



2015 ANNUAL WATER QUALITY REPORT

WESTHILLS WATER SYSTEM

Operated by SSL-Sustainable Services Ltd.



Submitted on: June 30th, 2016



SSL-Sustainable Services Ltd. is a provider of infrastructure services for the Westhills community in Langford, British Columbia. In partnership with the City of Langford, SSL was formed to provide water and, through its Community Energy System, thermal energy. For a community the size of Westhills, sustainability can come in different forms and SSL has been created to lead responsible development in energy and water delivery.

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Executive Summary

The purpose of this report is to fulfill the requirements set out in the British Columbia Drinking Water Protection Act (DWPA)¹ by providing an overview of the Westhills Water System for the 2015 calendar year, including major infrastructure upgrades, regular system operations and maintenance, and results of water quality monitoring.

The Westhills Water System was established in 2010, timed with the initial land development and construction of new homes in the Westhills community in Langford, B.C. Through efforts by both Westhills Land Corp and the City of Langford, the Capital Regional District (CRD) granted Langford the ability to provide water to Westhills residents. The system was operated on an interim basis by CRD Integrated Water Services until September 2010, at which point SSL took over as the operator of the water distribution system under contract with the City of Langford.

As the Westhills system does not maintain its own water source or undertake any water treatment, it was interpreted for several years as falling under the operating permit for the regional water system granted to the CRD by the Vancouver Island Health Authority (VIHA). Significant system expansion eventually led VIHA to issue a separate operating permit for the Westhills Water System (see Appendix 3). While the system was already in compliance with the base requirements set out in the BC Drinking Water Protection Act and Regulation, the permitting process now formalizes our relationship with VIHA and provides an additional layer of important oversight for water quality matters.

This report will demonstrate that all water-related construction work, operating procedures, and water quality monitoring currently meet or exceed standards and regulations set by the BC DWPA & DWPR, AWWA, VIHA, CRD Integrated Water Services, and the City of Langford.



Pressure Relief Valve

Highlights of the Westhills Water System for 2015:

- 160,997 m³ of water delivered to the Westhills community;
- 97,669 m³ of water delivered to Westhills residents;
- 61,218 m³ of water delivered to public works, parks and commercial space;
- 56 microbiological tests, 11 turbidity tests and 3 heterotrophic plate count tests were completed, as well as 1 Full Spectrum Potability Analysis;
- Maintained 1 pressure relief valve (in main);
- Maintained 51 fire hydrants² to ensure water is available during an emergency and for training purposes to Langford Fire Rescue;
- Zero leaks detected in water mains

¹ http://www.bclaws.ca/Recon/document/ID/freeside/00_01009_01

² Number of Fire Hydrants in Westhills as of December 2015

System Overview

The main water supply for the Westhills Water System is the Sooke Lake Reservoir, which also supplies water to the majority of the Capital Regional District (CRD)³. This water source is managed by CRD Integrated Water Services, including all disinfection and treatment processes – notably UV sterilization and chloramination.



Sooke Lake Reservoir



The treated supply water then enters the Humpback Pressure Reducing Station located approximately two kilometers upstream from the Westhills Water System's Booster Pump Station (BPS). Bulk water is metered inside the Westhills BPS, representing the demarcation point between the regional water system operated by the CRD and the Westhills Water System operated by SSL–Sustainable Services Ltd.

Water is then pumped through 3 high-efficiency variable speed pumps into a distribution system servicing 388 single family homes, 33 town homes, a 68-unit condominium as well as park and public irrigation and commercial end uses. An automatic fire pump within the BPS provides fire flows when needed. The BPS also includes a standby diesel generator for emergency conditions. Fuel supply for this generator is fed from a day tank, which is in turn fed from a larger underground storage tank. An annual overview of significant water system assets can be seen in Table 1.



Booster Pump Station

³ https://www.crd.bc.ca/docs/default-source/Partnerships-PDF/gvdwsa-school-tours/2014_iws_highschooltour_factsandfigures.pdf?sfvrsn=2

Source Water Map, 2015

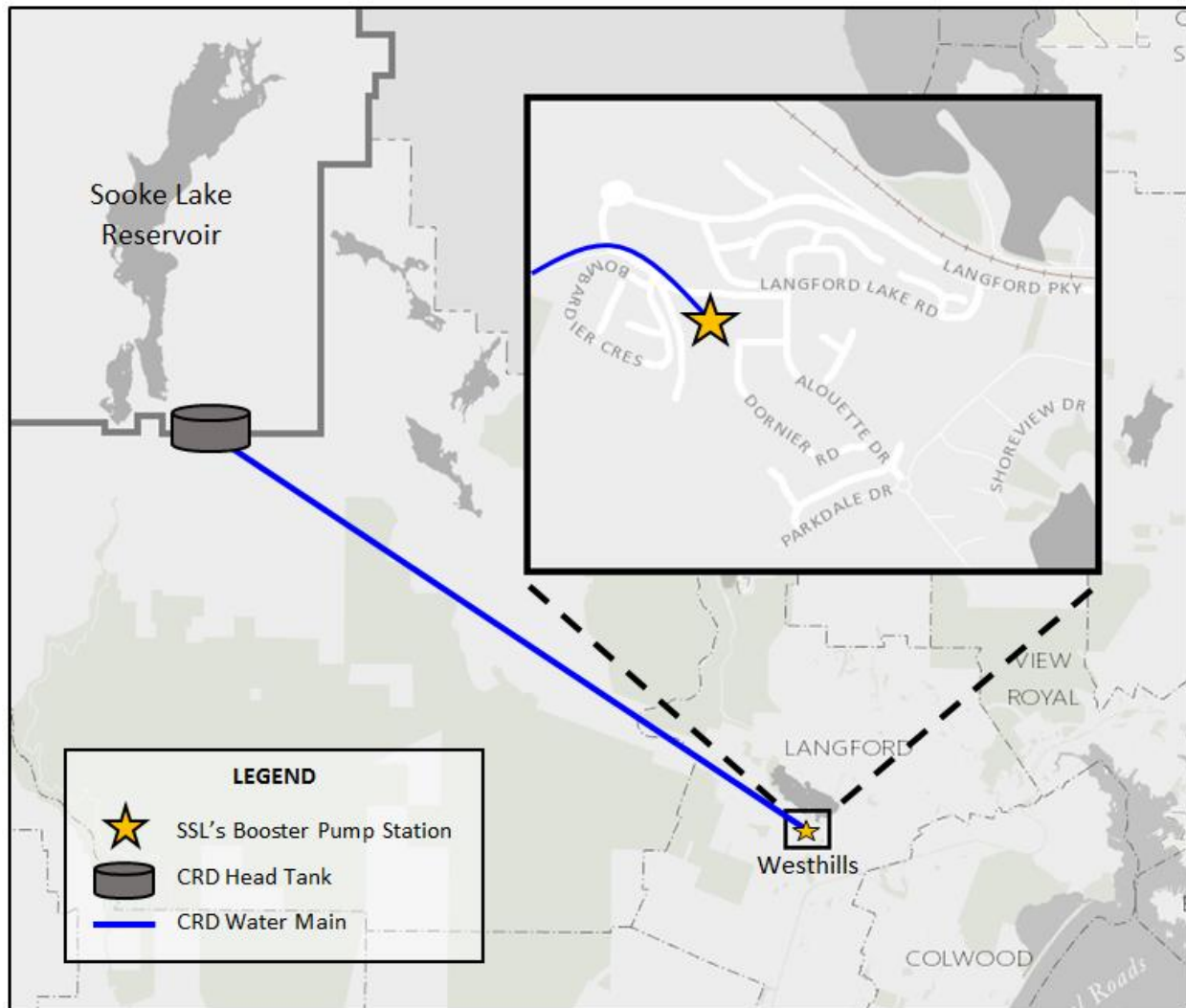
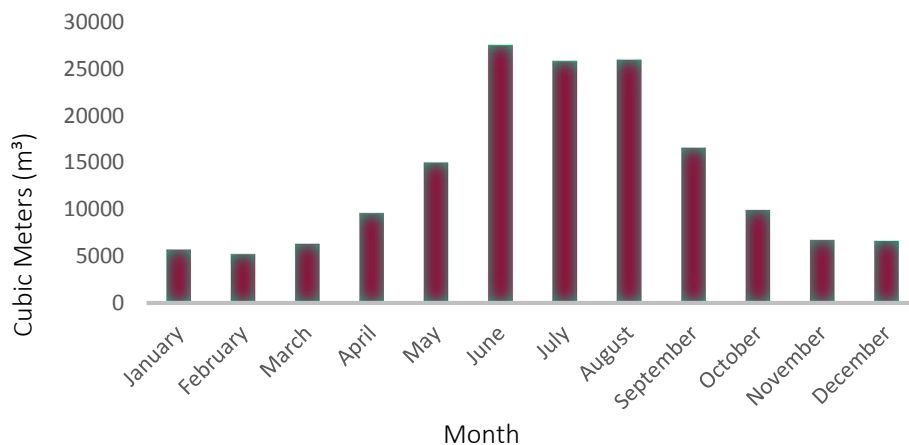


Table 1 – Overview of Westhills Water System

Water Assets	December 2014	December 2015
Hydrants	38	51
Pressure Relief Valve Chamber	1	1
Water Mains	5.96 km	7.09 km
Gate Valves	147	182
Flush Valves	19	23
Air Valves	6	7
Commercial Service Connections	3	5
Residential Service Connections	378	422
Households Served	445	489
Population Served	Approx. 1,800	1,912 (est.)

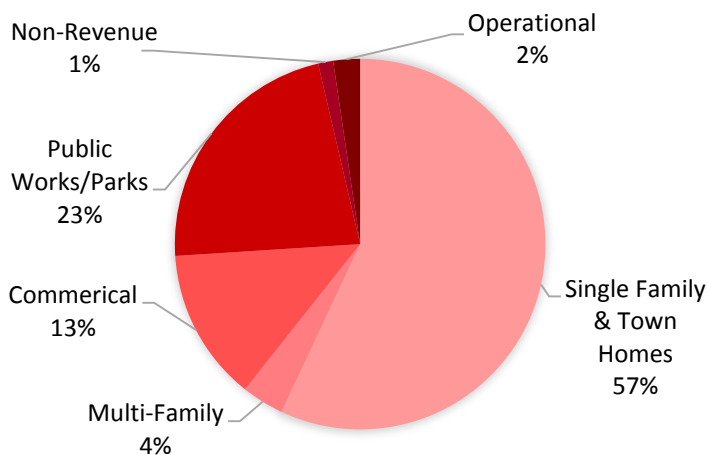
Like many systems, water usage within Westhills more than triples in summer months compared to average winter usage, as seen in the graph below. Most of this increase is associated with the use of irrigation systems. As an ongoing land development site, large amounts of water are also used in summer months for construction and dust control purposes.

2015 Water Consumption



The graph below provides a breakdown by end use of all water provided in 2015. Through customer metering, SSL is able to track residential, commercial, parks and operational water usage, which accounts for most of the water which passes through the BPS. It is reasonable to assume that any unidentified portion of the annual water consumption is attributed to “water loss” within the system. This category, also called non-revenue water, includes things like water leaks, error margins for estimated water billings, hydrant usage for fire department training and potentially water theft. In 2015, non-revenue water was 2,110 m³, or about 1% of total water usage in the system. This is significantly better than industry standards and represents an improvement from the 5% figure for 2014. We believe part of this change is due to an improved ability to measure operational water usage.

Annual Water Usage Breakdown



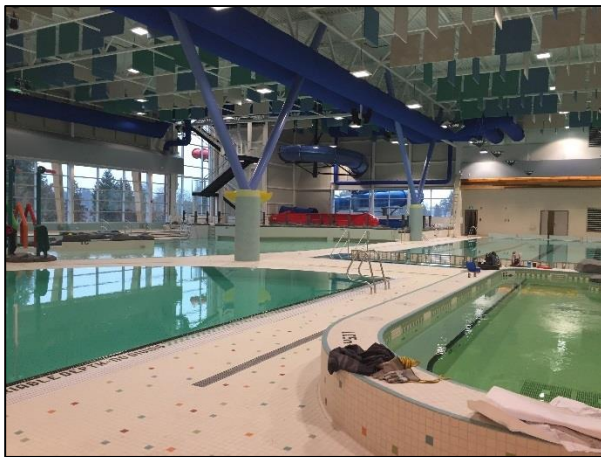
Annual Comparison

	2014	2015
Single Family & Townhomes	64 %	57 %
Multi Family	5 %	4 %
Commercial	5 %	13 %
Public Works/Parks	18 %	22 %
Non-Revenue	6 %	1 %
Operational	2 %	2 %

System Upgrades

In 2015, the Westhills Water System was extended by adding 44 new residential water meters and 2 commercial water meters. Other new infrastructure included 35 gate valves, 4 flush valves, 13 fire hydrants and 1.13 km of new water mains.

The two commercial water connections in 2015 were for the new Westhills YMCA-YWCA Aquatic Centre and the new Belmont Secondary School. The 73,000 square foot Westhills YMCA-YWCA Aquatic Centre is equipped with a wave pool, hot tub, lap pool, lazy river, warm water therapy pool, two 10m high waterslides, health and fitness facility, day care center, youth center, the Greater Victoria Public Library Langford Heritage Branch, the Westhills Victoria Conservatory of Music and other usable commercial space⁴. Belmont Secondary School has a capacity of 1,200 students, as well as 7 science labs, 1 multipurpose lab and 2 gymnasiums⁵.



Westhills YMCA-YWCA Aquatic Centre



Belmont Secondary School

⁴ <http://www.timescolonist.com/business/ym-ywca-building-the-new-jewel-in-langford-s-recreational-crown-1.2128955>

⁵ <http://newschools.sd62.bc.ca/>

System Operation & Maintenance

The Westhills Water System is operated by SSL and its team of engineers, civil contractors and certified plant operators to implement the O&M program below.

Monitoring: Booster Pump Station

- Weekly inspections of the BPS are carried out by a certified operator (EOCP Level III), with observations recorded in an on-site log book, including parameters like water temperature, total chlorine residual and pump run hours.
- SCADA/HMI System is remotely accessible from any computer connected to the internet and offers real time readings, trend logs and alarm tracking (authorized users only / protected by dual layer password protection).
- System Alarms are enunciated to a list of on-call personnel through an automated phone line system, which can operate without internet connectivity
- Live Video Cameras record any motion inside and outside the BPS, with both the live feed and recorded footage remotely accessible (authorized users only / protected by password and software registration)

Monitoring: Distribution System

- Water quality samples were regularly collected at the following minimum intervals:
 - **WEEKLY:** one bacteriological test for Total Coliform and E. Coli (CFU/100ml), along with total chlorine residual (ppm)
 - **MONTHLY:** one Turbidity test and one Heterotrophic Plate Count (HPC)
 - **ANNUAL:** Full spectrum VIHA potability analysis (bacteriological, metals, organics, etc.)

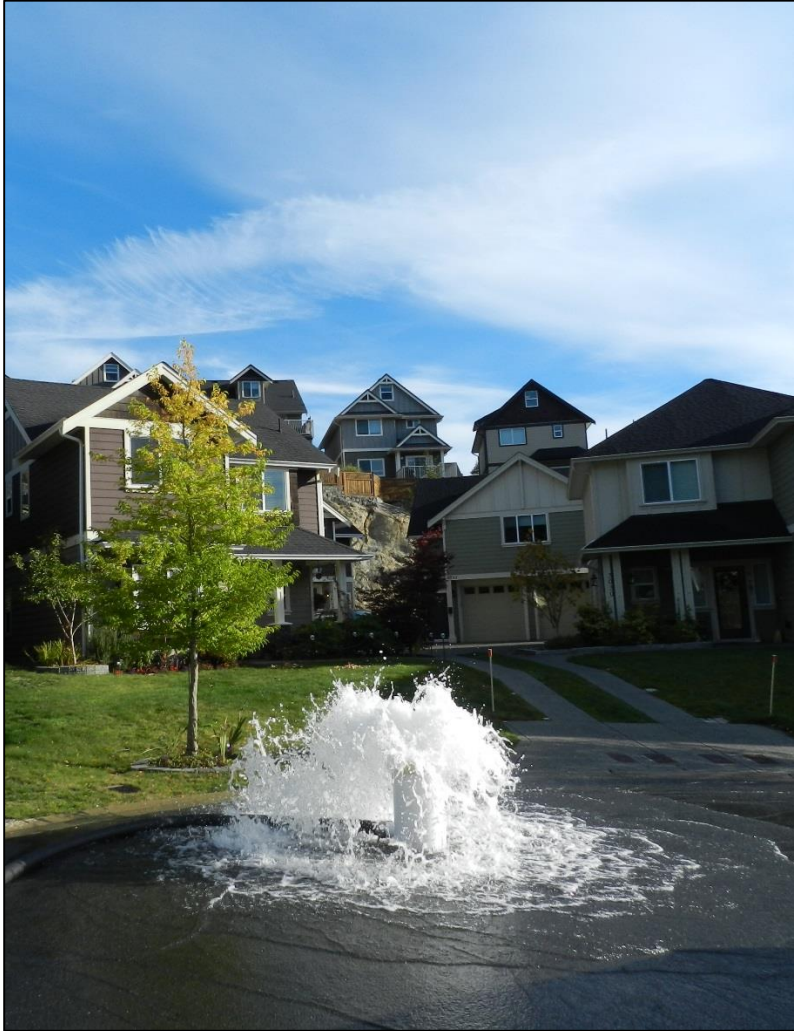
Maintenance: Booster Pump Station Equipment

- Fire pump: weekly inspection and 30-minute manual test run; annual inspection and cleaning of pump shaft cooling channels, packing glands and casing gaskets
- Booster pumps: weekly inspection and recording of run hours
- Diesel generator: weekly inspection and automated test run; annual full servicing which includes oil/filter change, readiness test and full loadbanking (report filed on site and at SSL office)
- Pressure tank: annual inspection and servicing
- Backflow prevention devices: annual test by certified BFP tester (repair or replace as needed)
- Building electrical systems: annual inspection and report completed by FSR listed on Electrical Operating Permit
- Full hard copy sets of as-built and shop drawings are located at BPS, SSL head office, and with water system operator

Maintenance: Distribution System

- Unidirectional flushing: Full system (annual); low-demand or dead-end sections (semi-annual)
- Fire hydrants: Pressure testing, painting, physical inspection and maintenance (annual); data reported to fire department, see Appendix 2.
- Valve exercising: Open/close all system valves to confirm operational; check all box covers and arrow painting (annual)

- Water meters: Physical inspection for leaks or bypasses; add mulch for frost protection (annual); Accuracy audit and verification (per manufacturer's specification – approx. 10-15 years, or sooner if required)



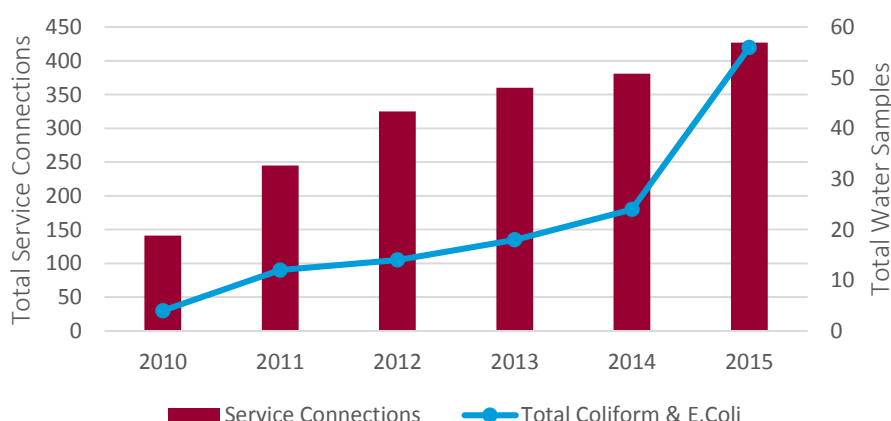
Unidirectional Flushing

Water Quality Monitoring

In 2015, SSL collected samples on a weekly basis at 9 dedicated sampling sites. These sites are strategically located throughout the Westhills Water System to give a good representation of the water quality across the distribution network. Due to inaccessibility and aging parts, 3 of the sampling sites were decommissioned by the end of 2015.

In 2015, 3 HPC, 11 Turbidity and 56 bacteriological samples for Total Coliform and E. Coli were collected. Sampling frequency has steadily increased over the years to keep up with the ongoing growth of the Westhills Water System and community, as seen in the graph below. All samples were sent for analysis at Maxxam Analytics laboratory, where tests were conducted in order to detect any potentially harmful parameters in the water.

Number of Bacteriological Samples vs Service Connections



Total coliforms are a group of bacteria that are usually found on or in plants, soils, water, and in the intestines of humans and warm-blooded animals. Total coliforms can be used to help determine the efficacy of a drinking water treatment system⁶.

If total coliforms are detected in a water sample, the positive site(s) should be immediately resampled. If total coliforms are detected in consecutive samples, or more than 10% of samples collected in a given sampling period, further investigation is required. This investigation will be coordinated by SSL, involving the water system operator and project engineer as required, and may include flushing or disinfection of the supply system and sampling of adjacent sites. CRD Integrated Water Services will also be notified in order to confirm results against water system supply quality.

***Escherichia coli* (E. coli)** is a member of the coliform group of bacteria that are usually found in the intestines of humans and warm-blooded animals. It is not naturally found on or in other environments such as plants, soils and water. The presence of *E. coli* in a water sample is a good indicator of recent faecal contamination and can suggest a possible danger to public health⁶.

⁶ Health Canada, Guidelines for Canadian Drinking Water Quality (2012)

If *E. coli* is detected in a water sample, SSL will immediately notify the water system operator, project engineer and VIHA. The positive site(s) and adjacent sites will be immediately resampled and a boil water advisory may be issued (subject to direction from VIHA). If a consecutive sample is positive for *E. coli*, a boil water advisory will be issued and corrective actions undertaken in consultation with VIHA (see Appendix 4). CRD Integrated Water Services will also be notified.

Turbidity is the overall transparency of water caused by the presence of organic and inorganic particles, such as: decomposed plant and animal debris, microorganisms, clays, silts and metal precipitates⁶.

The maximum acceptable concentration for Turbidity is less than or equal to 1.0 NTU in 95% of the measurement or 95% of the time each month⁶. Turbidity should never exceed 3.0 NTU, in which case, further investigation is required. This investigation will be coordinated by SSL, involving the water system operator and project engineer as required. CRD Integrated Water Services will also be notified in order to confirm results against water system supply quality.

Heterotrophic Plate Count is used to provide an overall baseline of bacteriological activity within the drinking water system.

2015 Test Results

In 2015, 51 of the 56 bacteriological water quality results met the drinking water requirements for *E. coli* and total coliforms. In the case of the 5 failed water quality results, small levels of total coliforms were detected and immediate resamples from the same sites resulted in a passing result. No samples tested positive for *E. coli* bacteria. All 11 Turbidity samples that were collected and tested in 2015 were found to be within acceptable ranges and did not require further sampling or investigation. An overview of all water quality results from 2015 can be seen in Table 2.

Table 2 – 2015 Water Quality Results

Sample Site	Sample Date	CL2 Res (ppm)	Total Coliforms (CFU/100mL)	<i>E. coli</i> (CFU/100mL)	Turbidity (NTU)	HPC	Temperature (°C)
Parkdale Creek Garden	5-Jan-15	0.85, 0.98	<1	<1			12, 13, 13
Clearwater Pl cul de sac	12-Jan-15	0.63, 0.72	<1	<1			12, 12, 12
Grob Crt cul de sac	19-Jan-15	0.9, 0.85	<1	<1			13
Dornier cul de sac	26-Jan-15	0.94, 0.7	<1	<1			9
Bombardier/Boeing	2-Feb-15	0.43, 0.35	<1	<1	0.2		9, 9, 10
3088 Dornier Rd	10-Feb-15	1.29, 1.16	<1	<1			14, 14, 14
Arado Court	16-Feb-15	1.29, 1.33	<1	<1			15, 15, 15
Langford Parkway	23-Feb-15	0.38, 0.34	<1	<1			15, 15, 15
Artesian cul de sac	2-Mar-15	0.88, 0.95	<1	<1	0.3		14, 14, 14
Clearwater cul de sac	9-Mar-15	0.79, 0.81	<1	<1			13, 13, 13
Grob Crt cul de sac	16-Mar-15	0.62, 0.60	<1	<1			13, 13, 13
Dornier cul de sac	23-Mar-15	0.30, 0.30	<1	<1			13, 13, 13
Boeing/Bombardier	30-Mar-15	0.46, 0.41	<1	<1			18, 18, 18
3088 Dornier Rd	6-Apr-15	1.05, 1.12	<1	<1	0.2		15, 16, 15
Langford Parkway	13-Apr-15	0.33, 0.84	<1	<1			15, 15, 15

Artesian cul de sac	17-Apr-15	0.98, 0.95	<1	<1			16, 16, 16
Clearwater cul de sac	27-Apr-15	0.83, 0.92	<1	<1			16, 16, 16
Grob Crt cul de sac	4-May-15	1.00, 1.03	<1	<1	0.3		17, 18, 18
Dornier cul de sac	11-May-15	1.33, 1.29	<1	<1			14, 14, 14
Boeing/Bombardier	19-May-15	1.12, 1.13	<1	<1			12, 11, 11
3088 Dornier Rd	25-May-15	1.09, 1.25	<1	<1			16, 16, 16
Langford Parkway	1-Jun-15	0.85, 0.88	3	<1	0.5		10, 10, 12
Langford Parkway (resample)	3-Jun-15	1.14, 1.11	<1	<1			10, 10, 10
Artesian cul de sac	8-Jun-15	0.65, 0.60	<1	<1			11, 11, 11
Grob Crt cul de sac	15-Jun-15	0.71, 0.69	<1	<1			13, 12, 13
Dornier cul de sac	22-Jun-15	1.23, 1.22	<1	<1			10, 10, 10
Boeing/Bombardier	29-Jun-15	0.72, 0.66	<1	<1			14, 14, 14
3088 Dornier Rd	6-Jul-15	1.18, 1.13	<1	<1	0.29		13, 12, 13
Langford Parkway	13-Jul-15	1.22, 1.21	<1	<1			13, 13, 13
Artesian cul de sac	20-Jul-15	1.22, 1.27	<1	<1			12, 12, 12
Grob Crt cul de sac	27-Jul-15	0.62, 0.65	<1	<1			16, 16, 16
Dornier cul de sac	4-Aug-15	0.69, 0.79	<1	<1			14, 15, 15
Boeing/Bombardier	10-Aug-15	0.57, 0.48	<1	<1	0.6		14, 12, 14
3088 Dornier Rd	17-Aug-15	1.17, 1.19	<1	<1			15, 15, 15
Langford Parkway	24-Aug-15	1.00, 0.98	<1	<1			16, 16, 15
Artesian cul de sac	1-Sep-15	0.80, 0.84	<1	<1			9, 18, 17
Grob Crt cul de sac	8-Sep-15	0.31, 0.24	<1	<1	0.3		21, 21, 21
Dornier cul de sac	14-Sep-15	0.88, 0.87	<1	<1			12, 12, 13
Boeing/Bombardier	21-Sep-15	0.23, 0.22	<1	<1			14, 14, 14
3088 Dornier Rd	28-Sep-15	0.69, 0.63	<1	<1			15, 14, 14
Langford Parkway	5-Oct-15	0.55, 0.51	1	<1	0.4	1	14, 12, 13
Langford Parkway (resample)	7-Oct-15	0.49, 0.50	<1	<1			13, 13, 13
Artesian cul de sac	13-Oct-15	0.99, 0.97	<1	<1			14, 9, 14
Grob Crt cul de sac	20-Oct-15	0.34, 0.37	<1	<1			17, 17, 18
Dornier cul de sac	26-Oct-15	1.08, 1.11	<1	<1			10, 10, 10
Boeing/Bombardier	3-Nov-15	0.53, 0.56	4	<1	0.3	<1	12, 10, 12
Boeing/Bombardier (resample)	5-Nov-15	0.47, 0.64	<1	<1			8, 8, 8
3088 Dornier Rd	9-Nov-15	1.08, 1.05	<1	<1			9, 9, 9
Langford Parkway	16-Nov-15	0.00, 0.00	<1	<1			6, 6, 6
Artesian cul de sac	23-Nov-15	1.20, 1.14	1	<1			7, 7, 7
Artesian cul de sac (resample)	25-Nov-15	0.74, 0.59	<1	<1			5, 6, 6
Grob Crt cul de sac	30-Nov-15	0.59, 0.64	<1	<1			14, 14, 14
Dornier cul de sac	7-Dec-15	0.67, 0.71	<1	<1	0.4	<1	6, 6, 6
Boeing/Bombardier	14-Dec-15	0.04, 0.00	1	<1			13, 13, 12
Boeing/Bombardier (resample)	16-Dec-15	0.75, 0.81	<1	<1			11, 11, 12
3088 Dornier Rd	22-Dec-15	0.77, 0.91	<1	<1			5, 6, 6

2015 VIHA Potability Analysis

In addition to routine bacteriological testing, SSL also completes an annual full spectrum analysis of water in the Westhills distribution system. This analysis measures dozens of parameters which are not practical for routine testing, including metals, nutrients and various physical properties. While this is not required under the DWPA or our operating permit, we see value in the long term maintenance of such records. The CRD also performs this analysis on the regional water source each year which allows us to make helpful comparisons between our distribution system and the primary water supply. The results of our 2015 analysis are included in Appendix 5.

2015 Water Quality Complaints

Three water quality complaints, related to discolouration, were received by SSL from homes within Westhills in 2015. Each complaint was investigated and all three were found to be caused by sediment build up within domestic hot water tanks and were not related to the incoming water supply.

Conclusion

In 2015, the Westhills Water System exceeded the requirements set out in the BC Drinking Water Protection Act. With the support of its core staff and team of engineers, civil contractors and plant operators, SSL was able to operate the drinking water system in a safe and reliable manner while efficiently performing routine maintenance and system upgrades.

For 2016, we anticipate the industry as a whole will be placing more focus on important issues such as drought & emergency preparedness, improved monitoring of lead, and regional information sharing. We look forward to collaborating with our partners to ensure all stakeholders in the region continue to receive a world-class level of drinking water service.

Southern Vancouver Island is extremely fortunate to enjoy high-quality drinking water resources. This has largely been made possible through efforts by the CRD and VIHA, who we acknowledge as valuable partners in the ongoing delivery of safe, clean water to our customers. We are proud of our role in providing a critical utility to the vibrant and growing community of Westhills and look forward to many years of continued service.



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Appendices

Appendix 1: SSL Water Main Book

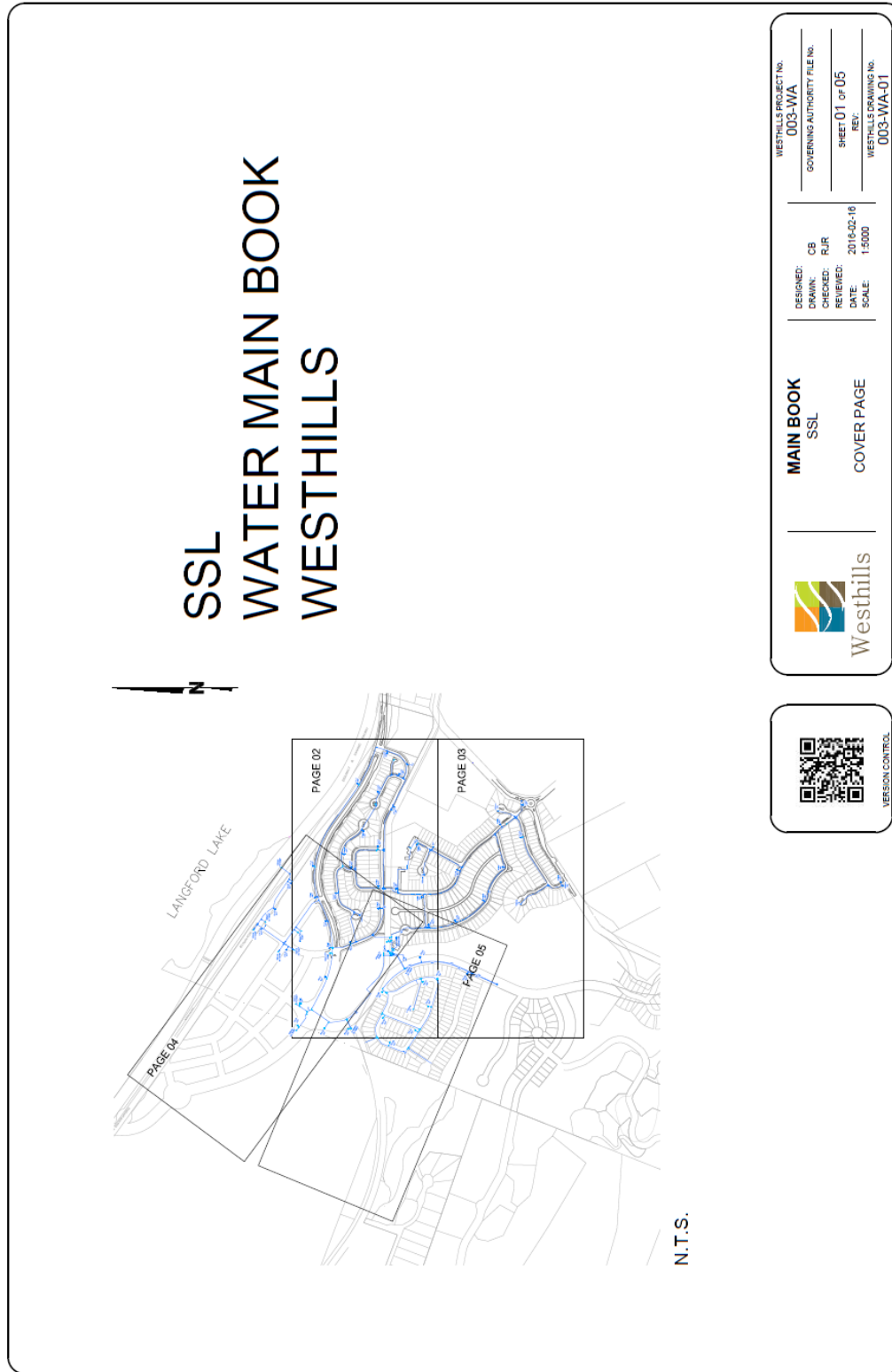
Appendix 2: Hydrant Maintenance Sheet

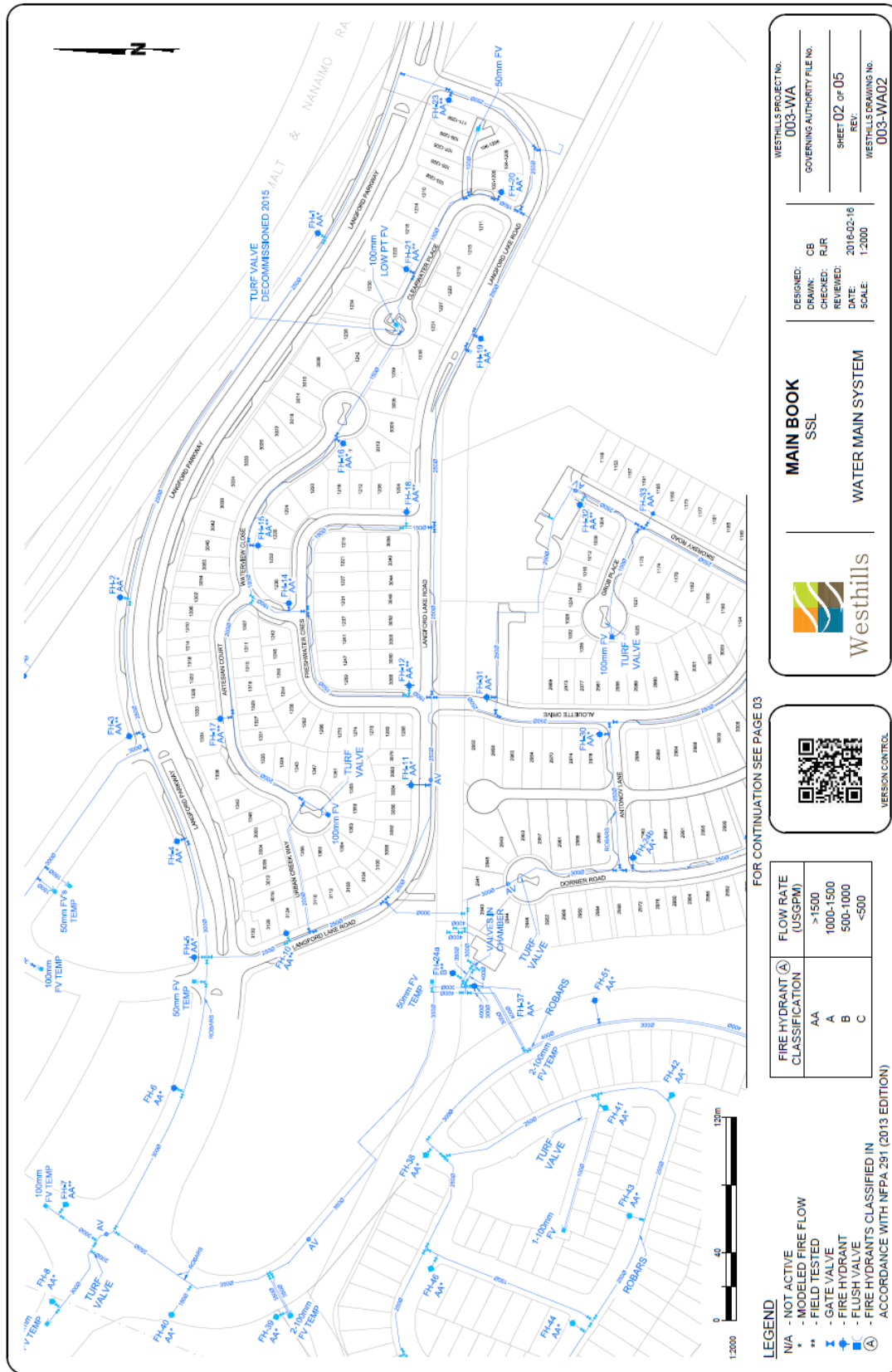
Appendix 3: VIHA Operating Permit

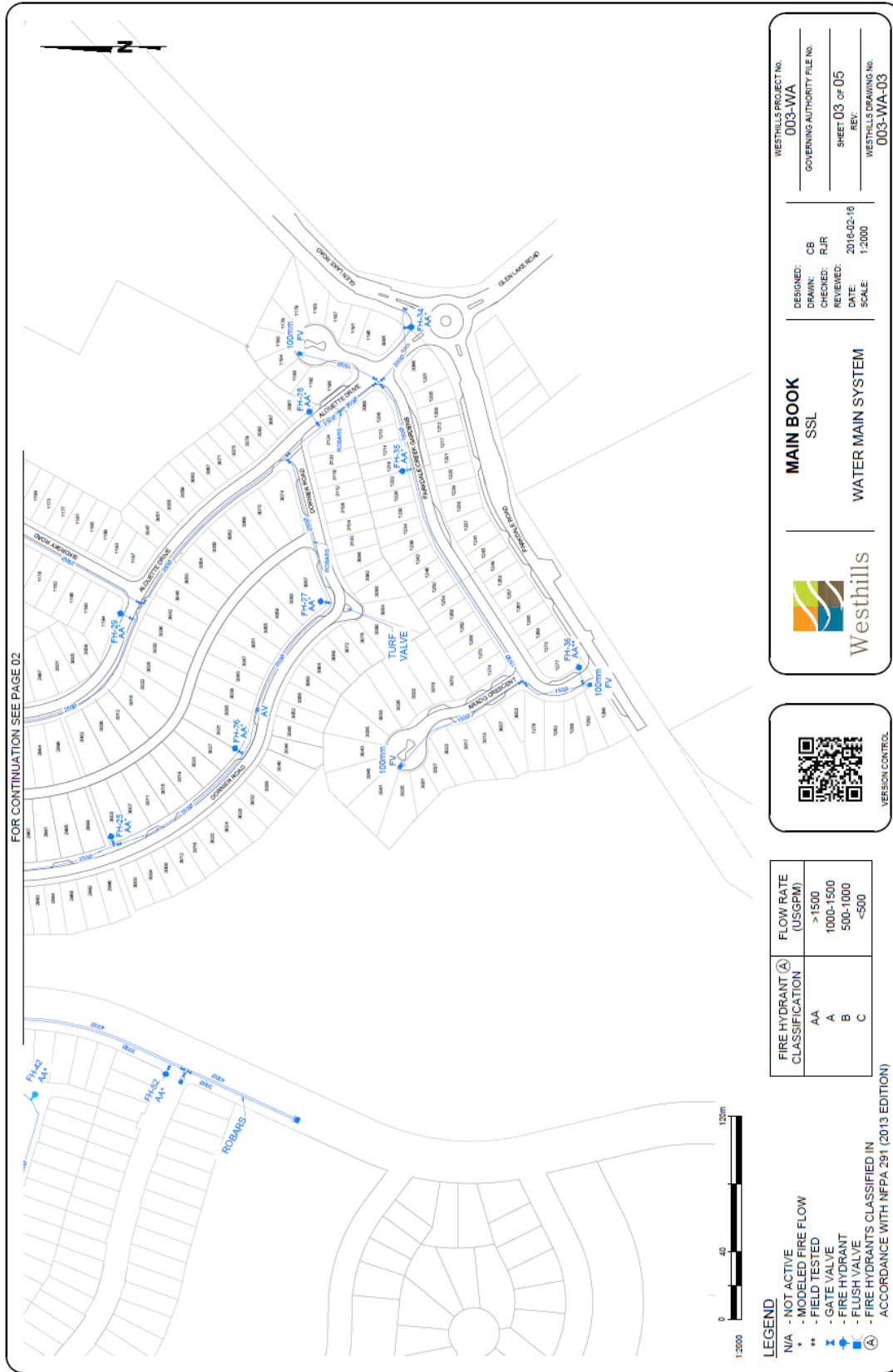
Appendix 4: Sample Drinking Water Quality Advisories

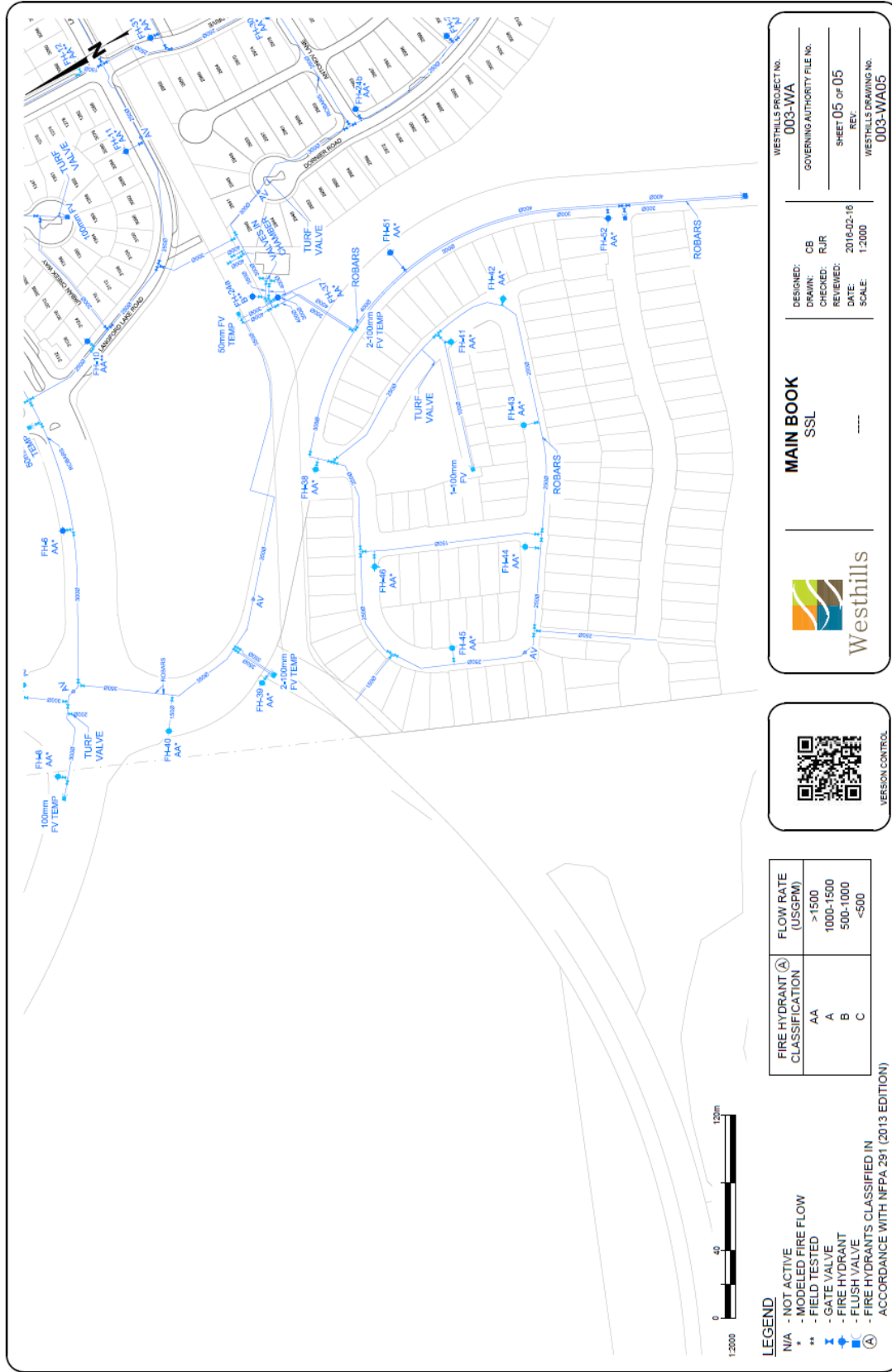
Appendix 5: Full Spectrum Potability Analysis

Appendix 1: SSL Water Main Book









Appendix 2: Hydrant Maintenance Sheet

Date	Hydrant #	Pressure (psi)	Requires Paint (Y-Yes or N-No)	Notes
24-Apr-15	FH #1	108	N	Pressure test - passed; is in good shape
24-Apr-15	FH #2	93	N	Pressure test - passed; is in good shape
24-Apr-15	FH #3	88	N	Pressure test - passed; is in good shape
24-Apr-15	FH #4	82	N	Pressure test - passed; is in good shape
24-Apr-15	FH #5	83	N	Pressure test - passed; is in good shape
24-Apr-15	FH #6	79	N	Pressure test - passed; is in good shape
24-Apr-15	FH #7	77	N	Pressure test - passed; is in good shape
24-Apr-15	FH #8	74	N	Pressure test - passed; is in good shape
24-Apr-15	FH #10	79	N	Pressure test - passed; is in good shape
24-Apr-15	FH #11	65	N	Pressure test - passed; is in good shape
24-Apr-15	FH #12	68	N	Pressure test - passed; is in good shape
24-Apr-15	FH #14	78	N	Pressure test - passed; is in good shape
24-Apr-15	FH #15	86	N	Pressure test - passed; is in good shape
24-Apr-15	FH #16	95	N	Pressure test - passed; is in good shape
24-Apr-15	FH #17	73	N	Pressure test - passed; is in good shape
24-Apr-15	FH #18	78	N	Pressure test - passed; is in good shape
24-Apr-15	FH #19	94	N	Pressure test - passed; is in good shape
24-Apr-15	FH #20	96	N	Pressure test - passed; is in good shape
24-Apr-15	FH #21	102	N	Pressure test - passed; is in good shape
24-Apr-15	FH #23	110	N	Pressure test - passed; is in good shape
24-Apr-15	FH #24A	32	N	Pressure test - passed; is in good shape
24-Apr-15	FH #24B	76	N	Pressure test - passed; is in good shape
24-Apr-15	FH #25	79	N	Pressure test - passed; is in good shape
24-Apr-15	FH #26	76	N	Pressure test - passed; is in good shape
24-Apr-15	FH #27	80	N	Pressure test - passed; is in good shape
24-Apr-15	FH #28	90	N	Pressure test - passed; is in good shape
24-Apr-15	FH #29	70	N	Pressure test - passed; is in good shape
24-Apr-15	FH #30	68	N	Pressure test - passed; is in good shape
24-Apr-15	FH #31	69	N	Pressure test - passed; is in good shape
24-Apr-15	FH #32	57	N	Pressure test - passed; is in good shape
24-Apr-15	FH #33	62	N	Pressure test - passed; is in good shape
24-Apr-15	FH #34	94	N	Pressure test - passed; is in good shape
24-Apr-15	FH #35	96	N	Pressure test - passed; is in good shape
24-Apr-15	FH #36	96	N	Pressure test - passed; is in good shape
24-Apr-15	FH #37	78	N	Pressure test - passed; is in good shape
24-Apr-15	FH #38	75	N	Pressure test - passed; is in good shape
24-Apr-15	FH #39	66	N	Pressure test - passed; is in good shape
24-Apr-15	FH #40	73	N	Pressure test - passed; is in good shape
24-Apr-15	FH #41	66	N	Pressure test - passed; is in good shape
24-Apr-15	FH #42	62	N	Pressure test - passed; is in good shape
24-Apr-15	FH #43	56	N	Pressure test - passed; is in good shape

Appendix 3: VIHA Operating Permit



HEALTH PROTECTION

PERMIT to OPERATE

A WATER SUPPLY SYSTEM

Water System Name: **WESTHILLS WATER SYSTEM**
Premises Number: **64010259**

Premises Address: **204 - 957 Langford Parkway
Victoria, BC
V9B 0A5**

Water System Owner: **SSL - Sustainable Services Ltd.**

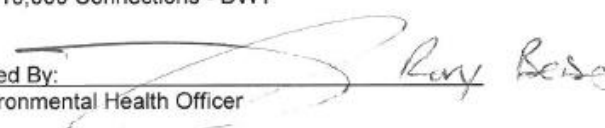
SSL - Sustainable Services Ltd. is hereby permitted to operate the above potable water supply system and is required to operate this system in accordance with the Drinking Water Protection Act and in accordance with the conditions set out in this operating permit and conditions established as part of any construction permit.

The water supply system for which this operating permit applies is generally described as:

Service Delivery Area: **Westhills**
Source Water: **CRD**
Water Treatment methods are: **None**
Water Disinfection methods are: **UV & Chloramination**

Number of Connections **301-10,000 Connections - DWT**

Date: **January 13, 2015**

Issued By: 
Environmental Health Officer

**This permit must be displayed
in a conspicuous place and is not transferable**



Appendix 4: Sample Drinking Water Quality Advisory

BOIL WATER NOTICE

SSL-Sustainable Services Ltd. (SSL), in consultation with the Vancouver Island Health Authority (VIHA), has issued a BOIL WATER NOTICE for the Westhills Water Distribution System. This Notice is effective immediately and covers all residents of Westhills and those who obtain water from the Westhills Water Distribution System (Facility #1948)

Until further notice, water from the Westhills Water Distribution System should be held at a rolling boil for one (1) minute and cooled before it is consumed. For your safety, only boiled or bottled water should be used for drinking, making ice or fountain drinks, washing dishes, brushing teeth, or preparing foods that will not be cooked.

The following checked statement best describes the situation that triggered this notice:

- Recent water test show the presence of unacceptable levels of bacteria. Boiling the water will make it safe to drink.
- Turbidity in the water system has risen to unacceptable levels as a result of _____. High turbidity can interfere with disinfection and may signal the presence of disease causing organisms. Boiling the water will make it safe to drink.
- The water system recently experienced a _____, which may make the water unsafe to drink. Boiling the water will make it safe to drink.

SSL and VIHA are working together to resolve the situation. Once the water is safe to drink, this Boil Water Notice will be rescinded.

Updates will be provided regularly to Westhills residents' _____ as well as by postings in locations throughout the community and online at www.SSL-BC.com. Updates can also be obtained by contacting one of:

SSL-Sustainable Services Ltd. – 250-391-7260
Island Flow Control Water Solutions Ltd. – 250-361-5503

The Vancouver Island Health Authority has additional information about boil water notices online at http://www.viha.ca/mho/water/boil_water

Thank you for your patience and cooperation. For further information, please contact:

Name:
Phone:
Email:
Date:

DO NOT USE WATER

SSL-Sustainable Services Ltd. (SSL), in consultation with the Vancouver Island Health Authority (VIHA), has issued a DO NOT USE WATER Notice for the Westhills Water Distribution System. This Notice is effective immediately and covers all residents of Westhills and those who obtain water from the Westhills Water Distribution System (Facility #1948)

*Until further notice, do not drink or use water from the Westhills Water Distribution System.
Boiling the water will not make it safe to drink.*

The following statement best describes the situation that triggered this notice:

SSL and VIHA are working together to resolve the situation. Once the water is safe to drink, this DO NOT USE WATER Notice will be rescinded.

Updates will be provided regularly to Westhills residents _____ as well as by postings in locations throughout the community and online at www.SSL-BC.com. Updates can also be obtained by contacting one of:

SSL-Sustainable Services Ltd. – 250-391-7260
Island Flow Control Water Solutions Ltd. – 250-361-5503

Thank you for your patience and cooperation. For further information, please contact:

Name:
Phone:
Email:
Date:

Appendix 5: Full Spectrum Potability Analysis

RDL = Reportable Detection Limit

N/A = Not Applicable

Criteria A = Maximum Acceptable Concentration (MAC)

Criteria B = Aesthetic Objectives (AO)

Criteria C = Operational Guidance Values (OG)

Maxxam ID					MY0263		
Sampling Date					2015/08/20		
COC Number					WI000319		
	UNITS	MAC	AO	OG	DORNIER	RDL	QC Batch
ANIONS							
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050	8012001
Calculated Parameters							
Total Hardness (CaCO ₃)	mg/L	-	-	-	19.1	0.50	8010249
Nitrate (N)	mg/L	10	-	-	<0.020	0.020	8010251
Misc. Inorganics							
Fluoride (F)	mg/L	1.5	-	-	0.017	0.010	8014852
Alkalinity (Total as CaCO ₃)	mg/L	-	-	-	14.2	0.50	8011850
Total Organic Carbon (C)	mg/L	-	-	-	2.4	0.50	8026605
Alkalinity (PP as CaCO ₃)	mg/L	-	-	-	<0.50	0.50	8011850
Bicarbonate (HCO ₃)	mg/L	-	-	-	17.4	0.50	8011850
Carbonate (CO ₃)	mg/L	-	-	-	<0.50	0.50	8011850
Hydroxide (OH)	mg/L	-	-	-	<0.50	0.50	8011850
Anions							
Dissolved Sulphate (SO ₄)	mg/L	-	500	-	2.35	0.50	8015085
Dissolved Chloride (Cl)	mg/L	-	250	-	4.2	0.50	8015084
MISCELLANEOUS							
True Colour	Col. Unit	-	15	-	<5	5	8012837
Nutrients							
Total Ammonia (N)	mg/L	-	-	-	0.12	0.0050	8015178
Total Organic Nitrogen (N)	mg/L	-	-	-	0.141	0.020	8011180
Nitrate plus Nitrite (N)	mg/L	-	-	-	<0.020	0.020	8012000
Total Nitrogen (N)	mg/L	-	-	-	0.260	0.020	8013620
Physical Properties							
Conductivity	uS/cm	-	-	-	49.5	1.0	8011849
pH	pH	-	6.5:8.5	-	7.31	N/A	8011848
Physical Properties							
Total Dissolved Solids	mg/L	-	500	-	41	10	8015065

Turbidity	NTU	-	-	-	0.9	0.1	8017832
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	14.3	3.0	8013254
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50	8013254
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10	8013254
Total Barium (Ba)	ug/L	1000	-	-	4.1	1.0	8013254
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	8013254
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	8013254
Total Boron (B)	ug/L	5000	-	-	<50	50	8013254
Total Cadmium (Cd)	ug/L	5	-	-	0.012	0.010	8013254
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0	8013254
Total Cobalt (Co)	ug/L	-	-	-	<0.50	0.50	8013254
Total Copper (Cu)	ug/L	-	1000	-	3.83	0.20	8013254
Total Iron (Fe)	ug/L	-	300	-	75.7	5.0	8013254
Total Lead (Pb)	ug/L	10	-	-	0.97	0.20	8013254
Total Manganese (Mn)	ug/L	-	50	-	21.8	1.0	8013254
Total Mercury (Hg)	ug/L	1	-	-	<0.050	0.050	8013254
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	8013254
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	8013254
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10	8013254
Total Silicon (Si)	ug/L	-	-	-	1870	100	8013254
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	8013254
Total Strontium (Sr)	ug/L	-	-	-	16.4	1.0	8013254
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	8013254
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	8013254
Total Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	8013254
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10	8013254
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	8013254
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	8013254
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	8013254
Total Calcium (Ca)	mg/L	-	-	-	5.55	0.050	8010941
Total Magnesium (Mg)	mg/L	-	-	-	1.28	0.050	8010941
Total Potassium (K)	mg/L	-	-	-	0.131	0.050	8010941
Total Sodium (Na)	mg/L	-	200	-	1.65	0.050	8010941
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	8010941
MISCELLANEOUS							
Sulphide	mg/L	-	0.05	-	0.0065	0.0050	8012848
	UNITS	MAC	DORNIER	RDL	QC Batch		
Elements							
Total Mercury (Hg)	ug/L	1	<0.010	0.010	8016063		
Parameter							

Iron Bacteria	CFU/mL	-	500	25	8017987
Sulphate reducing bacteria	CFU/mL	-	<200	200	8026505
Microbiological Param.					
Heterotrophic Plate Count	CFU/mL	-	1	1	8016626
Total Coliforms	CFU/100mL	<1	<1	1	8017020
E. coli	CFU/100mL	<1	<1	1	8017020
Parameter					
Langelier Index (@ 4.4C)	N/A		-2.65		8011181
Langelier Index (@ 60C)	N/A		-1.61		8011182
Saturation pH (@ 4.4C)	N/A		9.96		8011181
Saturation pH (@ 60C)	N/A		8.92		8011182