

# *Shuswap Lake Estates*

## **Water Distribution System**

### **Annual Report 2025**



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## Introduction

Shuswap Lake Utilities provides potable<sup>(1)</sup> water to Shuswap Lake Estates & surrounding area of the community of Blind Bay. Shuswap Lake Utilities draws raw water from the Blind Bay basin portion of Shuswap Lake and treats this water in accordance with the guidelines and conditions of the Provincial Drinking Water Act and related regulations put in place by the Interior Health Authority including permits and licensing requirements. This activity is monitored by the Interior Health Authority's Drinking Water Officer.

## Water System Overview

Shuswap Lake Estates has a robust system of pumps, Ultra-Violet and chlorine treatment facilities and abundant storage reservoirs, including sufficient storage to be used in the case of emergencies such as fire fighting. These systems are operated by trained and licensed personnel.

- (1) Potable water is defined under the *Drinking Water Protection Act* as water provided by a domestic water system that:
- (a) meets the standards prescribed by regulation and
  - (b) is safe to drink and fit for domestic purposes without further treatment.

# Shuswap Lake Estates - Water System Annual Report 2025

## Photos



Main pump house - Centennial Drive & Blind Bay Road



Municipal Sterilight Ultraviolet Disinfection System



Main Chlorine application system

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Highlands 1750 reservoir with radio antennae



Waverly Drive reservoir & booster pump house



Highlands 1645 reservoir & Chlorine booster station



1990 Domestic water pumps



1750 & 1990 reservoir booster pumps

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## 1990 Pumphouse and Backup Generator



1990 Highlands Phase 3 Pumphouse & Reservoir with Emergency Power Generator



1990 Fire water pumps

### Source Water Quality

Shuswap Lake Estates enjoys a clean water source in Blind Bay with few potential contamination sources. The raw water is tested regularly to ensure that it meets the health guidelines and parameters set for source water quality. The computerized UV system responds according to these parameters. The water is monitored for UV light transmission, turbidity, and temperature; records are kept for reference and analysis. The UV system installed in 2007 exceeds the requirements currently in place and ensures a safe water system as future demands dictate and as the population base increases.

The double treatment system used at Shuswap Lake Estates consists of three large ultra-violet modules to kill pathogens and a further treatment with chlorine. Chlorine in the form of calcium hypochlorite is used to kill parasites, bacteria, viruses and other microbes such as salmonella, campylobacter, and norovirus. This prevents the spread of waterborne diseases such as cholera, dysentery, and typhoid. Chlorine also serves as a “residual” to inhibit bacterial growth in the distribution system and storage facilities keeping them clean and growth free.

UV has become the standard throughout the world as it does a better job of rendering certain pathogens harmless to humans, such as giardia and cryptosporidium without the troublesome side effects of chlorine such THM & HAA (trihalomethanes & haloacetic acids).

Shuswap Lake Utilities sends multiple water samples on a weekly basis to Interior Health, who in turn forward the samples to a certified laboratory for analysis; this sample is drawn from different locations or pressure zones. These samples are sent to Caro Environmental Services in Kelowna to be tested for the presence of “E. coli” and “total coliforms” bacteria.

From time to time the lake experiences seasonal high and low water levels and varying temperature changes which can cause changes to the intake water quality and can be experienced as slight odour or taste changes. Within reason this is normal and the wisdom for water testing is to ensure the water satisfies the requirements of the Canadian Water Guidelines.

Shuswap Lake Estates is proud of its record of providing safe potable water and has never been required to issue a “boil water advisory” warning as issued by the Drinking Water Health Officer.

Periodic repairs to water lines and storage facilities or proprietary computerized equipment are undertaken by experienced and specialized contractors and/or additional staff as required. Shuswap Lake Utilities has ready access to heavy equipment and experienced personnel and can respond to any emergency quickly and efficiently.

## Source Water Quality (cont'd)

### Turbidity

Turbidity is the cloudiness or haziness of a fluid caused by individual particles (suspended solids) that are generally invisible to the naked eye, similar to smoke in the air. The measurement of turbidity is a key test of water quality. Turbidity is measured in NTUs (Nephelometric Turbidity Units).

Turbidity is continuously monitored and recorded on circular graph paper as it is pumped from the lake. The current guidelines targeted by Interior Health recommends a turbidity level not exceeding 1 NTU 95% of the time in any 30 day period. A NTU measurement of 5 or over renders the UV system less effective and would require a boil water notification. Average turbidity level for Shuswap Lake Estates for 2025 is 0.43 NTUs; well below the guideline set by Interior Health.

### Monitoring

Shuswap Lake Estates entire water system is monitored 24 hours a day by recently upgraded cellular wireless systems. This provides a computerized callout to alert our personnel quickly in the event of a problem with the UV modules; in such a case the system shuts down and our service personnel are notified and able to take prompt action. Further our cellular wireless system alerts staff of pump issues, low reservoir levels caused by a power outage or pump failure or other anomaly.

### Testing

Bacteriological testing is done (3 samples per week plus raw lake water once per month) from various sampling stations located throughout SLE in accordance with the [Schedule A of the Drinking Water Protection Regulation](#); (See page 16 for CARO reports summary).

In addition to the weekly samples, periodic testing is done to monitor disinfection by-products such as HAA (haloacetic acids), VOC (volatile organic compounds) & THM (trihalomethanes); and a more comprehensive report is undertaken annually to monitor metals and other elements to ensure compliance with the MAC (maximum acceptable concentrations) levels as per GCDWQ and to provide historical data.

All disinfection by-products tested in SLE were well below the MAC as per GCDWQ.

## **System Classification**

Shuswap Lake Estates water system has been classified by the BC Water & Wastewater Operators Certification Program (BCWWOCP) as a Water Distribution III System and as a Water Treatment Level I facility. The development currently has operators certified by the Environmental Operators Certificate Program (EOCP) at WD Level III & WD Level II and WT Level II.

## **Staff**

Trained and certified personnel monitor and maintain the system and are on call 24 hrs a day. Shuswap Lake Utilities has experienced operators licensed at or above the required level.

**Aron Thurlow** is the designated system operator and holds E.O.C.P. certification as Water Distribution Level III (WD III), Water Treatment Level I (WT I), and Small Wastewater System Lagoon (SWWS-L). Aron brings extensive background experience as a journeyman plumber with experience and training related to pumps and water systems.

**Mike Kooistra** rounds out the utility crew with a strong machine operator background. He has EOCP certification for Small Water Systems (SWS) and Small Wastewater System Lagoon (SWWS-L); and is currently pursuing EOCP necessary courses to obtain the required certification.

**Erik Hansen** is the former designated system operator and holds E.O.C.P. certification as Water Distribution Level III (WD III), Water Treatment Level II (WT II), and Small Wastewater System Lagoon (SWWS-L).

**Cory Barker** manages the water utility, bringing an engineering background with experience in subdivision design. Cory adds his expertise to the water and sewer systems with emphasis on future expansion requirements and plans.

## Water System Infrastructure

### Intake & Distribution

The source of our raw water is Blind Bay, a section of Shuswap Lake; the 16 inch diameter intake is located 1000 ft from shore and 49 ft below the surface at low water. A **low lift wet well**, containing four 7.5 HP submersible pumps, located on the lake side of Blind Bay Road, pump water to a **high lift station** located on the south side of Blind Bay Road by the Centennial Drive intersection. It is here the water is double-treated by modern ultra-violet reactors and chlorine residual systems. UV treatment has become the preferred method of treating certain pathogens. Chlorine in the form of calcium hypochlorite tablets is added to keep the UV treated water in the distribution lines and storage facilities clean. The water is pumped from the Blind Bay high lift station by three 75 HP and one 50 HP **hi-lift pumps** up to the Waverly Drive **booster station** and storage tanks, one metal and one concrete, at the 1480 pressure zone. From the 1480 level it is pumped by two 50 HP **booster pumps** to the 1645 reservoir located above the TransCanada Highway (under the pickleball courts). The 1645 pressure zone has over 850,000 imperial gallon concrete tank. In 2009 the first phase was constructed, complete with a valve house and chlorine booster utilizing a 104,000 imperial gallon concrete structure located a few yards south of the Trans Canada Highway on Highland Drive. In 2013 the second phase, a 750,000 imperial gallon concrete tank was constructed. From the 1645 elevation water is pumped by two 40 HP centrifugal **booster pumps** to the 1750 elevation 180,000 gallon concrete storage facility and by two 60 HP vertical turbine **booster pumps** to the 1990 elevation 166,000 gallon metal storage facility at the top of Highlands Subdivision. SLU has a strategic redundancy built-in to the system.

### Wireless & Radio Communication

A sophisticated cellular wireless system keeps all the PLC computers at each pump house and the office communicating with each other to start and stop the pumps as needed. The automated pumps respond by drawing from the tank at that elevation and boosting it to a higher level.

### Pressure Zones

We have four main pressure zones and storage facilities, as indicated above, as well as four smaller pressure zones operated by PRVs (pressure-reducing valves); these serve the entire area providing a convenient gravity fed system as well as ensuring sufficient water for emergencies. Additionally, there is one new pressure zone commissioned in 2025 for the uppermost portion of the Highlands Subdivision. This pressure zone is pumped directly from the 1990 elevation reservoir. In total Shuswap Lake Estates has over 1.5 million gallons of treated water on hand. A large engineer's drawing of the pressure zones is available for viewing at the Shuswap Lake Estates office.

### Fire Hydrants

In addition to the many kilometres of water pipe in the ground Shuswap Lake Estates also has approx. 210 fire hydrants and 77 standpipes scattered throughout the development. These are flushed and pressure tested annually and tested for chlorine residual to ensure clean safe potable water.

## System Operation & Maintenance

Regular inspections, maintenance and water quality testing are performed by the system operators to ensure optimal operation of the development's water system. Operation and maintenance involves several daily, weekly and periodic or 'as-needed' tasks.

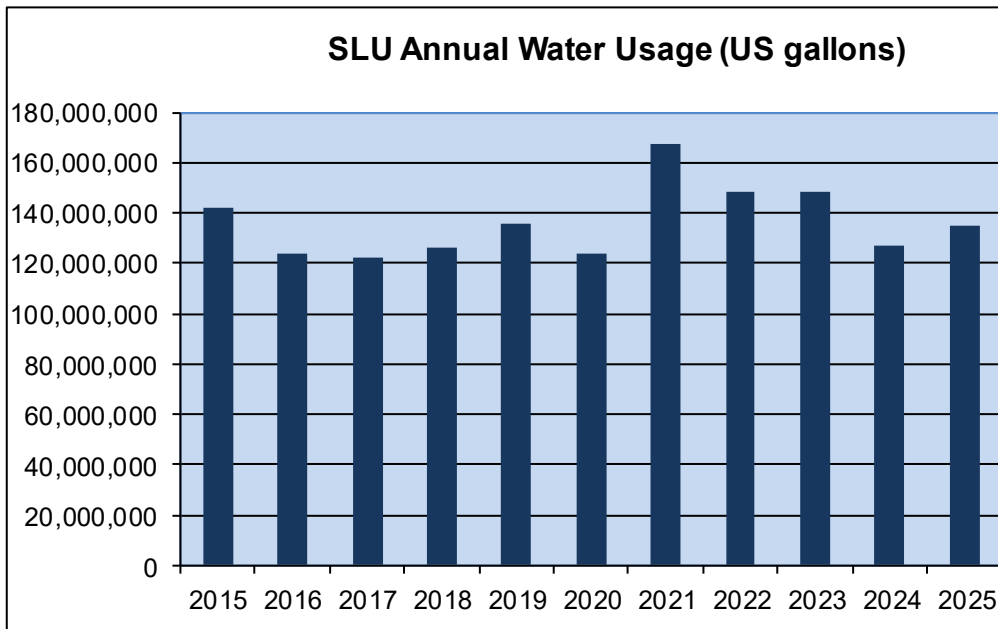
- Daily tasks include: Record flow meter readings, turbidity levels, and water UV transmission data, check UV dose & intensity, check calcium hypochlorite tablet levels at two locations, take chlorine samples and test at both chlorine stations.
- Weekly tasks include: take water sample from locations within the distribution system and send to laboratory for testing.
- Monthly and quarterly tasks include: Raw water samples taken at the inlet to the main pumphouse and at other points within the distribution system, verify calibration on UV Transmission meter, turbidity meter, chlorine analyzers, UV sensors; lubricate pumps, etc.
- Periodic or 'as-needed' tasks: Troubleshoot minor electrical and mechanical equipment problems, record time and nature of any alarms received on the water system and take appropriate action, flush & clean hydrants and water mains, repair damaged or leaking water lines, reset & restart computer systems after power outages as required;
- Included are periodic inspections from Interior Health Officer or other officials.

## New Additions

- 2025 saw the completion of **Phase Three** of the Highlands Subdivision
  - Road paving completed
  - Sewer and water lines installed
  - Other underground services - Hydro, telephone, cable, completed
  - Construction of an additional booster pumphouse at the 1990 reservoir (and is now operational as of spring 2026), adding 6 more pumps to the existing infrastructure. These pumps are exclusively for the new Phase Three subdivision, providing water services and firefighting capability.
  - In addition a backup generator has been installed to provide power to the 1990 booster station in the event of a power interruption.

## Water Consumption - 10 Year Historical Overview

In 2025 Shuswap Lake Estates drew a total of 512,106 cubic meters (135,284,000 US Gallons) from Blind Bay and supplied water to approximately 1,100 homes and commercial businesses as well as the Shuswap Lake Golf Course.



## Water Quality Monitoring Program

In accordance with the Interior Health Conditions of Permit, Shuswap Lake Utilities has developed a Water Quality Monitoring Program, which is approved by Interior Health.

Random samples of potable water are taken on weekly basis and delivered to the Interior Health Regional Office in Salmon Arm and forwarded to a government approved laboratory for testing. These samples are tested to ensure they conform to the Guidelines for Canadian Drinking Water Quality (GCDWQ) which are published by Health Canada and used to determine treatment requirements. Shuswap Lake Estates water treatment facility meets and exceeds the IHA's multi-barrier approach to water quality and the treated water exceeds the Guidelines for Canadian Drinking Water Quality (GCDWQ). The approach aims for 4-3-2-1-0:

- 4 – 99.99% log inactivation and/or removal of viruses
- 3 – 99.9% log inactivation and/or removal of Giardia and Cryptosporidium
- 2 – Two forms of treatment (e.g. ultra-violet and chlorine disinfection)
- 1 – Less than 1 NTU turbidity
- 0 – Zero E. coli and fecal coliform

In addition to the three weekly treated water samples Shuswap Lake Utilities also collects a monthly sample of raw water directly from our lake intake to assess water chemistry in comparison to the Guidelines for Canadian Drinking Water Quality and this information is also used to determine treatment requirements. To this data SLU also does a quarterly random analysis and testing for HAA - Haloacetic acid concentration, THM - Trihalomethane concentrations and TOC - Total Organic Carbon.

Shuswap Lake Utilities is currently using Ultra-violet and Chlorine disinfection systems to conform to the Drinking Water Protection Regulation (DWPR). This regulation requires water suppliers to monitor for total coliform bacteria and Escherichia coli (E-coli) at a certified laboratory. The distribution system is also monitored for disinfection by-products and residual chlorine to ensure safe levels are maintained.

Standards for Drinking Water as per Schedule A of the DWPR are as follows:

<b>Parameter</b>	<b>Standard</b>
Fecal coliforms bacteria	No detectable fecal coliforms bacteria per 100 ml
Escherichia coli (E-coli)	No detectable Escherichia coli per 100 ml
<b>Total coliform bacteria:</b>	
(a) 1 sample in a 30 day period	No detectable total coliform bacteria per 100 ml
(b) more than 1 sample in a 30 day period	At least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml

### **Source Protection**

Shuswap Lake Utilities is currently participating with other water suppliers drawing water from Shuswap Lake to monitor and assess our water source to ensure protection for future residents. Source protection plans are intended to assess the local factors and conditions that may influence the long term drinking water supply and to provide a strategy to mitigate inherent risks.

Shuswap Lake Utilities has undertaken to comply with these requirements and has engaged professional engineers to produce reports for historical and current data.

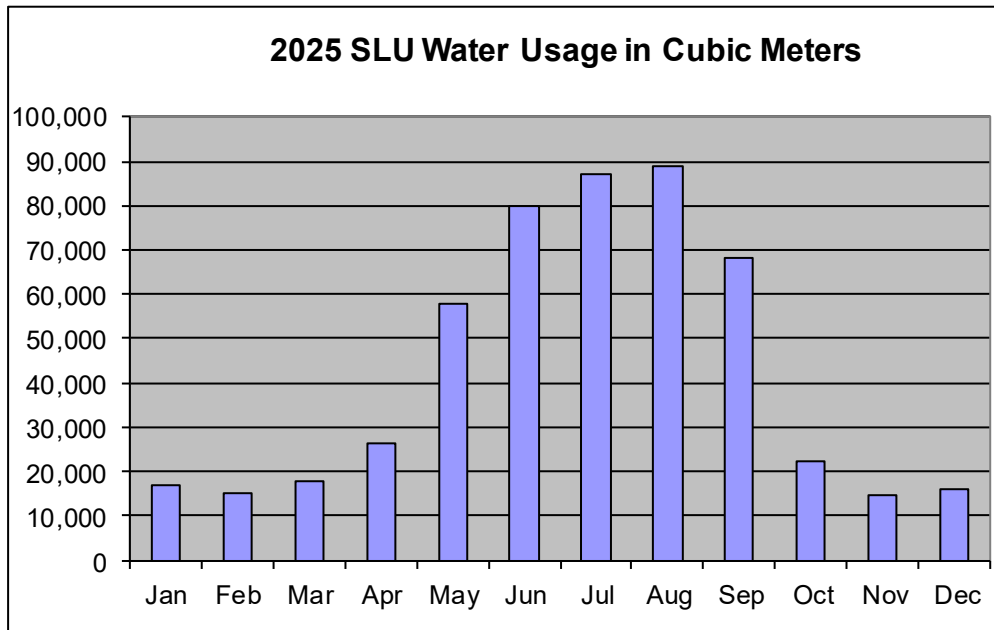
The overall plan for Interior Health is the creation of an Infrastructure Master Plan with recommendations for long term water source protection and management for each unique area of Shuswap Lake.

# Shuswap Lake Estates - Water System Annual Report 2025

## Shuswap Lake Estates Usage Reports

Shuswap Lake Utilities saw a similar water draw from the Shuswap Lake in 2025 over the previous 2024 year; but a slight reduction on a per user basis due to the additional homes. We did not experience the exceptional high temperatures from past years. The high temperatures coupled with low lake levels are contributing factors affecting turbidity levels.

### Annual Usage Reports

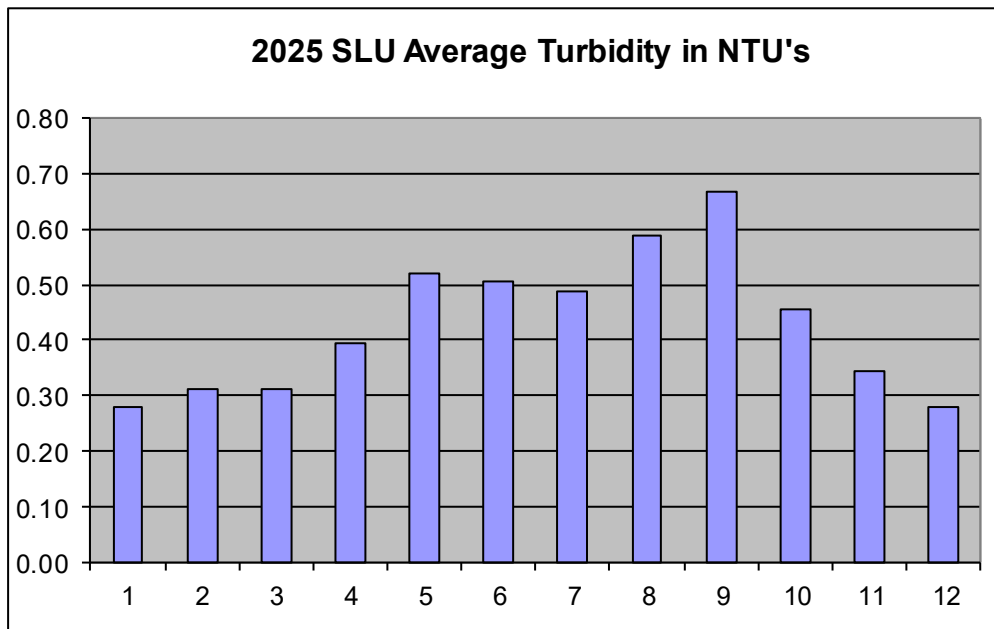


Average Monthly Usage 2025

42,675 m<sup>3</sup>

Year Total

512,106 m<sup>3</sup>



Turbidity 2025

Annual Average

0.43 NTU

# Shuswap Lake Estates - Water System Annual Report 2025

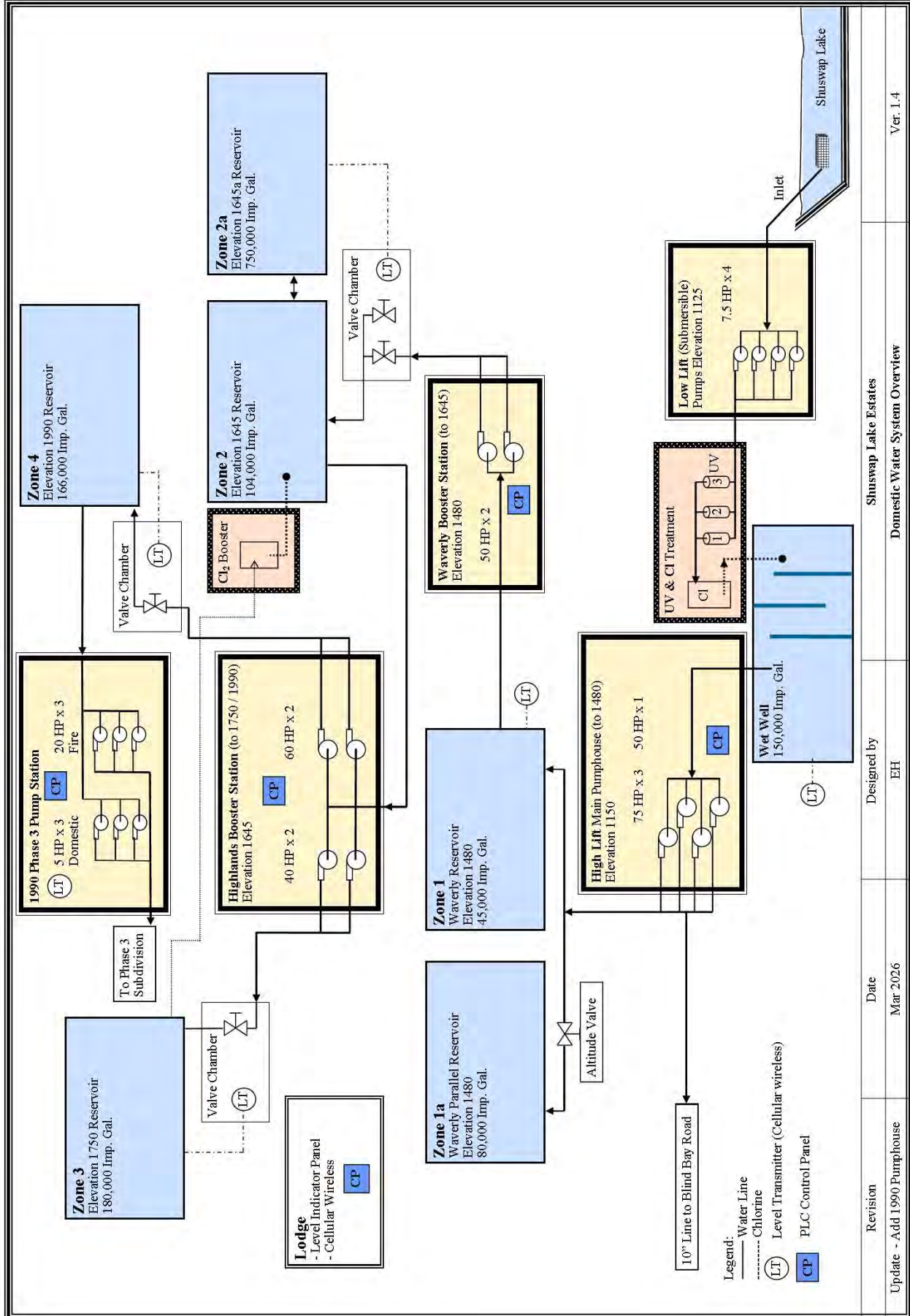
CARO Environmental Services

E.Coli and Total Coliform Testing - Shuswap Lake Estates

<b>2025</b>	<b>CARO eCOC</b>	<b>Lake Intake Raw Water</b>	<b>Main Pumphouse Treated</b>	<b>1645 Reservoir 2405 Cent. Dr.</b>	<b>1750 Reservoir</b>	<b>1990 Reservoir</b>
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		Total	E.Coli	Total	E.Coli	Total	E.Coli	Total	E.Coli	Total	E.Coli
07-Jan	19643	2	<1	<1	<1	<1	<1	<1	<1		
14-Jan	19893					<1	<1	<1	<1	<1	<1
21-Jan	20071			<1	<1			<1	<1	<1	<1
28-Jan	20233			<1	<1	<1	<1	<1	<1		
04-Feb	20396	15	<1	<1	<1	<1	<1	<1	<1		
11-Feb	20579					<1	<1	<1	<1	<1	<1
18-Feb	20719			<1	<1			<1	<1	<1	<1
25-Feb	20927			<1	<1	<1	<1	<1	<1		
04-Mar	21218	13	<1	<1	<1	<1	<1	<1	<1		
18-Mar	21673			<1	<1			<1	<1	<1	<1
01-Apr	22029	13	<1	<1	<1	<1	<1	<1	<1		
08-Apr	22254					<1	<1	<1	<1	<1	<1
15-Apr	22470			1	<1			<1	<1	<1	<1
22-Apr	22663			<1	<1	<1	<1	<1	<1		
29-Apr	22942					<1	<1	<1	<1	<1	<1
06-May	23121	39	<1	<1	<1	<1	<1	<1	<1		
13-May	23372					<1	<1	<1	<1	<1	<1
20-May	23587			<1	<1	<1	<1	<1	<1		
27-May	23868			<1	<1	<1	<1	<1	<1		
03-Jun	24059	14	<1	<1	<1	<1	<1	<1	<1		
10-Jun	24372					<1	<1	<1	<1	<1	<1
17-Jun	24577			<1	<1	<1	<1	<1	<1		
24-Jun	24827					<1	<1	<1	<1	<1	<1
01-Jul	25107	22	<1	1	<1	<1	<1	<1	<1		
08-Jul	25372					<1	<1	<1	<1	<1	<1
15-Jul	25624			<1	<1			<1	<1	<1	<1
22-Jul	25885			<1	<1	<1	<1	<1	<1		
29-Jul	26077					<1	<1	<1	<1	<1	<1
05-Aug	26405	39	1	<1	<1	<1	<1	<1	<1		
13-Aug	26734					<1	<1	<1	<1	<1	<1
19-Aug	26890			<1	<1			<1	<1	<1	<1
02-Sep	27367	130	<1	<1	<1	<1	<1	<1	<1		
09-Sep	WO25J1322					<1	<1	<1	<1	<1	<1
16-Sep	WO25J2410			<1	<1	<1	<1	<1	<1		
23-Sep	WO25J3199			<1	<1	<1	<1	<1	<1		
01-Oct	28427	91	<1	<1	<1	<1	<1	<1	<1		
07-Oct	28611					<1	<1	<1	<1	<1	<1
14-Oct	28843			1	<1			<1	<1	<1	<1
21-Oct	29080			<1	<1	<1	<1	<1	<1		
04-Nov	25K0451	21	1	<1	<1	<1	<1	<1	<1		
11-Nov	29856					<1	<1	<1	<1	<1	<1
18-Nov	30024			<1	<1	<1	<1	<1	<1		
25-Nov	30211			<1	<1			<1	<1	<1	<1
03-Dec	30501	6	<1	<1	<1	<1	<1	<1	<1		
16-Dec	30849			<1	<1			<1	<1	<1	<1

# Shuswap Lake Estates - Water System Annual Report 2025



- Legend:**  
 — Water Line  
 - - - Chlorine  
 (LT) Level Transmitter (Cellular wireless)  
 [CP] PLC Control Panel

	<b>Shuswap Lake Estates</b>	Ver. 1.4
	<b>Domestic Water System Overview</b>	
Designed by	EH	
Date	Mar 2026	
Revision		
Update - Add 1990 Pumphouse		