing capacity to 60 gpm and include variable frequency drives (VFDs).
- Phase 1c (future project, not scheduled) Replace Opal Booster package pump skid that pumps water to the upper Agate Heights Reservoir increasing capacity to 30 gpm.

The District published an advertisement for bids in the Bellingham Herald on November 18, 2020. A non-mandatory pre-bid meeting was held on December 2, 2020. Bids were due on December 16, 2020. Two bids were received.

Staff is in the process of reviewing mandatory and supplemental bidder responsibility criteria and will make a verbal recommendation at the Board meeting.

#### FISCAL IMPACT

The approved 2021 Budget includes \$235,000 for construction, PLC software development and SCADA integration broken down as follows:

PLC Software, SCADA Integration	\$18,000
Construction Contract	\$217,000
TOTAL	\$235,000

The apparent low bid including sales tax is \$215,915.00 and is within the District's approved budget.

#### APPLICABLE EFFECTIVE UTILITY MANAGEMENT ATTRIBUTE(S)

Product Quality Operational Optimization Infrastructure Strategy and Performance

#### **RECOMMENDED BOARD ACTION**

A verbal recommendation for the lowest responsible bidder will be made at the Board meeting following staff review of mandatory and supplemental bidder responsibility criteria.

#### PROPOSED MOTION

Recommended motions are:

"I move to award the Agate Heights Water Treatment Plant Upgrades public works contract to \_\_\_\_\_\_ for a total contract price of \$\_\_\_\_\_, including 8.5% sales tax, and authorize the general manager to execute the contract."

1220 LAKEWAY DRIVE

BELLINGHAM, WA 98229

(360) 734-9224

Item BASE BID

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HAM, WA 98229				BID TA	BULATION						
-9224 HE WHATCO			PROJECT NAME	PROJECT #	BID OPEN	NING DATE	PAGE # OF #		LOCATION		
A MAT	lake vhatcom		Agate Heights Water Treatment Plant Upgrades	C1814-CON	12/16	6/2020	1 OF 1	1220 Lakeway	Drive, Bellingł	nam,	, WA 98229
1. A. A.	SEWER DIS		NAME OF FIRM	Engine	er's Estim	nate	Equity Buil	ders LLC	Award Con	ıstru	ction, Inc.
Description	Quantity	Unit		Unit Price	Am	ount	Unit Price	Amount	Unit Price		Amount
Mobilization/Demobilation	1	LS		\$18,000.00		\$18,000.00	\$14,000.00	\$14,000.00	\$25,000.00		\$25,000.00
Trench Safety and Shoring	1	LS		\$200.00		\$200.00	\$500.00	\$500.00	\$1,000.00		\$1,000.00
Building Improvements	1	LS		\$15,000.00		\$15,000.00	\$12,500.00	\$12,500.00	\$18,400.00		\$18,400.00
Package Manganese Removal Water Treatment System	1	LS		\$60,000.00		\$60,000.00	\$53,000.00	\$53,000.00	\$74,000.00		\$74,000.00
Permanent Piping and Appurtennces	1	LS		\$35,000.00		\$35,000.00	\$19,000.00	\$19,000.00	\$40,000.00		\$40,000.00
Temporary Piping and Appurtenances	1	LS		\$5,000.00		\$5,000.00	\$1,500.00	\$1,500.00	\$19,000.00		\$19,000.00
Finish Water Flow Meter	1	LS		\$4,000.00		\$4,000.00	\$4,000.00	\$4,000.00	\$5,000.00		\$5,000.00
Telemetry Panel	1	LS		\$30,000.00		\$30,000.00	\$44,000.00	\$44,000.00	\$45,000.00		\$45,000.00
General Electrical	1	LS		\$18,000.00		\$18,000.00	\$49,000.00	\$49,000.00	\$21,000.00		\$21,000.00
Additional Treatment System Training	1	Per Day		\$1,000.00		\$1,000.00	\$1,500.00	\$1,500.00	\$1,500.00		\$1,500.00
	1		Subtotal Base Bid		\$	186,200.00		\$ 199,000.00		\$	249,900.00
			Sales Tax (8.5%)		\$	15,827.00		\$ 16,915.00		\$	21,241.50
			Total Base Bid		\$	202,027.00		\$ 215,915.00		\$	271,141.50
BID GURANTEE FOR P	ROJECTS OV	'ER \$3	5,000? (YES OR NO)		N	J/A		Yes			Yes
ADDEN	DUM ACKN	OWLED	DGED? (YES OR NO)		N	J/A		Yes	-		Yes

#### Pageage310ff1106

ACCURATE WHATCOM ACCURATE ACCU	GENDA BILL em 9.A	General Manager's Report				
DATE SUBMITTED:	December 23, 2020	MEETING DATE: December 30, 2020				
TO: BOARD OF COMMISSIONERS		FROM: Justin Clary, General Manager				
GENERAL MANAGER APPROVAL		Settley				
ATTACHED DOCUMENTS		1. General Manager's Report				
TYPE OF ACTION REQUESTED		RESOLUTION FORMAL ACTION/ INFO 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.



#### **General Manager's Report**

**Upcoming Dates & Announcements** 

Regular Meeting – Wednesday, December 30, 2020 – 8:00 a.m.

#### **Important Upcoming Dates**

Lake Whatcom Water & Sewer District				
Regular Board Meeting	Wed Jan 13, 2021	6:30 p.m.	Remote Attendance	
Employee Staff Meeting	Thu Jan 14, 2021	8:00 a.m.	Remote Attendance Commissioner McRoberts to attend	
Investment Comm. Meeting	Wed Jan 27, 2021	10:00 a.m.	Remote Attendance	
Safety Committee Meeting	Tue Dec 29, 2020	8:00 a.m.	Remote Attendance	
Lake Whatcom Management P	rogram			
Data Group Meeting	Thu Jan 14, 2021	9:00 a.m.	Remote Attendance	
Policy Group Meeting	Wed Feb 17, 2021	3:00 p.m.	Remote Attendance	
Joint Councils Meeting	Wed Mar 31, 2021	6:30 p.m.	Remote Attendance	
Other Meetings				
WASWD Section III Meeting	Tue Jan 12, 2021	7:00 p.m.	Remote Attendance	
Whatcom Water Districts Caucus Meeting	Wed Jan 20, 2021	1:00 p.m.	Remote Attendance	
Whatcom County Council of Governments Board Meeting	Wed Jan 20, 2021	3:00 p.m.	Remote Attendance	

#### **Committee Meeting Reports**

Safety Committee:

> No committee meeting has been held since the last board meeting.

Investment Committee:

> No committee meeting has been held since the last board meeting.

#### **Upcoming Important Board Meeting Topics**

- Election of 2021 officers
- Appointment of Investment Committee, Council of Governments, and Lake Whatcom Management Program Policy Group representatives
- On-site sewage system policy discussion
- Service area-specific rate structure policy discussion

#### 2020 Initiatives Status

#### **Administration and Operations**

#### Level-of-Service Analysis

Facilitate Board development of level-of-service standards for District operations. The Effective Utility Management self-assessment process was completed at varying levels of the organization that included the board, management team and staff. Results were presented during the August 26 board meeting.

#### 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. The management team has initiated plan development taking into consideration the results of the Effective Utility Management self-assessment.

#### Rate Study

Conduct rate study for the water and sewer utilities for the five-year planning horizon. A contract for a comprehensive rate study has been executed; however, the overall schedule for conducting the study requires extension into next year (current rates are approved through December 31, 2021) to allow for incorporating information to be gathered relative to large future capital projects (e.g., Post Point Wastewater Treatment Plant biosolids handling and nutrient removal projects, Sudden Valley Water Treatment Plant 20-year facility plan).

#### **Biennial Budget**

Facilitate Board consideration of shifting from an annual to a biennial budget.
 The board discussed the pros and cons of operating under a biennial budget during the August 26 board meeting.

#### Bond Rating Review

Pursue a higher bond rating.

The most recent bond rating review of the District was completed in December 2017 and resulted in a AA- (stable) rating. While the sole factor noted in the review that would allow for an upgrade in the rating remains outside of the District's control (strengthening of the service area's economy), the District has taken a number of steps to improve its financial position, including increasing the operating reserves of the Water Utility from 60 to 90 days and the Sewer Utility from 45 to 60 days, implementing issuance of quarterly financial reports, and fortifying the District's fiscal management policies.

#### Staffing Succession Plan

Develop a staffing succession plan to address anticipated retirements over the next five years. The staffing succession plan was submitted to the board on August 21.

#### Job Description Review

Update all District job descriptions that have not been revised in the last three years. Review of job descriptions has been broken into departments and the management team. Review of management team job descriptions are complete, and review of Finance, Engineering and Operations department descriptions is underway. Completion is anticipated in January 2021.

#### **Emergency Response/System Security**

#### **Risk and Resilience Assessment**

Develop an America's Water Infrastructure Act-compliant Risk and Resilience Assessment. A draft of the sewer utility assessment is currently under management review, and a draft of the water utility assessment is nearing readiness for review. Certification of both utility assessments is anticipated in January 2021 (the federal certification deadline is June 30, 2021).

#### 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 a component of the Risk and Resilience Assessment, staff have mapped the District's IT system so that it may be assessed under the cybersecurity component of the Risk and Resilience Assessment process.

#### Emergency Vendor Contracts

 Pursue contracts with applicable vendors for on-call contracts, including contracts for support during periods of emergency response.
 A nublic works contract template specific to unit-priced contracting has been developed

A public works contract template specific to unit-priced contracting has been developed.

#### **Community/Public Relations**

#### <u>General</u>

> Website

The District's web content is being updated on a regular basis, including regular posts specific to District operations in response to the COVID-19 pandemic.

Social Media

Posts are being made to District Facebook and LinkedIn pages regularly; Nextdoor is regularly monitored for District-related posts.

Press Releases

Press releases were issued on March 16, 18, 20, and 25 specific to District operations relative to the COVID-19 pandemic. A press release recognizing Drinking Water Week was issued on May 5, one summarizing the results of the District's 2018-19 audit was issued May 20, and one announcing the District's TOP Award was issued on November 5.

#### Intergovernmental Relations

- J Clary continues to represent WASWD at various virtual convenings of the Washington's Growth Policy Framework Update.
- > J Clary attended WASWD Section III virtual meeting on December 8.
- J Clary and B Hunter met (virtually) with Puget Sound Energy government relations staff on December 16.

#### EnviroStars Certification

Gain EnviroStars Green Business certification.

The District has completed 19 of 20 required core measures and earned a total of 275 points (core and elective measures) in the certification process. Once all core measures are complete, the District will be certified at the Tier 1-Leader level (300 points are required for Tier 2-Partner).

#### Lake Whatcom Water Quality

#### Management Program

Attend meetings of Lake Whatcom Management Program partners.
 J. Clary assembling District-specific reporting data supporting development of the 2020 annual report.

#### Onsite Septic System Impact Assessment

Lead effort in water quality monitoring to assess the impacts of septic systems on the lake. Herrera issued the final revision of the findings report (September 30), and presented the results during the September 9 board meeting and September 23 Lake Whatcom Management Program policy group meeting. A District-developed technical memo associated with inspection of District sewage collection systems in Drainage 485 of the study was submitted to City and County staff on November 12.

#### Onsite Septic System Conversion Program

Pursue connection of septic-served parcels within 200 feet of District sewer system.
 As of September 24, all three properties noticed in 2019 have connected to the District's collection system. No noticed-properties are outstanding.
 A white paper to facilitate analysis of the District's septic conversion policy was issued to the Board on April 9; during its meeting on July 29, the Board elected not to revise the program.

whatcom b Bewennen Ite	GENDA Eng BILL em 9.B	Engineering Department Report					
DATE SUBMITTED:	December 23, 2020 MEETING DATE: December 30, 2020						
TO: BOARD OF COMM	ISSIONERS	FROM: Bill Hunter, District Engineer					
GENERAL MANAGER A	APPROVAL	Sotolay					
		1. Engineering Department Report					
ATTACHED DOCUMENTS		2. Summary of District Projects					
TYPE OF ACTION REQU	JESTED	RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER			

#### **BACKGROUND / EXPLANATION OF IMPACT**

Updated information regarding District projects and current priorities in advance of the Board meeting.

#### FISCAL IMPACT

None.

**RECOMMENDED BOARD ACTION** 

None required.

PROPOSED MOTION

None.



## Lake Whatcom Water & Sewer District Engineering Department Report

#### Prepared for the December 30, 2020 Board Meeting Data Compiled 12/23/20 by RH, BH, RM, KH

Status of Water and System Capacities				
	South Shore	Eagleridge	Agate Heights	Johnson Well
	ID# 95910	ID# 08118	ID# 52957	ID# 04782
DOH Approved ERUs	**	85	57	2
Connected ERUs	3882	70	44	2
Remaining Capacity (ERUs)	* *	15	13	0
Permitted ERUs Under Construction	36	0	0	0
Pre-paid Connection Certificates & Expired Permit	14	0	5	0
Water Availabilities (trailing 12 months)	44	0	0	0
Subtotal - Commitments not yet connected	94	0	5	0
Available ERUs	**	15	8	0

\*\* Per DOH, water system capacity is sufficient for buildout. Oct 2018

Annual Reports				
Name Of Report	Deadline	Completed		
Report Number of Sewer ERUs				
to City of Bellingham	January 15	March 3, 2020		
Prepared by: Bill				
Other Reports				
Name Of Report	Deadline	Last Completed		
Water Right Permit No. G1-22681	Due Every 5 Years	March 20, 2018		
Development Extension	Next Due Feb 15, 2023	March 20, 2018		
Water Right Permit No. S1-25121	Due Every 5 Years	March 20, 2018		
Development Extension	Next Due March 30, 2023	March 20, 2018		

	Developer Exter	nsion Ag	reements				
D1801	Sudden Valley Community Association - Are	ea Z Fire H	lydrant				
Scope	Installation of Fire Hydrant						
Sign Dat	Sign Date8/16/2018Expiration Date8/16/2021 (3 years)						
	Prior to Commencing Construction		Prior to Final Acceptance				
$\bowtie$	1. District Engineer approves design	$\boxtimes$	1. District inspects & approves facilities as complete				
$\boxtimes$	2. Reimbursement of District Engineer review costs	N/A	2. District receives water meters for each service				
	3. Copy of insurance policy	$\boxtimes$	3. District accepts record drawings				
	4. Copies of recorded easement n/a: to be recorded prior to jinal acceptance,		4. District accepts easements & title insurance				
	property owned by Sudden Valley Community Association		5. District receives warranty bond or like security				
	5. Copies of permits		6. District receives maintenance bond				
	6. Pay Developer Conformance Deposit	$\boxtimes$	7. District receives and approves Bill of Sale				
	<i>Receipt #16291 8/14/18</i> 7. Developer delivers performance bond	N/A	8. District receives a copy of recorded plat or legal description				
	Assignment of savings account received in the amount of \$135.798 and dated 8/14/2018.	$\boxtimes$	9. District receives legal description of property				
	This will cover up to \$90,532 of constructed facilities	N/A	10. District receives Latecomers Reimbursement fees due to otherDevelopers (if applicable)				
$\boxtimes$	8. Pays 25% of total amount of general facilities connection fees due to District <i>n/a: no new connection</i>	$\boxtimes$	11. Developer pays any applicable Supplemental DEA Processing/General Administrative fees				
$\boxtimes$	9. Pays District Administration, Legal Services, and Inspection Deposit	N/A	12. District receives signed and notarized Latecomers Reimbursement Agreement (when applicable)				
	Receipt #16291 8/14/18		13. Developer has reimbursed the District for all incurred costs associated with DEA				
$\boxtimes$	10. District Issues Notice to Proceed w/Construction		14. Developer has met and completed all local, state, and federal permit requirements				
		$\boxtimes$	15. Copies of recorded easement on file with District				
Tasks/N	otes						
•	7/3/2018 DEA Application Received 7/25/2018 Board Authorizes DEA with Conditions 8/7/2018 SVCA Submits Hydraulic Analysis 8/14/2018 SVCA submits drawings, DEA, assignment	of savings,	insurance certificate, check for				
	\$6,750 (\$5,000 deposit for review & inspec	tion, \$1,0	00 conformance deposit, and \$750 for				
	processing tee), and shallow pipe depth me	emo.					
•	9/5/2018 District completes review of hydraulic analy	vsis. 1,250	GPM for 90 minutes is available.				
•	9/5/2018 SVCA submits revised plans. Review on hol legal and engineering review.	d until SV(	CA makes another deposit of \$5,329.66 to cover				
	Continued	on next pa	ge				

	Developer Extension Agreements (cont'd)
D1801	Sudden Valley Community Association - Area Z Fire Hydrant
Tasks/I	Notes (cont'd)
•	12/17/2018 Deposit of \$5,329.66 received
•	1/23/2019 Meeting with SVCA to review revised plans received 1/9/2019
•	2/26/2019 SVCA submits revised plans
٠	3/20/2019 District returns plan review comments to Wilson Engineering
٠	4/1/2019 Deposit of \$2031.91 received.
٠	4/9/2019 District approves plans and issues notice to proceed.
•	6/3/2019 Preconstruction meeting with SVCA, contractor, and Wilson to coordinate construct and inspections.
	Contractor will be starting work soon.
•	8/5/2019 Punch list inspection
•	8/15/2019 Final acceptance checklist/punch list sent to SVCA
•	9/19/2019 Deposit of \$13,842.73 received.
•	10/22/2019 District Preparing Bill of Sale, Easement, and Supplemental Conditions agreemnt
•	11/7/2019 District receives record drawings
•	11/18/2019 Supplemental conditions and municipal utility easement sent to SVCA
•	11/18/2019 Deposit of \$2,136.39 received.
•	12/16/2019 District reviewing SVCA's proposed changes to bill of sale and supplemental conditions
	and municipality utility easement agreement received 12/16/19
•	1/15/2020 District receives signed supplemental conditions and municipality utility easement agreement
•	2/11/2020 District receives and signs bill of sale
•	3/6/2020 Bill of Sale Recorded
•	3/17/2020 Sent status letter to SVCA for final acceptance, need maintenance bond & ecology permit
	documentation to close out project

		Summary of Di	istrict	Proje	ects	
		Report Prepare	ed 12/15/202	0		
Line	Project		Approved	Spent	Amount	2020 Schedule
#	Number	Project Title / Tasks	Budget	to Date	Remaining J	FMAMJJASOND
- 4	01700	Pall Charle Values at Austin and Passian Course Duran Stations	¢0 540	¢0.004	¢440	
1	C1716A	Ball Check valves at Austin and Beaver Sewer Pump Stations	\$8,519	\$8,901	\$44Z	
2	C1716A	Dead End Blowolls (53 of them completed)	\$20,000	\$17,901	\$2,039	
3	M1011	Scheve Dousier Station - PRV S, Dacknow, Root	\$40,000	\$39,920 ¢27.010	00¢	
4	A 1001	Whatcom County Region CIS Imagory Partnership 2010 Elight	φ20,002 ¢1.000	¢1 000	φ092 ¢0	
5	A1002	Compulsory Sower Connections	\$1,000	\$1,000 \$7,600	φU ¢10.209	
7	C1004	Comprehensive Sower Dian Lindete	\$20,000	200,1¢	\$12,390	
/ Q	A1010	OSS Impact Assessment	\$19,032	\$00,143 \$107,610	φ311 \$7,610	
0	C2001	Demolish Old Concrete Reservoir at 1010 Lakeview St	\$100,000	\$18 553	\$6,447	
10	C2001	Johnson Well Storage Building - New Siding and Paint	\$27,500	\$24,800	\$2,700	
11	C2002	Ouick Connect Fitting Kit for CAT Backhoe	\$4,000	\$2,343	\$657	
12	C2005	Used Forklift	\$20,000	\$10 157	\$5/3	
12	C2003	Tool Truck with Snowplow and Sander Attachments	\$86,300	\$13,437 \$0	\$86 300	
14	C2000	Flush-Vac Truck	\$525,000	φ0 \$514 245	\$10,755	
15	C2000	Reaver, Elat Car, SVPS Motor Leads (cancelled - not needed)	\$18,000	φ51-7,2-10 \$0	\$18,000	
16	C2014	Water Meters and Registers	\$13,000	\$10.616	\$2 384	
17	C2014	Fire Hydrant Flow Testing Kit	\$3,500	\$2 864	\$636	
18	C2017	Fire Hydrant Stortz Adapters	\$12,000	\$7,738	\$4 262	
19	M2018	Annual Asphalt Patching	\$35,000	\$26 173	\$8,827	
20	M2019	Annual Tree Trimming (none needed in 2020)	\$10,000	\$0	\$10,000	
20	A2020	Design and Construction Standards Update	\$8 175	\$6 613	\$1 562	
22	A2020	Onsite Records Management Assessment	\$5,952	\$6,013	\$140	
22	M2022	District Eacilities Payement Striping	\$2,476	\$2,883	\$408	
24	M2024	Landscape Maintenance (contract executed for monthly maint)	\$6,000	\$0.20	\$6,000	
25	C2026	Electrical On-Call Unit Price Contract (contract executed)	\$0,000 \$0	\$0	φ0,000 \$0	
26	C1802	Dellesta Edgewater & Euclid Sewer Pump Stations	\$1 057 472	\$571 485	\$485 987	
39	C1814	Agate Heights WTP and Opal Booster Upgrades	\$124 320	\$100,322	\$23,998	
42	C1908	Fire Flow Improvements - Hydraulic Model Calibration	\$15,000	\$7,889	\$7,111	
43	C1909	Little Strawberry Bridge Water Main Predesign & Estimate	\$20,000	\$0	\$20,000	
10	01000	SVWTP and AHWTP Misc Component Replacement	φ20,000	ψŪ	<i>\\</i> 20,000	
	C1910	(Raw pH Probe, 4 Pump Control Valves, 2 Surge Valves, Spare				
44	0.0.0	Transfer Pump, AHWTP Finish Meter)	\$72,000	\$59,433	\$12,567	
45	C1913	SVWTP 20-Year Facility Plan	\$159,710	\$56,008	\$103,702	
46	M1917	Beaver & Flat Car PLC and UPS Improvements	\$100.000	\$24.001	\$75,999	
47	C2003	Sewer System Rehab and Replacement Projects	\$71.460	\$45.267	\$26,193	
48	C2006	SCADA Telemetry - Managed Ethernet Switches	\$20.000	\$158	\$19.842	
49	C2007	Administrative Server Hardware	\$25.000	\$0	\$25,000	
50	C2011	Convert Eagleridge Booster to Metering Station	\$30.000	\$18,502	\$11,498	
51	C2012	Austin-Fremont PRV Rebuild	\$10,000	\$0	\$10,000	
52	C2013	Geneva and Div 22 Res Impressed Current Cathodic Protection	\$40,000	\$0	\$40,000	
		SVWTP Misc Component Replacement				
	00040	(CCB Fiberglass Ladder, Spare 300 Amp Breakers, Div 22 Finish				
	C2016	Meter, Raw Meter, CCB Pressure Transmitter, Intake Anchorage				
53		Warning Signs)	\$40,000	\$14,559	\$25,441	
54	A2021	AWIA Risk Assessment and Emergency Response Plans	\$10,000	\$0	\$10,000	
55	A2025	Rate Study	\$30,000	\$0	\$30,000	
		NOTATION LE	GEND			
	A	Administrative Project			р	Planned (labor not started)
	C	Capital Project			a	Active (labor underway)
	M	Maintenance Project			С	Completed (no further labor needed
		Sewer Project (Green Font)			t	Target Completion
		Water Project (Blue Font)				
		Sewer and Water Project (Black Font)				

AC	iENDA F BILL em 9.C	inance Depa Report	rtment		
DATE SUBMITTED:	December 23, 2020	MEETING DATE:	December 30	), 2020	
TO: BOARD OF COMMISSIONERS FROM: Debi Denton, Finance N				ager	
GENERAL MANAGER A	PPROVAL	Sotdaley			
		1. Monthly Finance Dept Reports			
ATTACHED DOCUMEN	TS	2. Nov 2020 Adjustment Report			
		3.			
TYPE OF ACTION REQU	IESTED	RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER	

#### **BACKGROUND / EXPLANATION OF IMPACT**

Updated information regarding District finances in advance of the Board meeting.

#### FISCAL IMPACT

None.

#### **RECOMMENDED BOARD ACTION**

None required.

#### PROPOSED MOTION

None.

## LAKE WHATCOM WATER AND SEWER FUND SUMMARY 2020



	401	402	460	
SEWER DIS	WATER	SEWER	BOND RESERVE (RESTRICTED)	TOTAL
2020 REVENUES	2,689,240	4,113,532	-	6,802,772
2020 EXPENDITURES	(2,705,724)	(4,135,443)	-	(6,841,167)
2019 BALANCE CARRYOVER	987,272	1,363,375	772,334	3,122,981
2019 CONTINGENCY CARRYOVER	460,000	787,088		1,247,088
2020 BALANCE	\$1,430,788	\$2,128,552	\$772,334	\$4,331,674
2020 ALLOCATED TO OPERATING RESERVES	-\$520,000	-\$420,000		-\$940,000
2020 ALLOCATED TO CONTINGENCY	-\$460,000	-\$796,088		-\$1,256,088
AVAILABLE 2020 BALANCE	\$450,788	\$912,464	\$772,334	\$2,135,586

LAKE WHATCOM WATER AND SEWER DISTRICT				
	Description	Budget	11/30/2020	92%
		2020		
WATER - 401				
REVENUES				
	EPA Grant Water Quality			
401-333-66-00-00	North Shore Sampling Interlocal Agreement	40,000		
401-343-40-10	Water Sales Metered (4% base rate increase) *	2,632,739	2,447,970	92.98%
401-343-40-20	DEA Permits		(9,311)	
401-343-41-10	Permits (15 new connection permits) \$6,000	90,000	204,425	227.14%
401-343-81-10	Combined Fees (Increase in Lien and Lock fees)	35,000	15,131	43.23%
401-359-90-00	Late fees	55,000	14,573	26.50%
401-361-11-00	Investment Interest	30,000	15,421	51.40%
401-369-10-00	Sale of scrap metal and surplus	3,000	115	0.038333
401-369-10-01	Miscellaneous	1,000	916	91.60%
401-369-40-00	Judgements and Settlements	-	-	
401-395-10-00	Sale of Capital Assets	-	-	
401-395-20-00	Insurance Recoveries	-	-	
	TOTAL REVENUES	2,886,739	2,689,240	93.16%
	* Per Resolution 844 effective 1/1/2020			
	Scheduled annual rate increase			

LAKE WHATCOM WATER AND SEWER DISTRICT					
	Description	Budget	11/30/2020	92%	
		2020			
SEWER - 402					
REVENUES					
402-343-41-10-02	Permits (15 new connection permits) \$9,000	135,000	244,827	181.35%	
402-343-50-11	Sewer Service Residential (2.5% rate increase) *	4,186,946	3,818,958	91.21%	
402-343-50-19	Sewer Service Other	4,500	4,146	92.13%	
402-343-50-80	Latecomer's Fees	-	-	0	
402-361-11-00-02	Investment Interest	30,000	13,670	45.57%	
402-361-40-00-80	ULID 18 Interest/Penalties	4,000	7,264	181.60%	
402-368-10-00-80	ULID 18 Principal Payments	15,000	15,853	105.69%	
402-369-10-00-02	Sale of scrap metal and surplus	3,000	96	0.032	
402-369-10-00-02	Miscellaneous	1,000	436	43.60%	
402-369-40-02	Judgements and Settlements	-	8,282	0	
402-395-10-00-02	Sale of Capital Assets	-	-	0	
402-395-20-02	Insurance Recoveries	-	-	0	
	TOTAL REVENUES	4,379,446	4,113,532	93.93%	
	* Per Resolution 844 effective 1/1/2020				
	Scheduled annual rate increase				

	Description	Budget	11/30/2020	92%
WATER - 401	OPERATING EXPENDITURES	200800		, _ , .
401 534 10 10	Admin Davroll (2.2% colo plus stop ingrossos 2020)	252.000	224 414	01 670/
401-534-10-10	Admin Payton (2.276 cola plus step increases - 2020)	174.250	126.240	70 240/
401-534-10-20	Con Admin Supplies / Fouriement (Master Mater Software)	35,000	190,340	/ 0.24 / 0 52 1 00/
401-534-10-51	Mostings /Team building	2,000	067	18 35%
401-534-10-51-01	Merchant Services Fees	10,000	10,690	106.00%
401-534-10-40	Bank Fees	10,000	622	100.9070
401-334-10-40-01	Laterlocal Lawasiya Spacios (City) (8% increase) (2010 and 2020)	55.000	104.000	
	Interlocal – Invasive Species (City) (676 increase) (2019 and 2020)	5000	6 276	
	North Shore Sempling (County Interlocal Acrosmont)	100,000	107.600	
	Mutt Mite	5,000	5 575	
401 534 10 41	Water Oveling Accuracy Drograms (TOTAL)	165,000	3,373	
401-334-10-41	County Auditor Eiling Food	3,000	223,400	
	Statement are assessing	12 500		
	Approxima Sorriga	72,500		
	Time clock system	750		
	Einendiel Software Meintenange	5,000		
	Web Check services	2,500		
	CDA (Einengial statements)	2,300		
	Data Study	5,000		
	State Audit	13,000		
L	Freenomia Assessment	8,000		
L	Decumero maintenence and uncende	1,000		
	Docuware maintenance and upgrade	4,500		
		15,000		
	Anti virus subscription	300		
	D 11 D 1 1	7,000		
	Building custodial	5,000		
	Pest control	300		
	Landscaping service	3,000		
	South Whatcom Fire (hydrant maintenance)	1,000		
	Scada System Software Maintenance - Operations	3,/30		
	Cyber Security AWIA Assessment	5,000		
	SCADA/PLC Support - Engineering/Operations	5,000		
	Cartegraph - Engineering/Operations	2,500		
	Auto Desk - Engineering	500		
	GIS Partnership (County)	500		
	Rockwell - Engineering/Operations	250		
	IT Pipes	750		
	ESRI - ARC GIS	/50		
	Innovyze - Engineering	1,230		
	Master Meter	2,000		
	Cyberlock software	500		
	Whatcom County Emergency Management	10,000		
	Misc (Bid notices etc.)	2,500		
401-534-10-41-01	Professional Services (TOTAL)	100,250	102,808	102.55%
401-534-10-41-02	Water Engineering Services	21,000	18,240	86.86%
401-534-10-41-03	Water Legal Services	20,000	14,756	73.78%
401-534-10-41-04	DEA expenditures	-	2,200	
401-534-10-42	Communication	30,000	27,398	91.33%
401-534-10-45	Admin Lease (copy/printers)	5,000	4,897	97.94%
401-534-10-46	Property Insurance	72,000	89,029	123.65%
401-534-10-49	Admin Misc.	500	134	26.80%
401-534-10-49-01	Memberships/Dues/Permits	10,000	14,661	146.61%
401-534-10-49-02	WA State Dept of RevenueTaxes/County Stormwater fees	115,000	104,343	90.73%
401-534-40-43	Training & Travel	17,500	5,934	33.91%
401-534-40-43-01	Tuition reimbursement	500	-	0.00%
401-534-50-31	Operations/Maintenance Supplies	75,000	112,779	150.37%
401-534-50-31-01	Small Assets/tools	25,000	42,395	169.58%
401-534-50-48	Operations Repair/Maint contracted work	60,000	29,365	48.94%
401-534-50-49	Insurance Claims	2,500	-	0.00%
401-534-60-41	Operations Contracted (water testing)	12,500	10,633	85.06%
401-534-60-47	Water City of Bellingham	40,000	24,936	62.34%
401-534-80-10	Operations Payroll (2.2% cola plus step increases - 2020)	575,561	536,972	93.30%
401-534-80-20	Operations Personnel Benefits (Medical,Retirement etc)	247,590	228,832	92.42%
401-534-80-32	Fuel	15,000	9,013	60.09%
401-534-80-35	Safety Supplies	10,000	12,218	122.18%
401-534-80-35-01	Safety Supplies Boots	1,250	630	50.40%
401-534-80-35-02	Emergency Preparedness	5,000	2,790	55.80%

	Description	Budget	11/30/2020	92%
401-534-80-43-00	Water - Operatoins Training/Travel/Certification		500	
401-534-80-47	General Utilities (Electric, gas, water, garbage)	110,000	104,500	95.00%
401-534-80-49	Laundry	2,000	1,451	72.55%
	Payroll liability		(267)	
	WATER OPERATING EXPENDITURES	2,313,301	2,215,904	<mark>95.79%</mark>
DEBT SERVICE				
401-591-34-77-01	Redemption of Long Term Debt Geneva AC Mains	119,938	119,938	
401-591-34-77-02	Redemption of Long Term Debt Div 22 Reservoir	65,475	65,475	
401-592-34-83-01	Debt Service Interest Geneva AC Mains	28,785	28,785	
401-592-34-83-02	Debt Service Interest Div 22 Reservoir	17,678	17,678	<mark>100%</mark>
SYSTEM REINVESTMENT				
	2020 System Reinvestment Projects	569,400		
401-534-10-41-20	20 Year Plan for SVWTP C19-13		55,613	
401-594-34-62-01	Water Structures		133,646	
401-594-34-63-01	Water System		54,694	
401-594-34-64-01	Water Equipment		13,991	45.30%
WATER FUND	TOTAL WATER REVENUES	2,886,739	2,689,240	
	TOTAL WATER EXPENDITURES	(3,114,577)	(2,705,724)	86.87%
	2019 BALANCE CARRYOVER	987 272	987 272	
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,212	
	2019 CONTINGENCY CARRYOVER	460,000	460,000	
	2020 ALLOCATED TO OPERATING RESERVES	(520,000)	(520,000)	
	2020 ALLOCATED TO WATER CONTINGENCY	(460,000)	(460,000)	
	AVAILABLE 2020 YEAR END BALANCE	239,434	450,788	

#### Page 99 of 106

	Description	Budget	11/30/2020	92%
SEWER - 402				
OPERATING EXPENDITURES				
402-535-10-10	Admin Payroll (2.2% cola plus step increases - 2020)	353,900	324,413	91.67%
402-535-10-20	Admin Personnel Benefits	174,250	136,337	78.24%
402-535-10-31	Gen Admin Supplies/Equipment	20,000	21,779	108.90%
402-535-10-31-01	Meetings/Team building	2,000	1,374	68.70%
402-535-10-40	Merchant Services Fees	10,000	9,997	99.97%
402-535-10-40-01	Bank Fees	-	512	
	County Auditor Filing Fees	3,000		
	Statement processing	12,500		
	Answering Service	750		
	Time clock system	750		
	Financial Software Maintenance	5,000		
	Web Check services	2,500		
	CPA (Internal audit and Financial statements)	3,000		
	Rate study	15,000		
	State audit	8,000		
	Ergonomic Assessment	1,000		
	Docuware maintenance and upgrade	4,500		
	Computer support	15,000		
	Cyber Security AWIA Assessment	5,000		
	Anti virus subscription	500		
	Building security for offices	1,000		
	Building custodial	5,000		
	Pest control	500		
	Landscaping service	3,000		
	Scada System Software Maintenance - Operations	3,750		
	Camera Van Software	1,500		
	SCADA/PLC Support - Engineering/Operations	5,000		
	Cartegraph - Engineering/Operations	2,500		
	Auto Desk - Engineering	500		
	GIS Partnership (County)	500		
	Rockwell - Engineering/Operations	250		
	IT Pipes	750		
	ESRI - ARC GIS	750		
	Innovyze - Engineering	1,250		

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	Description	Budget	11/30/2020	92%
	Cyberlock software	500		
	Whatcom County Emergency Management	10,000		
	Misc (Bid notices etc.)	2,500		
402-535-10-41-01	Professional Services (TOTAL)	100,750	92,685	92.00%
402-535-10-41-02	Engineering Services	19,000	14,057	73.98%
402-535-10-41-03	Legal Services	20,000	18,648	93.24%
402-535-10-41-04	DEA expenditures		-	
402-535-10-42	Communication	30,000	27,436	91.45%
402-535-10-45	Admin Lease (copy/printers)	5,000	4,897	97.94%
402-535-10-46	Property Insurance	72,000	89,029	123.65%
402-535-10-49	Admin Misc.	500	65	13.00%
402-535-10-49-01	Memberships/Dues/Permits	8,000	8,925	111.56%
402-535-10-49-02	WA State Dept of RevenueTaxes/County Stormwater fees	115,000	105,154	91.44%
402-535-40-43	Training & Travel	17,500	4,286	24.49%
402-535-40-43-01	Tuition reimbursement	500	-	0.00%
402-535-50-31	Operations/Maintenance Supplies	75,000	30,954	41.27%
402-535-50-31-01	Small Assets/tools	25,000	22,699	90.80%
402-535-50-48	Operations Repair/Maint contracted work	60,000	63,851	106.42%
402-535-50-49	Insurance Claims	2,500	1,480	59.20%
402-535-60-41	Operations Contracted (generator load testing)	15,000	24,654	164.36%
402-535-60-47	Sewer City of Bellingham Treatment Fee	680,000	703,626	103.47%
402-535-80-10	Operations Payroll (2.2% cola plus step increases - 2020)	483,494	432,988	89.55%
402-535-80-20	Operations Personnel Benefits (Medical, Retirement etc)	247,590	182,773	73.82%
402-535-80-32	Fuel	13,000	10,443	80.33%
402-535-80-35	Safety Supplies	10,000	12,181	121.81%
402-535-80-35-01	Safety Supplies Boots	1,250	630	50.40%
402-535-80-35-02	Emergency Preparedness	5,000	2,478	49.56%
402-535-80-43-00	Operations Training/Travel/Certification		940	
402-535-80-47	General Utilities (Electric, gas, water, garbage)	100,000	94,206	94.21%
402-535-80-49	Laundry	2,000	2,185	109.25%
	SEWER OPERATING EXPENDITURES	2,668,234	2,445,682	<mark>91.66</mark> %

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	Description	Budget	11/30/2020	92%
DEBT SERVICE				
402-591-35-72-03	2016 Bond Principal Payments	425,000	425,000	
402-592-35-83-03	2016 Bond Interest Payments	218,176	218,175	<mark>100.00%</mark>
SYSTEM REINVESTMENT				
	2019 Sewer System Reinvestment Projects			
	2020 Sewer System Reinvestment Projects	1,230,900		
	2019 Excess Carryover Unallocated			
	Sewer Comp Plan C19-04		23,076	
402-594-35-62-02	Sewer Structures		3/8,612	
402-594-35-63-02	Sewer System		110,576	
402-594-35-64-02	Sewer Equipment		22,985	
402-594-35-64-02	Sewer Equipment (Flush/Vac Truck)	525,000	511,337	<mark>30.48%</mark>
SEWER FUND	TOTAL SEWER REVENUES	4,379,446	4,113,532	
	TOTAL SEWER EXPENDITURES	(5,067,310)	(4,135,443)	81.61%
	2019 BALANCE CARRYOVER	1,363,375	1,363,375	
	2019 CONTINGENCY CARRYOVER	787,000	787,000	
	2020 ALLOCATED TO SEWER OPERATING RESERVES	(420,000)	(420,000)	
	2020 ALLOCATED TO SEWER CONTINGENCY	(796,000)	(796,088)	
	AVAILABLE 2020 YEAR END BALANCE	246,511	912,376	

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#### LAKE WHATCOM WATER AND SEWER

### INVESTMENTS/CASH AS OF 11/30/2020

Petty Cash			\$	1,600		
Cash			\$	1,168,184		0.45%
Public Funds Account			\$	302,633		0.10%
LGIP			\$	1,036,105		0.21%
			\$	2,508,522		
			Р	AR VALUE		YIELD
RFCO-Pro Equity	Non	-callable	\$	1,071,488	Jan-21	2.71%
FHLB - Pro Equity	Calla	able	\$	751,663	Apr-23	0.80%
US Bank			\$	1,823,151		
TOTAL			\$	4,331,673		
<b>USE OF FUNDS:</b>						
Bond Reserve	\$	772,334				
Restricted Contingency	\$	1,256,088				
Restricted Operating	\$	970,000				
Unrestricted	\$	1,333,251				
			\$	4,331,673		

Nov-20	ADJUS	<b>STMENTS</b>	
180012030	\$	22.34	Water Leak Credit
100000123	\$	225.36	Water Leak Credit
40000052	\$	29.22	Water Leak Credit
240013004	\$	190.13	Water Leak Credit
100000181	\$	535.23	Water Leak Credit
140017066	\$	12.09	Water Leak Credit
TOTAL	Ś	1.014.37	
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AC	GENDA Op BILL 9 m 9.D	erations Department Report		
DATE SUBMITTED:	December 23, 2020	MEETING DATE:	December 30	), 2020
TO: BOARD OF COMMISSIONERS		FROM: Brent Winters, Operations Manager		
GENERAL MANAGER APPROVAL		Jost & Clay		
	тс	1. Operations Department Report		
ATTACHED DOCOMENTS		2. Status of District Water & Sewer Systems		
TYPE OF ACTION REQUESTED		RESOLUTION	FORMAL ACTION/ MOTION	INFORMATIONAL /OTHER

#### **BACKGROUND / EXPLANATION OF IMPACT**

Updated information regarding District operations in advance of the Board meeting.

#### FISCAL IMPACT

None.

**RECOMMENDED BOARD ACTION** 

None required.

PROPOSED MOTION

None.

#### Status of District Water and Sewer Systems Prepared by Brent Winters Operations and Maintenance Manager 12/30/2020 Board Meeting

Safety Activities			
1. Continuing social	distancing of crew. Kevin Cook is reporting directly to the water plant, the rest		
of the crew is reporting directly to their assigned vehicle and then attending the morning			
briefing via "Go to Meeting."			
2. No injuries or near misses.			
<ol><li>Daily safety reminders directly relevant to the day's tasks.</li></ol>			
<ol><li>Jobsite tailgate meetings by project lead.</li></ol>			
5. Participated in annual confined space rescue with Rich.			
Water Utility Activities			
Water Treatment Plants			
1. Sudden Valley			
a. Plant is c	perating well, averaging 0.5 million gallons per day (MGD).		
2. Agate Heights			
a. Plant is c	perating well, averaging .01 million gallons per day (MGD).		
Distribution System			
a. Complete	ed installation of Stortz adaptors purchased in 2020 Capital Budget.		
b. Located	and repaired leaking service saddle on Milton.		
c. Located	and repaired leak on Agate Heights PRV.		
d. Installed	new connection 17 Green Hill Rd.		
Sewer Utility Activities			
Lift Stations			
1. Eight hour power outage in the Sudden Valley area Tuesday 12/22. The crew did a great job			
keeping everything running.			
2. Lift stations are in normal operation.			
3. Performed scheduled pump maintenance and inspections.			
Collection System			
1. Installed water tight cover on Manhole GT-29 as element of wet weather response.			
2. Continuing to televise Tomb basin searching for I&I. Kristin is adding any leaks to the work order			
that was created for Pro Vac contract repair.			
Fleet			
Vehicles			
1. All vehicles are in service.			
2. Studded tires have been installed.			
Equipment			
1. All equipment is in service.			
2. Crane successfully received annual inspection.			
3. New service truck is on order (December 31 delivery).			
Facilities			
Shop Building			
1. Cleaned and inspected 1220 Lakeway roof.			
2. Performing shop and grounds maintenance as fill in work between projects.			
Development			
1. Inspector is actively working with nine (9) contractors making connection to our systems			

2. Completed new sewer connection 17 Green Hill Rd.