VILLAGE OF LIONS BAY
DRINKING WATER QUALITY ANNUAL REPORT

FY 2015

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INTRODUCTION

INTRODUCTION

This report comprises the 2015 Drinking Water Quality Annual Report prepared by the Village of Lions Bay. It provides pertinent information about the Village's drinking water to support the Village's application for its annual Operating Permit, issued by the Medical Health Officer. The purpose of the report is to provide Village water consumers with drinking water sampling test results for 2015, as well as to present background information on Village-specific issues concerning water supply, treatment, and measures being taken to protect and enhance drinking water quality as per requirements under the *Drinking Water Protection Regulation* and the *Drinking Water Protection Act*.

Although the Village is a member of Metro Vancouver, its water supply is not sourced from the Greater Vancouver Water District (GVWD). The Village of Lions Bay owns and operates its own water supply, treatment, and distribution system, and has the water from its system analyzed for the presence of microbiological pathogens (and other indicator organisms), metals, and chlorine residuals by laboratories approved by the Medical Health Officer.

GENERAL DESCRIPTION

The Village of Lions Bay supplies potable water to its customers via a waterworks system comprised of 2 intakes located on Harvey and Magnesia Creeks, 2 water treatment plants (which provide UV disinfection and chlorination) located downstream from the respective intakes, 5 storage tanks, 14 PRV stations, and 13 kilometers of water mains. A population of approximately 1,348 is served through 591 service connections.

LICENSES

The Village of Lions Bay held 6 water licenses (5 utilized) in 2015, issued by the Ministry of Environment. Table 1 lists the licenses and quantity of water associated with each.

Table 1. Village Water Licenses

License No	Imperial Quantity	Metric Quantity	Stream Name
C059405	10,000,000.00 gal/year	45,460.90000 m3/year	Magnesia Creek
C065267	4,380,000.00 gal/year	19,911.87420 m3/year	Magnesia Creek
C065316	7,300,000.00 gal/year	33,186.45700 m3/year	Magnesia Creek
C042330	18,250,000.00 gal/year	82,966.14250 m3/year	Alberta Creek *
C119916	9,125,000.00 gal/year	41,483.07125 m3/year	Harvey Creek
C119917	54,750,000.00 gal/year	248,898.42750 m3/year	Harvey Creek

*Alberta Creek is not utilized by the Village

In 2015, 437,433.27 m3 of water was supplied to residents from Magnesia and Harvey creeks – representing a significant decrease from the 772,300.85 m3 supplied in 2014.

CONSUMPTION RATES

The Village of Lions Bay is one of a number of municipalities that was dramatically affected by climate change in 2015. Many Village operational and policy changes were enacted during the year in an effort to ensure potable water remained in the system for both residential and firefighting use during drought conditions for a significant portion of the year. The Village's first Outdoor Water Use Bylaw (OWUB) came into effect in 2015, and significant resources were focussed on the careful monitoring, reduction, and reuse of water within the Village, in addition to building on operational programs that were first implemented in mid-to-late 2014 that concentrated on finding and actively ensuring leaks on both public and private property were fixed expediently. In 2015, 29 leaks on private property and 2 leaks on Village property were identified, monitored, and repaired.

Village Staff, Council, Infrastructure Committee members, and resident volunteers organized informational campaigns, sent out information via ePosts, held public information meetings, and put up

signage to inform residents of the new OWUB, and to help the Village ensure water consumption was kept to a minimum, especially during the summer months.

Table 2 provides a month by month comparison with average Village daily consumption rates (USG) and the percentage decrease year over year.

Table 2. Average Daily Consumption Rates 2014 vs 2015

Month	2014 (USG)	2015 (USG)	Percentage decrease
January	536,542	381,273	29%
February	515,735	382,268	26%
March	508,453	391,763	23%
April	540,650	390,755	28%
May	610,391	357,663	41%
June	649,326	401,600	38%
July	711,684	349,890	51%
August	702,637	292,394	58%
September	636,759	254,540	60%
October	503,372	273,092	46%
November	497,769	197,812	60%
December	415,464	175,062	58%

SOURCE WATER

The Village of Lions Bay's watershed areas include Magnesia Creek drainage (421 hectares), Harvey Creek drainage (635 hectares), Alberta Creek drainage (51 hectares), and Rundle Creek drainage (20 hectares). All Village water is drawn from 2 intakes located on Magnesia and Harvey Creeks, and the Village is responsible for water acquisition, supply, treatment, and distribution to its residents.

The Village is systematically working toward a "4-barrier" approach to mitigate source water quality issues that include the potential for waterborne disease, seasonal raw water turbidity fluctuations, and bacterial regrowth in its distribution system. The barriers are as follows: primary (UV) and secondary (chlorine) treatment, water quality monitoring (daily, weekly, and monthly), water main cleaning/flushing (bi-annually), and watershed protection (in progress).

ISSUES

Adequate supply for both residential consumption and fire protection is the primary issue for the Village, as both creek flow levels vary throughout the year. Harvey Creek flow levels are the more volatile of the two, ranging from 1,259.5 gallons per minute (October 2) to 219.9 gallons per minute (August 21) entering the treatment plant in 2015. Conversely, Magnesia Creek flows appear more stable year round; however, Village crews manually limit the amount of water taken from Magnesia due to operational considerations downstream. As such, there are few opportunities to measure the volume of water that would enter the treatment plant if crews didn't intervene. On the 4 occasions crews allowed the full flow of available water through the treatment plant at Magnesia in 2015, high flows were 1,068.2 gallons per minute (January 21) and 1,141.2 gallons per minute (April 14) and low flows were 716.6 gallons per minute (July 8) and 405.3 gallons per minute (July 9).

CHALLENGES

The Village draws all of its water from surface sources that are subject to fluctuating turbidity levels, and are designated as unstable terrain upslope. This fluctuation in raw water turbidity presents many challenges for the treatment of the water to ensure that turbidity and chlorine residuals throughout the entire supply system are not adversely affected. The water treatment plants are monitored remotely via a SCADA system, and are checked daily (work days) by crews; each intake is checked at least weekly, unless safe work procedures prohibit entry to the intake road.

The watershed areas for the intakes are contained by steep, rocky, unstable terrain upslope on one side, and steep flowing creeks subject to debris torrents on the other. Access to the intakes is via narrow gravel roads which are subject to rock fall and tree throw hazards from above. Strict safe working guidelines for unstable terrain upslope prohibit crews from entering the watershed areas and water intakes if rainfall parameters are exceeded. This prevents crews from being able to investigate decreased

water flow or increased raw water turbidity levels during periods of heavy rain – the exact times most likely to cause either event.

Drought conditions created further challenges for the Village in 2015, noted on page 2 of this document.

TESTING & RESULTS

The Village tests raw source water for turbidity from both creeks daily (work days). More extensive testing is undertaken bi-annually for general water chemistry, hardness, metals, and other contaminants including organic compounds. Table 3 presents the Village's raw water turbidity test results for 2015.

Table 3. 2015 Raw Water Turbidity Results

	Harvey Creek	Magnesia Creek
Count	248	236
Maximum result (NTU)	7.04	18.1
Minimum result (NTU)	0.08	0.14
Average (NTU)	0.68	0.46
Number >5 NTU	1	2
Percentage > 5 NTU	0.40%	0.85%

Section 3.3 of the 2003 Guidelines for Canadian Drinking Water Quality Supporting Documentation titled "Turbidity, Criteria for Exclusion of Filtration in Waterworks Systems" contains a provision for exemption from its recommendation of filtration for all surface water supplies if the system's average daily source water turbidity levels measured immediately prior to where disinfection is applied, are around 1.0 NTU but do not exceed 5.0 NTU for more than 2 days in a 12-month period. As indicated in Table 1, raw water turbidity exceeded 5 NTUs from Harvey Creek once during the year, and exceeded 5 NTUs twice from Magnesia.

Elevated turbidity levels caused by debris slides and stream scouring upslope of the Village's intakes has resulted in boil water advisories issued by Vancouver Coastal Health in previous years. No boil water advisories were issued for 2015.

Appendix B contains all source raw water test results for 2015. APPENDIX E contains copies of all boil water advisories issued for 2015 (none).

The Village further tests twice a year for metals and general chemistry of its treated and raw water, including hardness, pH, total suspended solids, turbidity, alkalinity, organic carbon, biochemical oxygen demand (BOD), and trihalomethanes. Appendix D contains the 2015 raw water metals and general chemistry test results.

WATER TREATMENT

The Village of Lions bay does not have a filtration system. Raw water from Harvey and Magnesia Creek intakes is treated via a 2-stage process within their respective treatment plants – the primary stage is disinfection utilizing ultraviolet radiation (UV), and the secondary stage is chlorine injection. This 2-stage process is required because although UV is very effective at inactivating Giardia and Cryptosporidium, it does not introduce any disinfectant residual to the water, rendering it incapable of protecting the distribution system against contamination. Therefore, chlorination is used as the secondary stage of disinfection in order to establish a residual throughout the system.

The Village tests samples which are taken daily (workdays) for turbidity and chlorine residuals from 6 sampling stations located in the middle and ends of the distribution system, in addition to those taken from the 2 reservoir tanks located at the treatment plants. Once a week, further samples are taken from the 2 reservoir tanks and sent to a Vancouver Coastal Health approved testing laboratory and tested for E. coli and total coliforms.

The Drinking Water Protection Regulation's water quality standards for potable water indicate that there can be no detectable E. coli per 100ml; and that total coliform bacteria samples (for more than 1 sample taken per month) must have at least 90% of samples with no detectable total coliform bacteria per 100ml and no 1 sample can have more than 10 total coliform bacteria per 100ml. No test samples taken weekly from the Village's 2 reservoir tanks exceeded these parameters in 2015.

CHALLENGES & TURBIDITY EVENT RESPONSE

The challenges outlined in the Source Water Section of this report also impact the Village's water treatment plants. The performance of the primary UV treatment is affected by increased turbidity because water that that has higher turbidity absorbs a significant amount of UV light, and will therefore have a correspondingly low UV transmittance (UVT) rate. The UV system automatically increases lamp intensity to counter the lower UVT. If turbidity exceeds 5 NTUs entering the plants, the UV system will send an alarm through SCADA to notify the Water Operator, and the UV reactor shuts down. During turbidity events in excess of 5 NTU, microbiological sampling and testing is increased at all sampling locations; chlorine residual sampling and testing is likewise increased; and the Village will contact Vancouver Coastal Heath, who may issue a Boil Water Advisory. Appendix F contains the Village's Emergency Response Plan.

In times of severe weather, the Water Operator increases the frequency of testing and adjusts chlorine injection rates to compensate for any fluctuating chlorine demand caused by varying turbidity levels. The generally agreed minimum acceptable residual chlorine level for treated drinking water at all points in the distribution system is 0.2ppm; and the maximum is 4ppm.

TESTING & RESULTS

Table 4 presents an overview of the Village's treated water turbidity results at Harvey and Magnesia reservoir storage tanks located directly downstream of their respective treatment plants. Table 5 presents an overview of the chlorine residuals at the same reservoir storage tanks. Appendix C contains 3-year comparison graphs of turbidity and chlorine residual test results.

Table 4. 2015 Village Treated Water Turbidity at Reservoir Tanks

	Harvey reservoir tank	Magnesia reservoir tank
Count	251	251
Maximum NTU	8.1	3.61
Minimum NTU	0.08	0.12
Average NTU	0.57	0.60
Number >5 NTU	1	0
Percentage >5 NTU	0.40%	0%

Table 5. 2015 Village Chlorine Residuals at Reservoir Tanks

	Harvey reservoir tank	Magnesia reservoir tank
Count	251	251
Maximum ppm	1.45	2.20
Minimum ppm	0.52	0.30
Average ppm	0.92	0.90
Number <0.2 ppm	0	0
Percentage <0.2 ppm	0%	0%

DISTRIBUTION SYSTEM

The Village of Lions Bay's distribution system serves a population of approximately 1,348 residents accounting for essentially 100% of the Village's annual water consumption. As the Village is located on a mountainside, water pressure within the Village's 13km of water mains is controlled by 14 PRV stations; 7 of which are located on the Harvey Creek supplied system, and 7 on the Magnesia Creek supplied system. These mains are constructed primarily of ductile iron (DI), however a variety of materials, including asbestos cement (AC), cast iron (CI), and PVC also exist within the Village. The oldest pipes in the Village's distribution system were installed between 1970 and 1971. Village Public Works crews are able to seamlessly switch the supply source of the water in the distribution system in the event that one source is compromised or offline, although water pressure is significantly reduced for residents of upper Sunset Drive if the Village is being supplied solely by Harvey Creek.

There are 8 storage tanks located on the system, 5 of which were in use in the potable water system in 2015. These 5 were Harvey reservoir tank (480,380 USG), Magnesia reservoir tank (120,095 USG), Phase 4 tank (24,019 USG), Phase 5 tank (30,024 USG), and the Highway tank (25,220 USG). In 2015, both Brunswick tank (42,000 USG) and Oceanview tank (100,000 USG) were filled with water to act as emergency fire reserves. These tanks do not contain potable water, and are isolated from entering the Village's potable water system.

In 2015, 437,433.27 m3 of water was supplied to the Village from Magnesia and Harvey creeks through 591 service connections. This equates to a rough average of 320,676 US gallons consumed by the Village per day.

TESTING & RESULTS

The Village tests samples which are taken daily (workdays) for turbidity and chlorine residuals from 6 sampling stations located in the middle and ends of the distribution system, in addition to those taken from the 2 reservoir tanks located at the treatment plants, to ensure all meet the generally accepted minimum residual of 0.2ppm for chlorine residual and are less than 5 NTU for turbidity. Once a week, further samples are sent to a Vancouver Coastal Health approved testing laboratory and tested for E. coli and total coliforms.

The Drinking Water Protection Regulation's water quality standards for potable water indicate that there can be no detectable E. coli per 100ml; and that total coliform bacteria samples (for more than 1 sample taken per month) must have at least 90% of samples with no detectable total coliform bacteria per 100ml and no 1 sample can have more than 10 total coliform bacteria per 100ml. No test sample results taken weekly from the Village's distribution and storage system exceeded these parameters in 2015.

Table 6 presents an overview of the Village's treated water turbidity results on the Harvey system and Table 7 presents the same overview on the Magnesia system. Tables 8 and 9 present an overview of the

Village's chlorine residual results on the Harvey and Magnesia distribution systems respectively. Appendix A lists all sample site locations, the tests performed, and the frequency of testing at each. Appendix B contains all Village treated water test results for 2015.

Table 6. 2015 Turbidity Results in Harvey Distribution System

	PRV-3	CAFÉ	LIONS BAY AVE	KELVIN GROVE
Count	251	251	251	251
Maximum NTU	3.10	1.54	1.25	4.79
Minimum NTU	0.09	0.11	0.08	0.09
Average NTU	0.36	0.32	0.23	0.34
Number >5 NTU	0	0	0	0
Percentage >5 NTU	0%	0%	0%	0%

Table 7. 2015 Turbidity Results in Magnesia Distribution System

	PRV-5	BRUNSWICK BEACH
Count	251	251
Maximum NTU	3.39	2.21
Minimum NTU	0.11	0.10
Average NTU	0.37	0.37
Number >5 NTU	0	0
Percentage >5 NTU	0%	0%

As indicated in Tables 5 and 6 above, the Village's treated water turbidity on both distribution systems was on average less than ½ of 1 NTU; and was not in excess of 5 NTU in any samples taken in 2015.

Table 8. 2015 Chlorine Residual Results in Harvey Distribution System

	PRV-3	CAFÉ	LIONS BAY AVE	KELVIN GROVE
Count	251	251	251	251
Maximum ppm	1.66	1.42	1.32	1.43
Minimum ppm	0.48	0.23	0.22	0.21
Average ppm	0.90	0.71	0.72	0.59
Number <0.2 ppm	0	0	0	0
Percentage <0.2 ppm	0%	0%	0%	0%

Table 9. 2015 Chlorine Residual Results in Magnesia Distribution System

	PRV-5	BRUNSWICK BEACH
Count	251	251
Maximum ppm	1.47	1.21
Minimum ppm	0.40	0.2
Average ppm	0.86	0.60
Number <0.2 ppm	0	0
Percentage <0.2 ppm	0%	0%

As indicated in Tables 8 and 9 above, the Village's treated water chlorine residuals on both distribution systems was on average less than 1 ppm; and was not below 0.2 ppm in any samples taken in 2015. As indicated in the Water Treatment Section of this report, the Water Operator adjusts chlorine injection rates to compensate for any fluctuating chlorine demand caused by varying turbidity levels, and must ensure that all points in the system show minimum residuals. The generally agreed minimum acceptable residual chlorine level for treated drinking water at all points in the distribution system is 0.2ppm; the maximum is 4ppm.

Appendix C contains 3-year comparison graphs of turbidity and chlorine residual test results.

The Village further tests 10 locations twice a year for metals and general chemistry of its treated and raw water, including hardness, pH, total suspended solids, turbidity, alkalinity, organic carbon, biochemical oxygen demand (BOD), and trihalomethanes. First draw test results from samples taken in March for lead exceeded the limits set in the Guidelines for Canadian Drinking Water Quality of a maximum acceptable concentration of 0.010 mg/L measured at the tap in 2 locations – at the Works Yard and at the elementary school. Given that lead test results have been consistently low in the distribution system, the most likely sources of lead found in these locations would be from lead in the private-side service lines, lead solder in plumbing, or brass fittings such as faucets. Both locations tested below the acceptable limit after flushing. In September, the Works Yard, Lions Bay Café, and Community Centre location's first draw tests were above the acceptable limit; they again tested below the acceptable limit after flushing. Appendix D contains metals and general chemistry test results for 2015.

WORK PROGRAM - 2015

The Village's Public Works Department performed Village-wide hard water main flushing in April and October of 2015. A series of projects were also undertaken by Village crews to increase overall system resilience and improve the ability to shift portions of the Village from one supply to the other. These projects included the installation of a valve at Phase 5 tank to enable it to be filled from either supply (this tank previously had to be taken offline if Magnesia was supplying all of the Village's water) and the installation of a new PRV across from the Lions Bay School on Bayview Road.

DISTRIBUTION SYSTEM

Projects undertaken to address drought conditions included the installation of two 5,000 USG raw water storage tanks upstream of the Harvey Creek water treatment plant to provide a small buffer of raw water when creek flows became dangerously low; repurposing two offline water storage tanks (Oceanview 100,000 USG and Brunswick 42,000 USG) for emergency fire supply to enable Lions Bay Fire Rescue crews to fight fires for a period of time in the event that the water availability in the mains is exhausted (these tanks are NOT connected to the potable water supply); and the purchase of various water tanks (one truck-mounted) and rain barrels to enable crews to capture water that must flow through the Village's water system to meet regulatory requirements for testing, and store the water captured for future re-use. Crews utilized this system to water Village-owned planters, and to provide recycled water via filling on-site rain barrels located at the Native Plant Garden and the Community Garden at Kelvin Grove, as opposed to potable water being taken from the system.

No capital water main replacement work was endorsed by Council for scheduling for 2015, due in large part to the Village's commissioning of an overall Infrastructure Master Plan (IMP), of which water infrastructure was a key component. AECOM was the successful proponent for the IMP, which is currently 4 months behind schedule in delivery; however, it is anticipated that this plan will identify and recommend future required capital improvements and policies, ranked by priority, to ensure that the Village's water system as a whole is efficiently managed and responsibly operated.

The Village applied for grant funding for improvements to both Harvey and Magnesia water intakes via the New Building Canada Fund: Small Communities Fund (NBCF-SCF) on February 13, 2015, and received confirmation of funding on July 29, 2015. These improvements included the following projects: a new infiltration intake design to be retrofitted to the existing Magnesia and Harvey Creek intakes to mitigate the impact of sediment debris that enters the system and reduces the amount of time staff must spend at the intake itself to manually clean out debris; safety improvements on Harvey Creek and Magnesia Creek access roads; installation of a PRV upstream of the Magnesia water treatment plant to mitigate infrastructure and safety concerns for staff working on or near this main and in the treatment plant; and the installation of a bypass at the Magnesia water treatment plant to ensure that regular maintenance or emergency work to the water plant can be undertaken without shutting down the entire supply system. As at the date of this report, the PRV and bypass works are complete. The infiltration galleries could not be installed in 2015, due to the drought conditions that required all streamflow entering both intakes to be diverted to the Village's water system in the summer months, and high creek flows within the remaining work window approved by the Ministry of Forests, Lands, and Natural Resource Operations (FLNRO).

Phase 3 of the emergency work (restoration of the rock stack wall) arising from the debris slide that occurred in December 2014 at the Magnesia Creek intake was completed in 2015. The Village was notified of Emergency Management BC (EMBC)'s acceptance of its application for Disaster Financial Assistance (DFA) funding for this work in June of 2015; work began in July and was completed in October 2015.

DISTRIBUTION SYSTEM

WORK PROGRAM - 2016

The Village's Public Works Department will perform Village-wide hard water main flushing in April and October of 2016. Should drought conditions again be noted in 2016, the same water conservation and reuse measures noted in 2015's work program will again be implemented. NBCF works noted as commencing in 2015 will be completed in 2016. Considerable scaling and debris hauling from the Harvey Creek intake access road due to a considerable debris slide in early 2016 will also be completed.

OPERATOR TRAINING

The BC Drinking Water Protection Regulation outlines water system operator qualification standards. Water systems are classified by the Environmental Operators Certification Program (EOCP), based on the population served and the complexity of the system. The chief "operator(s)" of the system must, in turn, be certified by the EOCP at the matching classification level of the system. The Village's water treatment and distribution system has been evaluated as a "Level 2" classification. The Village currently has one water distribution system operator (Alberto Urrutia) with Level 2 certification from the EOCP.

The Village recognizes the inherent value that operator education training and education provides; and ensures that its operator participates annually in a variety of product orientation, workshops, and technical courses that become available annually. In 2015, the course undertaken to maintain the year's mandatory Continuing Education Units (CEUs) was Bucket Truck Operation. In early 2016, two more Village Public Works employees will be undertaking Water Distribution 1 through BCWWA.

Appendices H and I respectively contain the Village's EOCP water system facility classification and operator certification. The Village will apply for EOCP reclassification of the Village's water treatment facilities in 2016.

APPENDIX A: WATER QUALITY SAMPLING SITE LOCATIONS AND TEST FREQUENCY

SAMPLE STATIONS AND TESTS

SAMPLE STATIONS AND TESTS

Tests	Location	Source	Frequency
Chlorine Residual & Turbidity (Treated Water)	PRV-3	Harvey Creek	Daily (workdays)
	Harvey Reservoir Tank	Harvey Creek	Daily (workdays
	Lions Bay Café	Harvey Creek	Daily (workdays)
	Lions Bay Avenue	Harvey Creek	Daily (workdays
	Kelvin Grove	Harvey Creek	Daily (workdays)
	PRV-5	Magnesia Creek	Daily (workdays
	Magnesia Reservoir Tank	Magnesia Creek	Daily (workdays)
	Brunswick Beach	Magnesia Creek	Daily (workdays)

Test	Location	Source	Frequency
Raw Water Turbidity	Harvey Intake	Harvey Creek	Daily (workdays)
	Magnesia Intake	Magnesia Creek	Daily (workdays

Tests	Location	Source	Frequency
Treated Water Bacteriological (E. coli & total coliforms)	PRV-3	Harvey Creek	weekly
	Harvey Reservoir Tank	Harvey Creek	weekly
	Lions Bay Café	Harvey Creek	weekly
	Lions Bay Avenue	Harvey Creek	weekly
	Kelvin Grove	Harvey Creek	weekly
	PRV-5	Magnesia Creek	weekly
	Magnesia Reservoir Tank	Magnesia Creek	weekly
	Brunswick Beach	Magnesia Creek	weekly

Test	Location	Source	Frequency
Raw Water Turbidity	Harvey Intake	Harvey Creek	Daily (workdays)
	Magnesia Intake	Magnesia Creek	Daily (workdays

SAMPLE STATIONS AND TESTS

Tests	Location	Source	Frequency
Treated Water Metals & Chemical Composition	PRV-3	Harvey Creek	2x annually
	Harvey Reservoir Tank	Harvey Creek	2x annually
	Lions Bay Café	Harvey Creek	2x annually
	Lions Bay Avenue	Harvey Creek	2x annually
	Kelvin Grove	Harvey Creek	2x annually
	Community Centre	Harvey Creek	2x annually
	Magnesia Reservoir Tank	Magnesia Creek	2x annually
	Brunswick Beach	Magnesia Creek	2x annually
	Elementary School	Magnesia Creek	2x annually
	PRV-5	Magnesia Creek	2x annually

Test	Location	Source	Frequency
Raw Water Metals & Chemical Composition	Harvey Intake	Harvey Creek	2x annually
	Magnesia Intake	Magnesia Creek	2x annually

APPENDIX B: SOURCE & DISTRIBUTION WATER TESTING RESULTS

The Municipality of the Village of Lions Bay

	RAW WATER JANUARY 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2			0.11			N/A
3						
4						
5			0.25			N/A
6			0.77			N/A
7			0.45			N/A
8			0.32			N/A
9			0.50			N/A
10						
11						
12			0.80			N/A
13			0.42			N/A
14			0.41			N/A
15			0.42			N/A
16			1.20			0.54
17						
18						
19			0.87			N/A
20			0.50			N/A
21			0.43			1.36
22			0.32			0.97
23			1.23			0.40
24						
25						
26			1.02			0.88
27			0.56			0.46
28			0.82			0.36
29			0.43			1.06
30			0.26			0.52
31						

The Municipality of the Village of Lions Bay

	RAW WATER FEBRUARY 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2			0.19			0.22
3			0.58			0.22
4			0.87			0.37
5			0.26			1.41
6			1.46			4.85
7						
8						
9						
10			1.32			0.62
11			0.49			0.75
12			0.48			0.45
13			0.40			0.52
14						
15						
16			1.13			1.06
17			0.57			0.24
18			0.96			0.30
19			0.86			0.26
20			1.03			0.57
21						
22						
23			1.29			0.29
24			0.50			0.36
25			0.38			0.29
26			0.68			0.16
27			0.70			0.19
28						

The Municipality of the Village of Lions Bay

	RAW WATER MARCH 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2			1.66			0.20
3			0.96			0.34
4			0.61			0.18
5			0.51			0.15
6			1.00			0.17
7						
8						
9			0.90			0.16
10			0.38			0.17
11			0.62			0.18
12			0.41			0.28
13			0.22			0.40
14						
15						
16			0.67			0.28
17			0.40			0.35
18			0.44			0.15
19			0.88			0.24
20			0.65			0.50
21						
22						
23			0.60			1.42
24			0.41			0.49
25			0.75			0.47
26			0.35			0.75
27			0.45			0.53
28						
29						
30			0.99			1.50
31			0.50			1.08

The Municipality of the Village of Lions Bay

	RAW WATER APRIL 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.55			0.43
2			0.38			0.29
3						
4			0.56			0.35
5						
6						
7			0.23			0.31
8			0.38			0.17
9			0.47			0.18
10			0.53			0.18
11						
12						
13			0.20			0.93
14			0.52			0.23
15			0.37			0.17
16			0.44			0.22
17			0.33			0.20
18						
19						
20			0.93			0.20
21			0.23			0.26
22			0.39			0.23
23			0.40			0.20
24			0.62			0.21
25						
26						
27			0.67			0.42
28			0.51			0.67
29			0.80			0.28
30			0.53			0.26

The Municipality of the Village of Lions Bay

	RAW WATER MAY 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.31			0.43
2						
3						
4			0.21			0.19
5			0.52			0.21
6			0.50			0.28
7			0.41			0.28
8			0.66			0.17
9						
10						
11			1.02			0.19
12			0.45			0.25
13			0.33			0.28
14			0.98			0.19
15			0.57			0.28
16						
17						
18						
19			1.40			0.19
20			0.52			0.19
21			0.54			0.21
22			0.56			0.52
23						
24						
25			0.26			0.18
26			0.46			0.64
27			0.48			0.60
28			0.54			0.21
29			0.53			0.24
30						
31						

The Municipality of the Village of Lions Bay

	RAW WATER JUNE 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.14			0.17
2			0.47			0.43
3			0.51			0.23
4			0.46			0.50
5			0.58			0.72
6						
7						
8			1.21			0.20
9			0.56			0.26
10			0.74			0.19
11			0.46			0.23
12			0.33			0.17
13						
14						
15			1.46			0.18
16			0.58			0.26
17			0.51			0.19
18			0.57			0.23
19			0.58			0.23
20						
21						
22			0.11			0.18
23			0.10			0.17
24			0.10			0.27
25			0.09			0.21
26			0.08			0.17
27						
28						
29			0.13			0.15
30			0.14			0.15

The Municipality of the Village of Lions Bay

	RAW WATER JULY 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2			0.97			0.28
3			0.57			0.18
4						
5						
6			0.20			1.42
7			0.51			0.22
8			0.57			0.31
9			0.75			0.21
10			0.75			0.17
11						
12						
13			1.92			0.18
14			0.85			0.15
15			0.85			0.26
16			0.73			0.22
17			0.16			0.20
18						
19						
20			1.29			0.19
21			0.15			0.14
22			0.92			0.15
23			0.73			0.20
24			1.05			0.64
25						
26						
27			0.44			0.20
28			0.54			0.30
29			1.06			0.52
30			0.70			0.21
31			0.60			0.24

The Municipality of the Village of Lions Bay

	RAW WATER AUGUST 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2						
3						
4			0.14			0.16
5			0.16			0.32
6			0.88			0.21
7			0.16			0.17
8						
9						
10			2.28			0.23
11			0.86			0.22
12			0.86			0.21
13			0.93			0.32
14			0.39			0.18
15						
16						
17			3.23			0.23
18			1.06			0.41
19			1.16			0.18
20			0.78			0.19
21			1.08			0.43
22						
23						
24			0.35			0.22
25			0.11			0.14
26			0.15			0.15
27			1.44			0.21
28			1.45			0.49
29						
30						
31			4.85			1.62

The Municipality of the Village of Lions Bay

	RAW WATER SEPTEMBER 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.79			2.06
2			0.73			0.54
3			0.75			0.53
4			0.61			0.36
5						
6						
7						
8			0.37			0.29
9			1.01			0.31
10			1.04			0.23
11			0.79			0.56
12						
13						
14			0.23			0.19
15			0.36			0.24
16			0.10			0.19
17			0.85			0.23
18			1.28			0.29
19						
20						
21			0.93			0.45
22			0.39			0.61
23			0.57			0.26
24			1.12			0.45
25			1.52			0.84
26						
27						
28			0.73			0.22
29			0.66			0.18
30			0.48			0.23

The Municipality of the Village of Lions Bay

	RAW WATER OCTOBER 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.70			0.19
2			0.78			0.22
3						
4						
5			0.22			0.23
6			0.61			0.44
7			0.61			0.25
8			0.83			0.51
9			0.84			0.23
10						
11						
12						
13			2.01			0.23
14			0.36			0.24
15			0.60			0.24
16			0.61			0.24
17						
18						
19			1.67			0.21
20			0.66			0.21
21			0.64			0.21
22			0.77			0.25
23			0.30			0.31
24						
25						
26			2.06			0.30
27			0.46			0.16
28			1.04			1.19
29			0.87			0.54
30			0.53			0.95
31						

The Municipality of the Village of Lions Bay

	RAW WATER NOVEMBER 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1						
2			0.31			0.35
3			0.53			0.33
4			0.26			0.28
5			0.78			0.35
6			0.58			0.20
7						
8						
9			0.58			0.98
10			0.76			1.17
11						
12			0.61			0.28
13			0.73			5.13
14						
15						
16			0.59			0.38
17			0.41			0.44
18			0.59			0.28
19			0.52			0.49
20			0.53			0.31
21						
22						
23			0.88			0.23
24			0.44			0.21
25			0.52			0.26
26			0.39			0.26
27			0.33			0.25
28						
29						
30			1.20			0.23

The Municipality of the Village of Lions Bay

	RAW WATER DECEMBER 2015					
	HARVEY CREEK			MAGNESIA CREEK		
DATE	Time	24 Hr Flow	NTU	Time	24 Hr Flow	NTU
1			0.59			0.18
2			0.95			0.29
3			7.04			1.62
4			0.76			18.10
5						
6						
7			0.77			1.20
8			1.31			0.87
9			0.67			1.25
10			1.38			0.90
11			0.26			2.71
12						
13						
14			0.16			4.27
15			0.16			3.88
16			0.41			0.55
17			0.54			0.62
18			1.24			1.04
19						
20						
21			0.75			0.32
22			0.31			0.35
23			0.30			0.41
24			0.77			0.38
25						
26			1.29			0.31
27						
28						
29						
30						
31						

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR JANUARY 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2	0.13	1.45	0.17	1.66	0.17	1.42	0.14	1.22	0.14	1.10	N/A	0.44	0.11	1.47	0.12	0.95
3																
4																
5	0.25	1.40	0.26	1.37	0.21	1.31	0.14	1.32	0.23	1.43	0.84	0.45	0.29	1.38	0.15	1.18
6	1.20	1.20	0.37	1.19	0.32	1.07	0.16	1.27	0.34	1.07	0.91	0.50	0.26	1.21	0.23	1.21
7	0.62	1.09	0.50	1.15	0.73	0.96	0.23	1.01	0.28	0.83	0.88	0.45	0.64	1.00	0.29	0.99
8	0.41	1.15	0.38	1.17	0.42	1.01	0.31	0.88	0.50	0.97	0.92	0.45	0.32	1.12	0.24	0.79
9	1.07	1.24	0.67	1.20	0.50	1.05	0.42	0.92	0.34	0.92	1.17	0.40	0.39	1.13	0.36	0.72
10																
11																
12	0.43	1.24	0.34	1.19	0.27	1.09	0.20	0.99	0.19	0.96	0.84	0.34	0.20	1.16	0.17	0.88
13	0.48	1.25	0.54	1.28	0.28	1.12	0.15	1.05	0.26	0.88	0.86	0.30	0.25	1.15	0.16	0.92
14	0.26	1.30	0.33	1.22	0.43	1.17	0.32	1.03	0.26	1.15	0.93	0.33	1.17	1.21	0.46	0.90
15	1.46	1.32	1.03	1.28	0.54	1.26	0.37	1.11	0.66	1.02	0.80	0.34	0.64	1.27	0.32	0.90
16	2.67	1.32	1.34	1.22	0.61	1.15	0.42	1.11	0.73	1.17	0.65	2.13	0.47	1.29	0.46	0.94
17																
18																
19	0.77	1.01	0.85	1.10	0.78	0.96	0.30	0.92	0.76	0.75	2.34	1.65	0.65	0.99	0.32	0.73
20	0.68	1.11	0.66	1.10	0.49	0.95	0.50	0.80	0.46	0.69	N/A	N/A	0.42	1.05	0.30	0.74
21	1.11	1.24	0.62	1.22	0.54	1.08	0.36	0.85	0.48	1.01	2.54	2.00	0.42	1.20	0.36	0.81
22	1.45	1.37	1.40	1.35	1.08	1.17	0.61	0.99	0.77	1.02	0.82	1.50	0.43	1.25	0.28	0.76
23	2.43	1.33	1.43	1.33	0.68	1.19	0.27	1.07	0.83	1.06	0.53	1.10	0.49	1.17	0.31	0.82
24																
25																
26	0.99	1.09	0.44	1.22	0.48	1.07	0.33	0.82	0.79	0.78	1.70	0.92	0.58	1.01	0.34	0.74
27	1.55	1.19	1.15	1.16	1.03	1.05	0.62	0.88	0.49	0.85	1.49	0.96	0.58	1.01	1.28	0.67
28	1.90	1.25	1.20	1.30	0.34	1.04	0.25	0.94	0.86	1.02	1.05	1.07	0.30	1.08	1.01	0.63
29	1.31	1.23	0.74	1.28	0.70	1.09	0.22	1.06	0.59	1.01	1.62	1.13	0.28	1.15	0.73	0.58
30	0.91	1.29	0.92	1.54	0.67	1.21	0.55	1.11	0.38	1.04	0.92	1.23	0.45	1.25	0.81	0.62
31																

The Municipality of the Village of Lions Bay

	TREATED WATER FOR FEBRUARY 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
DATE	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2	0.39	1.32	0.22	1.32	0.24	1.28	0.15	1.23	0.31	1.22	0.40	1.21	0.32	1.17	0.36	1.06
3	1.03	1.08	0.26	1.12	0.24	1.04	0.14	1.15	0.56	1.12	0.31	1.10	0.29	1.09	0.56	1.06
4	1.14	0.96	0.16	1.04	0.29	0.92	0.12	1.06	0.47	0.92	0.78	1.10	0.31	1.02	0.32	1.08
5	0.70	0.85	0.76	0.87	0.27	0.81	0.22	0.89	0.89	0.79	0.36	1.00	0.24	0.95	0.37	0.95
6	3.07	0.62	1.98	0.67	1.37	0.57	0.38	0.77	2.00	0.64	1.77	0.78	1.49	0.72	0.44	0.87
7																
8																
9																
10	2.88	1.02	0.65	0.98	0.46	0.81	0.40	0.67	0.59	0.73	1.44	0.39	0.42	0.88	1.66	0.22
11	0.89	1.00	1.11	1.08	0.54	0.98	0.45	0.71	1.03	0.77	1.58	0.35	0.48	0.98	1.47	0.21
12	0.94	1.11	1.28	1.13	0.67	1.10	0.55	0.79	0.38	0.93	1.50	0.69	0.47	1.08	1.07	0.64
13	1.69	1.21	0.76	1.19	0.41	1.07	0.62	0.91	0.64	1.05	0.88	1.36	0.71	1.16	0.38	0.64
14																
15																
16	0.48	1.27	0.26	1.25	0.32	1.14	0.18	1.04	0.43	1.10	0.46	1.15	0.18	1.17	0.26	0.81
17	0.57	1.17	0.64	1.16	0.47	0.99	0.26	1.09	0.22	1.06	0.37	1.08	0.31	0.98	0.22	0.91
18	0.87	1.05	0.46	1.01	0.31	0.91	0.19	0.98	0.39	1.01	0.45	0.93	0.39	0.89	0.42	0.88
19	1.89	0.99	0.83	0.97	0.62	0.84	0.34	0.90	0.69	0.88	0.27	0.98	0.41	0.84	0.59	0.84
20	1.80	0.92	0.61	0.94	0.53	0.82	0.29	0.84	0.35	0.78	0.43	0.87	0.36	0.80	0.29	0.76
21																
22																
23	0.43	0.94	0.16	0.82	0.14	0.72	0.13	0.72	0.26	0.58	0.23	0.84	0.21	0.78	0.23	0.63
24	1.49	0.80	0.14	0.79	0.24	0.69	0.16	0.68	0.20	0.66	0.22	0.91	0.22	0.82	0.24	0.57
25	0.36	0.77	0.33	0.76	0.22	0.67	0.28	0.67	0.21	0.61	0.27	0.89	0.18	0.89	0.27	0.59
26	0.54	0.83	0.24	0.86	0.24	0.75	0.12	0.64	0.31	0.62	0.26	0.93	0.26	0.86	0.21	0.70
27	0.25	0.88	0.24	0.90	0.28	0.69	0.38	0.70	0.53	0.66	0.20	0.95	0.17	0.86	0.32	0.68
28																

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR MARCH 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2	0.19	0.91	0.26	0.90	0.15	0.78	0.10	0.71	0.21	0.72	0.23	0.91	0.16	0.89	0.21	0.67
3	1.24	0.94	0.68	0.97	0.15	0.83	0.14	0.76	0.13	0.69	0.42	0.88	0.22	0.85	0.37	0.69
4	0.34	0.90	0.17	0.88	0.19	0.81	0.11	0.78	0.15	0.80	0.28	0.87	0.47	0.85	0.18	0.62
5	0.24	0.89	0.32	0.85	0.26	0.79	0.11	0.74	0.19	0.88	0.29	0.89	0.35	0.78	0.20	0.69
6	2.24	0.90	0.15	0.86	0.22	0.73	0.12	0.73	0.16	0.79	0.50	0.86	0.20	0.83	0.17	0.71
7																
8																
9	0.19	0.74	0.18	0.80	0.23	0.72	0.10	0.69	0.38	0.74	0.30	0.88	0.22	0.87	0.17	0.69
10	0.38	0.83	0.15	0.84	0.15	0.75	0.12	0.72	0.24	0.84	0.20	0.88	0.22	0.86	0.20	0.70
11	0.73	0.84	0.16	0.86	0.30	0.79	0.17	0.73	0.62	0.67	0.19	0.91	0.21	0.85	0.32	0.69
12	0.44	0.78	0.32	0.81	0.26	0.64	0.14	0.65	0.20	0.70	0.20	0.84	0.27	0.80	0.35	0.65
13	0.27	0.75	0.25	0.73	0.30	0.58	0.24	0.59	0.24	0.57	0.26	0.78	0.31	0.75	0.24	0.64
14																
15																
16	0.38	0.68	0.35	0.73	0.27	0.54	0.23	0.41	0.18	0.31	0.47	0.73	0.33	0.64	0.25	0.52
17	0.25	0.81	0.20	0.80	0.26	0.68	0.21	0.57	0.19	0.41	0.47	0.70	0.31	0.67	0.37	0.40
18	0.23	0.84	0.20	0.89	0.23	0.71	0.24	0.68	0.17	0.33	0.58	0.79	0.26	0.77	0.28	0.38
19	0.93	0.93	0.27	0.94	0.75	0.74	0.27	0.76	0.23	0.44	0.22	0.88	0.31	0.83	0.32	0.32
20	0.36	0.76	0.30	0.76	0.22	0.69	0.15	0.75	0.36	0.49	0.36	0.96	0.30	0.86	0.26	0.61
21																
22																
23	0.54	0.81	0.69	0.83	0.57	0.57	0.53	0.42	0.21	0.27	3.01	0.42	0.59	0.63	1.49	0.32
24	1.10	0.93	0.57	0.88	0.44	0.75	0.37	0.58	0.37	0.34	3.01	0.31	0.42	0.76	0.46	0.20
25	0.76	0.95	0.71	0.93	0.32	0.77	0.36	0.68	0.36	0.36	1.08	0.74	0.40	0.83	0.32	0.30
26	1.99	0.85	1.31	0.90	0.55	0.75	0.31	0.74	0.49	0.42	1.27	0.80	0.56	0.79	0.34	0.37
27	0.75	1.20	1.12	1.24	0.47	1.05	0.22	0.85	0.58	0.34	1.05	0.92	0.28	0.98	0.20	0.41
28																
29																
30	0.73	0.74	0.58	0.78	0.45	0.63	0.20	0.77	0.34	0.53	1.02	0.95	0.66	0.71	0.16	0.68
31	0.84	0.82	0.69	0.86	0.51	0.65	0.36	0.58	0.31	0.28	1.15	0.81	0.36	0.71	0.18	0.60

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR APRIL 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.72	1.09	0.61	1.07	0.39	0.84	0.28	0.75	0.58	0.31	1.07	0.69	0.32	1.07	0.32	0.27
2	0.54	1.11	0.31	1.15	0.28	1.03	0.20	0.81	2.77	0.57	1.02	1.04	0.32	1.01	0.29	0.42
3																
4	0.27	1.17	0.46	1.08	0.36	0.97	0.23	0.90	1.54	0.30	0.78	0.96	0.31	0.95	0.52	0.43
5																
6																
7	0.24	0.99	0.18	0.97	0.39	0.86	0.14	0.92	0.14	0.88	0.30	1.22	0.25	1.15	0.34	1.01
8	0.38	0.95	0.18	0.95	0.19	0.77	0.20	0.81	0.17	0.70	0.54	1.18	0.23	1.11	0.82	0.98
9	0.22	0.87	0.22	0.81	0.44	0.78	0.18	0.77	0.23	0.79	1.08	1.07	0.23	1.04	1.08	0.97
10	0.84	0.81	0.28	0.79	0.45	0.72	0.32	0.76	0.19	0.70	0.46	0.98	0.42	0.94	0.21	0.94
11																
12																
13	0.33	0.63	0.16	0.71	0.25	0.59	0.17	0.54	0.27	0.26	0.30	0.99	0.19	0.89	0.20	0.74
14	0.17	0.69	0.30	0.74	0.18	0.59	0.16	0.55	0.19	0.26	0.34	0.90	1.40	0.76	0.21	0.73
15	0.28	0.83	0.16	0.79	0.46	0.66	0.18	0.53	0.37	0.53	0.25	0.90	0.30	0.86	0.32	0.69
16	0.80	0.87	0.40	0.86	0.39	0.79	0.17	0.63	0.29	0.66	0.26	0.86	0.22	0.79	0.20	0.72
17	0.58	0.85	0.60	0.84	0.20	0.85	0.24	0.68	0.22	0.38	0.26	0.83	0.25	0.79	0.17	0.65
18																
19																
20	0.17	0.85	0.15	0.92	0.19	0.84	0.14	0.75	0.21	0.58	0.30	0.73	0.21	0.72	0.16	0.56
21	0.28	0.85	0.22	0.91	0.15	0.92	0.17	0.85	0.22	0.63	0.20	0.81	0.45	0.71	0.76	0.53
22	0.22	0.94	0.18	0.95	0.23	0.93	0.14	0.81	0.19	0.73	0.26	0.73	0.21	0.70	0.19	0.53
23	0.31	1.02	0.15	0.99	0.26	0.91	0.18	0.80	0.20	0.55	0.55	0.77	0.20	0.73	0.18	0.56
24	0.17	0.98	0.20	0.96	0.19	0.91	0.16	0.82	0.26	0.46	0.50	0.96	0.30	0.88	0.22	0.54
25																
26																
27	0.16	0.81	0.14	0.79	0.15	0.79	0.13	0.70	0.24	0.47	0.22	0.99	0.18	1.00	0.24	0.79
28	0.95	0.68	0.23	0.65	0.47	0.62	0.18	0.63	0.21	0.65	1.65	0.95	0.60	0.84	0.37	0.76
29	1.06	0.75	0.55	0.73	0.50	0.70	0.32	0.55	0.22	0.59	0.71	0.72	0.69	0.70	0.62	0.66
30	2.14	0.87	1.38	0.85	0.39	0.80	0.23	0.68	0.23	0.74	0.59	0.78	0.41	0.66	0.53	0.42

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR MAY 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.81	0.94	0.42	0.92	0.28	0.88	0.28	0.74	0.23	0.89	0.55	0.72	0.41	0.75	0.40	0.34
2																
3																
4	0.20	0.96	0.22	0.95	0.29	0.94	0.20	0.89	0.14	0.82	0.87	0.83	0.21	0.82	0.22	0.53
5	0.33	1.00	0.20	0.98	0.17	0.93	0.14	0.86	0.17	0.90	0.27	0.95	0.17	0.97	0.18	0.58
6	0.33	0.97	0.34	0.95	0.21	0.91	0.15	0.91	0.18	0.82	0.83	0.97	0.25	0.91	0.31	0.60
7	0.15	0.91	0.20	0.89	0.23	0.84	0.15	0.86	0.13	0.83	0.23	0.90	0.17	0.88	0.23	0.67
8	0.98	0.89	0.17	0.86	0.18	0.82	0.16	0.79	0.21	0.76	0.27	0.89	0.22	0.75	0.28	0.70
9																
10																
11	0.18	0.84	0.19	0.81	0.12	0.76	0.14	0.71	0.13	0.67	0.74	0.79	0.16	0.75	0.22	0.63
12	0.37	0.79	0.40	0.77	0.29	0.72	0.13	0.68	0.14	0.51	0.22	0.64	0.18	0.58	0.20	0.51
13	0.20	0.85	0.20	0.83	0.16	0.76	0.16	0.71	0.17	0.64	0.34	0.73	0.30	0.63	0.29	0.45
14	0.37	0.92	0.15	0.90	0.46	0.83	0.19	0.74	0.33	0.78	0.21	0.87	0.20	0.78	0.20	0.43
15	0.87	0.91	0.39	0.89	0.19	0.87	0.14	0.81	0.19	0.79	0.39	0.79	0.28	0.71	0.36	0.54
16																
17																
18																
19	0.16	0.95	0.20	0.93	0.17	0.90	0.14	0.88	0.19	0.81	0.36	0.84	0.14	0.76	0.16	0.65
20	0.13	0.98	0.43	0.96	0.18	0.88	0.12	0.84	0.13	0.82	0.19	0.92	0.18	0.78	0.20	0.68
21	0.26	0.91	0.20	0.88	0.17	0.86	0.14	0.83	0.15	0.77	0.24	0.87	0.32	0.90	0.18	0.70
22	0.21	0.95	0.21	0.93	0.38	0.91	0.19	0.85	0.19	0.80	0.43	0.97	0.25	0.84	0.26	0.69
23																
24																
25	0.16	0.91	0.17	0.89	0.18	0.93	0.30	0.84	0.13	0.76	0.49	0.85	0.21	0.79	0.38	0.71
26	0.16	0.91	0.18	0.89	0.21	0.88	0.16	0.84	0.28	0.79	0.67	0.77	0.19	0.66	0.27	0.67
27	0.38	0.94	0.29	0.92	0.17	0.87	0.21	0.88	0.15	0.79	0.62	0.78	0.41	0.71	0.26	0.59
28	0.38	0.94	0.41	0.92	0.24	0.85	0.17	0.84	0.17	0.80	0.35	0.78	0.23	0.74	0.21	0.57
29	0.19	0.94	0.26	0.92	0.20	0.85	0.18	0.87	0.18	0.78	0.29	0.78	0.20	0.70	0.18	0.61
30																
31																

The Municipality of the Village of Lions Bay

	TREATED WATER FOR JUNE 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
DATE	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.16	0.87	0.13	0.84	0.21	0.86	0.13	0.84	0.12	0.78	0.25	0.85	0.15	0.80	0.29	0.63
2	0.12	0.87	0.15	0.84	0.16	0.78	0.12	0.79	0.13	0.75	0.44	0.90	0.16	0.80	0.23	0.65
3	0.37	0.78	0.15	0.79	0.23	0.82	0.16	0.74	0.19	0.67	0.33	0.91	0.17	0.78	0.22	0.62
4	0.21	0.78	0.15	0.76	0.26	0.78	0.13	0.70	0.19	0.68	0.96	0.94	0.18	0.86	0.23	0.66
5	0.21	0.87	0.17	0.85	0.21	0.68	0.14	0.71	0.15	0.70	0.17	0.94	0.23	0.85	0.29	0.76
6																
7																
8	0.15	0.97	0.14	0.94	0.17	0.82	0.14	0.86	0.13	0.79	0.26	0.87	0.27	0.86	0.20	0.74
9	0.14	0.96	0.17	0.94	0.18	0.80	0.14	0.84	0.17	0.75	0.47	0.79	0.19	0.70	0.25	0.72
10	0.15	0.95	0.14	0.93	0.15	0.84	0.15	0.85	0.15	0.84	0.28	0.75	0.59	0.71	0.19	0.64
11	0.16	0.90	0.19	0.88	0.16	0.79	0.19	0.83	0.22	0.73	0.41	0.78	0.17	0.70	0.29	0.55
12	0.17	0.93	0.13	0.91	0.16	0.78	0.11	0.84	0.28	0.81	0.20	0.77	0.13	0.68	0.17	0.66
13																
14																
15	0.12	0.95	0.20	0.92	0.18	0.80	0.17	0.86	0.16	0.61	0.21	0.86	0.21	0.79	0.21	0.61
16	0.14	0.92	0.17	0.90	0.22	0.78	0.16	0.82	0.17	0.66	0.30	0.93	0.20	0.89	0.21	0.64
17	0.15	0.87	0.16	0.85	0.16	0.76	0.14	0.83	0.14	0.64	0.22	0.88	0.18	0.88	0.16	0.78
18	0.12	0.92	0.17	0.89	0.13	0.75	0.15	0.83	0.19	0.68	0.23	0.94	0.34	0.86	0.38	0.76
19	0.22	0.80	0.15	0.77	0.18	0.67	0.14	0.76	0.15	0.74	0.16	0.89	0.20	0.82	0.23	0.72
20																
21																
22	0.14	0.84	0.21	0.84	0.16	0.64	0.18	0.75	0.18	0.52	0.15	0.97	0.13	0.90	0.23	0.60
23	0.09	0.78	0.10	0.86	0.12	0.66	0.09	0.70	0.20	0.44	0.16	0.94	0.13	0.82	0.23	0.70
24	0.11	0.78	0.21	0.83	0.13	0.72	0.10	0.74	0.12	0.55	0.12	0.94	0.14	0.79	0.10	0.79
25	0.09	0.81	0.09	0.78	0.12	0.67	0.18	0.48	0.14	0.44	0.46	0.89	0.27	0.83	0.20	0.63
26	0.08	0.84	0.14	0.88	0.12	0.71	0.10	0.69	0.17	0.44	0.30	0.86	0.23	0.76	0.24	0.57
27																
28																
29	0.12	0.72	0.11	0.89	0.11	0.73	0.14	0.73	0.15	0.47	0.12	0.82	0.12	0.84	0.24	0.61
30	0.16	0.70	0.09	0.83	0.14	0.72	0.14	0.80	0.20	0.44	0.16	0.85	0.18	0.74	0.24	0.71

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR JULY 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2	0.14	0.95	0.11	0.93	0.15	0.76	0.12	0.79	0.18	0.41	0.28	0.75	0.36	0.71	0.27	0.56
3	0.18	0.96	0.11	0.95	0.12	0.72	0.19	0.78	0.15	0.44	0.18	0.77	0.24	0.67	0.19	0.56
4																
5																
6	0.14	0.91	0.20	0.89	0.18	0.72	0.12	0.82	0.18	0.41	0.24	0.72	0.13	0.71	0.21	0.53
7	0.68	0.91	0.14	0.88	0.12	0.68	0.12	0.76	0.57	0.42	0.30	0.64	0.15	0.59	0.22	0.44
8	0.12	0.85	0.19	0.83	0.14	0.58	0.09	0.72	0.17	0.39	0.15	0.68	0.21	0.69	0.27	0.39
9	0.19	0.86	0.15	0.84	0.20	0.71	0.13	0.73	0.17	0.43	0.43	0.77	0.20	0.64	0.25	0.36
10	0.11	0.88	0.12	0.86	0.18	0.57	0.14	0.75	0.15	0.40	0.22	0.75	0.24	0.53	0.16	0.52
11																
12																
13	0.14	0.71	0.14	0.69	0.11	0.59	0.12	0.64	0.19	0.31	0.20	0.74	0.14	0.70	0.32	0.44
14	0.11	0.75	0.27	0.73	0.12	0.52	0.12	0.51	0.12	0.29	0.18	0.77	0.14	0.66	0.21	0.46
15	0.16	0.72	0.18	0.68	0.13	0.54	0.11	0.57	0.14	0.22	0.25	0.79	0.14	0.73	0.27	0.42
16	0.11	0.75	0.28	0.72	0.11	0.54	0.10	0.54	0.15	0.29	0.23	0.83	0.17	0.72	0.20	0.63
17	0.18	0.78	0.13	0.75	0.15	0.47	0.10	0.56	0.23	0.30	0.44	0.79	0.16	0.69	0.19	0.53
18																
19																
20	0.38	0.66	0.17	0.78	0.17	0.57	0.10	0.55	0.14	0.24	0.18	0.89	0.17	0.84	0.21	0.60
21	0.10	0.80	0.23	0.77	0.12	0.58	0.08	0.57	4.79	0.45	0.26	0.84	0.17	0.72	0.23	0.67
22	0.16	0.84	0.15	0.82	0.13	0.48	0.15	0.58	0.90	0.35	0.31	0.79	0.13	0.78	0.24	0.57
23	0.10	0.83	0.14	0.80	0.13	0.53	0.09	0.61	0.42	0.31	0.17	0.81	0.20	0.77	0.26	0.54
24	0.15	0.79	0.11	0.75	0.41	0.42	0.38	0.55	0.32	0.24	0.16	0.83	0.16	0.80	0.27	0.45
25																
26																
27	0.15	0.54	0.18	0.49	0.28	0.30	0.13	0.49	0.16	0.27	0.22	0.67	0.18	0.64	0.23	0.43
28	0.36	0.52	0.34	0.48	0.17	0.24	0.13	0.28	0.14	0.21	0.25	0.77	0.37	0.63	0.22	0.28
29	0.28	0.58	0.14	0.54	0.22	0.31	0.11	0.22	0.24	0.27	0.69	0.82	0.29	0.73	0.22	0.21
30	0.14	0.67	0.15	0.62	0.23	0.38	0.13	0.31	0.26	0.21	0.28	0.93	0.20	0.84	0.20	0.42
31	0.15	0.73	0.11	0.69	0.21	0.38	0.44	0.35	0.11	0.21	0.13	0.93	0.23	0.82	0.20	0.56

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR AUGUST 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2																
3																
4	0.19	0.79	0.14	0.75	0.19	0.49	0.16	0.55	0.10	0.38	0.20	0.86	0.44	0.81	0.24	0.39
5	0.15	0.86	0.17	0.83	0.15	0.47	0.11	0.61	0.10	0.40	0.13	0.76	0.18	0.67	0.20	0.48
6	0.14	0.85	0.12	0.80	0.20	0.45	0.11	0.66	0.13	0.38	0.19	0.67	0.16	0.60	0.28	0.49
7	0.15	0.83	0.11	0.79	0.30	0.33	0.11	0.60	0.12	0.37	0.27	0.74	0.17	0.68	0.22	0.44
8																
9																
10	0.12	0.82	0.12	0.78	0.20	0.35	0.09	0.61	0.16	0.30	0.12	0.90	0.14	0.88	0.19	0.46
11	0.10	0.80	0.12	0.76	0.17	0.49	0.13	0.62	0.14	0.28	0.27	0.91	0.17	0.94	0.19	0.63
12	0.15	0.77	0.11	0.74	0.20	0.41	0.10	0.58	0.09	0.36	0.28	1.06	0.15	0.92	0.18	0.63
13	0.18	0.78	0.12	0.74	0.19	0.49	0.10	0.59	0.13	0.35	0.20	0.91	0.14	0.83	0.31	0.64
14	0.21	0.74	0.11	0.71	0.23	0.46	0.15	0.46	0.13	0.34	0.17	0.82	0.16	0.72	0.37	0.29
15																
16																
17	0.13	0.75	0.10	0.71	0.17	0.47	0.10	0.59	0.11	0.28	0.24	0.75	0.22	0.78	0.24	0.40
18	0.16	0.79	0.10	0.74	0.17	0.42	0.10	0.59	0.12	0.34	0.15	0.74	0.14	0.71	0.24	0.40
19	0.28	0.78	0.19	0.73	0.27	0.39	0.12	0.56	0.13	0.30	0.16	0.75	0.16	0.70	0.26	0.51
20	0.12	0.81	0.11	0.77	0.51	0.40	0.11	0.58	0.21	0.34	0.14	0.75	0.24	0.76	0.28	0.38
21	0.11	0.83	0.11	0.79	0.28	0.39	0.12	0.61	0.12	0.36	0.38	0.74	0.15	0.83	0.19	0.49
22																
23																
24	0.22	0.85	0.12	0.81	0.11	0.72	0.10	0.62	0.13	0.31	0.15	0.70	0.16	0.68	0.18	0.52
25	0.12	0.78	0.12	0.73	0.19	0.45	0.10	0.66	0.13	0.36	0.34	0.78	0.17	0.68	0.23	0.40
26	0.09	0.80	0.12	0.76	0.19	0.47	0.11	0.61	0.15	0.32	0.15	0.87	0.16	0.80	0.24	0.44
27	0.23	0.73	0.13	0.69	0.29	0.47	0.15	0.60	3.52	0.30	0.13	0.91	0.15	0.87	0.21	0.59
28	1.24	0.80	0.23	0.73	0.23	0.46	0.15	0.62	4.07	0.38	0.62	0.97	0.23	0.82	0.43	0.54
29																
30																
31	0.23	0.54	0.31	0.49	0.21	0.30	0.15	0.28	0.49	0.27	0.28	0.71	0.36	0.60	0.34	0.37

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR SEPTEMBER 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.35	0.54	0.64	0.48	0.42	0.23	0.28	0.22	0.25	0.22	3.61	0.86	3.39	0.61	0.34	0.20
2	0.83	0.84	0.53	0.72	0.44	0.44	0.30	0.22	0.28	0.26	2.70	0.61	2.54	0.43	0.80	0.26
3	0.28	0.74	0.31	0.71	0.38	0.43	0.29	0.29	0.47	0.24	2.03	0.66	1.77	0.44	2.19	0.22
4	0.24	0.81	0.27	0.67	0.35	0.33	0.25	0.38	0.35	0.22	1.34	0.91	1.23	0.70	1.38	0.72
5																
6																
7																
8	0.23	1.00	0.21	0.97	0.23	0.67	0.14	0.52	0.22	0.24	0.51	1.09	0.38	0.92	0.48	0.84
9	1.07	0.91	0.21	0.87	0.24	0.65	0.19	0.67	0.21	0.30	0.68	1.03	0.35	0.91	0.58	0.62
10	0.47	0.86	0.38	0.82	0.34	0.58	0.14	0.70	0.25	0.36	0.34	0.96	0.38	0.91	0.32	0.72
11	0.22	0.87	0.54	0.83	0.32	0.44	0.13	0.69	0.24	0.34	0.60	1.02	0.52	0.94	0.30	0.69
12																
13																
14	0.16	0.97	0.16	0.94	0.33	0.58	0.12	0.73	0.17	0.33	0.21	1.02	0.14	1.03	0.29	0.50
15	0.16	0.97	0.14	0.94	0.37	0.38	0.15	0.81	0.14	0.54	0.18	0.98	0.16	0.97	0.30	0.56
16	0.29	0.90	0.18	0.84	0.29	0.43	0.12	0.77	0.20	0.52	0.20	1.02	0.16	0.97	0.32	0.64
17	0.15	0.87	0.16	0.82	0.30	0.40	0.15	0.70	0.14	0.38	0.20	0.95	0.16	0.87	0.29	0.56
18	0.24	0.85	0.13	0.81	0.38	0.30	0.17	0.68	0.17	0.24	0.31	0.97	0.17	0.92	0.31	0.51
19																
20																
21	0.30	0.58	0.24	0.54	0.49	0.42	0.23	0.45	0.17	0.23	0.59	0.83	0.56	0.76	0.26	0.52
22	1.13	0.70	0.23	0.66	0.44	0.24	0.21	0.37	0.34	0.37	0.77	0.91	0.47	0.87	0.29	0.45
23	0.22	0.80	0.30	0.76	0.37	0.44	0.19	0.42	0.38	0.72	0.32	1.10	0.36	0.96	0.38	0.32
24	1.46	0.75	0.67	0.72	0.38	0.60	0.18	0.52	0.30	0.30	0.39	1.10	0.39	1.12	0.40	0.44
25	2.05	0.76	0.34	0.72	0.51	0.58	0.19	0.63	0.22	0.26	0.43	1.16	0.60	1.12	0.38	0.53
26																
27																
28	0.29	0.84	0.22	0.80	0.36	0.59	0.18	0.59	0.15	0.37	0.20	0.99	0.24	0.97	0.32	0.53
29	0.22	0.82	0.20	0.77	0.28	0.53	0.15	0.63	0.15	0.36	0.23	0.90	0.18	0.91	0.28	0.52
30	0.28	0.90	0.21	0.86	0.34	0.45	0.16	0.70	0.15	0.55	0.22	0.94	0.25	0.89	0.33	0.49

The Municipality of the Village of Lions Bay

DATE	TREATED WATER FOR OCTOBER 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.52	0.96	0.15	0.93	0.31	0.50	0.15	0.76	0.15	0.45	0.22	0.90	0.39	0.88	0.31	0.46
2	0.28	1.00	0.18	0.96	0.41	0.46	0.17	0.79	0.19	0.49	0.34	0.88	0.38	0.84	0.24	0.52
3																
4																
5	0.13	1.10	0.16	1.06	0.33	0.56	0.13	0.92	0.13	0.84	0.20	0.93	0.21	0.87	0.22	0.54
6	0.32	1.08	0.23	1.04	0.35	0.52	0.17	0.95	0.25	0.68	0.88	1.00	0.21	0.99	0.24	0.57
7	0.21	1.12	0.36	1.08	0.49	0.80	0.15	0.95	0.25	0.72	0.53	0.99	0.51	0.98	0.25	0.58
8	0.33	1.20	0.44	1.17	0.62	0.53	0.92	1.02	0.35	0.67	0.42	0.96	0.59	0.97	0.28	0.57
9	0.21	1.07	0.25	1.03	0.57	0.50	0.28	1.03	0.37	0.78	0.28	1.01	0.26	0.92	0.43	0.57
10																
11																
12																
13	0.14	0.97	0.13	0.94	0.38	0.41	0.15	0.81	0.18	0.65	0.17	0.88	0.20	0.83	0.25	0.49
14	0.17	0.90	0.22	0.95	0.37	0.35	0.18	0.82	0.14	0.55	0.15	0.80	0.18	0.75	0.28	0.48
15	1.52	0.98	0.94	0.95	0.72	0.79	0.21	0.77	0.17	0.55	0.37	0.84	0.33	0.78	0.29	0.44
16	0.17	0.99	0.35	0.96	0.24	0.79	0.20	0.84	0.23	0.60	0.17	0.87	0.14	0.77	0.19	0.44
17																
18																
19	0.13	1.03	0.14	1.00	0.27	0.84	0.15	0.90	0.16	0.59	1.45	0.86	0.15	0.82	0.23	0.47
20	0.25	1.08	0.31	1.04	0.24	0.78	0.20	0.83	0.16	0.86	0.15	0.96	0.18	0.86	0.21	0.57
21	0.22	0.89	0.25	0.86	0.29	0.79	0.15	0.89	0.23	0.72	0.20	0.97	0.17	0.93	0.25	0.53
22	1.45	0.98	0.32	0.94	0.31	0.80	0.18	0.79	0.15	0.81	0.32	1.18	0.29	1.14	0.26	0.99
23	0.20	1.03	0.26	0.92	0.17	0.85	0.19	0.86	0.22	0.80	0.24	1.19	0.19	1.11	0.33	0.86
24																
25																
26	0.18	0.94	0.21	0.90	0.17	0.89	0.16	0.86	0.15	0.79	0.14	1.02	0.19	1.01	0.20	0.87
27	0.88	0.69	0.28	0.65	0.18	0.64	0.13	0.84	0.18	0.78	0.27	0.92	0.24	0.90	0.27	0.86
28	1.75	0.79	0.22	0.76	1.06	0.55	1.02	0.75	0.20	0.52	3.14	0.83	2.97	0.81	0.43	0.75
29	0.85	0.80	0.71	0.76	0.35	0.53	0.60	0.55	0.25	0.40	2.44	0.69	1.61	0.67	0.43	0.63
30	0.29	0.58	0.31	0.54	0.20	0.50	0.24	0.47	0.22	0.28	1.75	0.79	1.57	0.67	2.21	0.55
31																

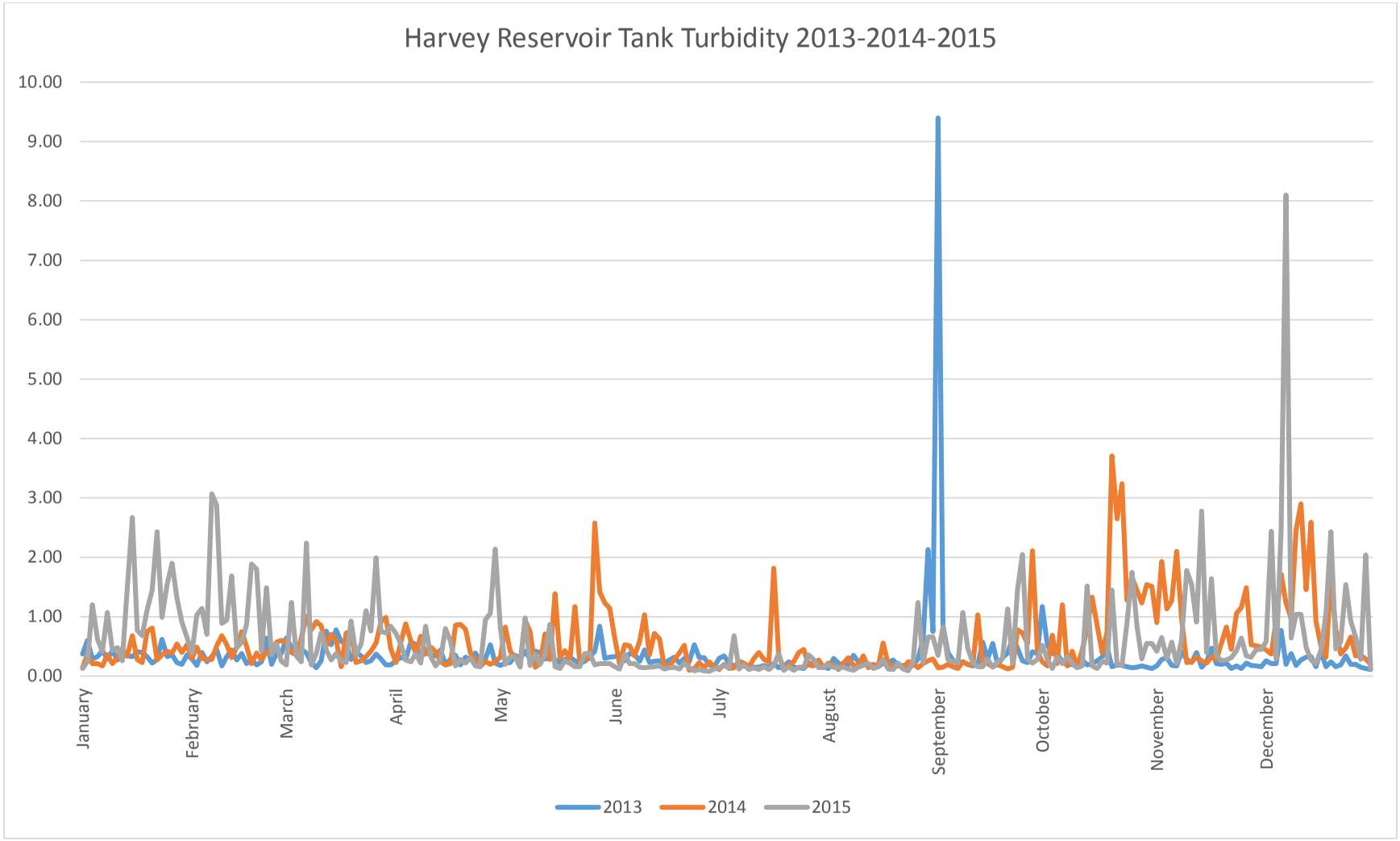
The Municipality of the Village of Lions Bay

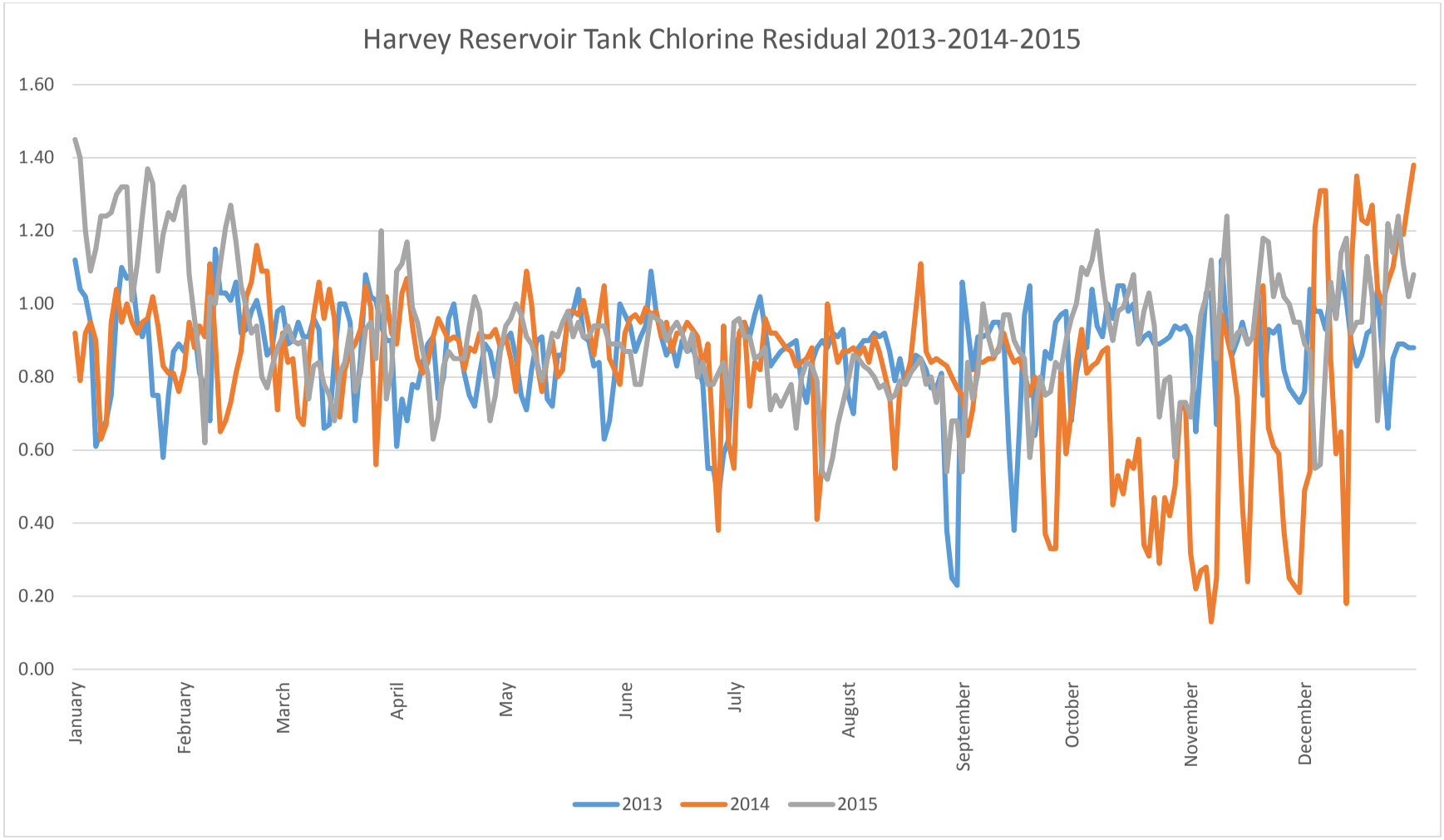
	TREATED WATER FOR NOVEMBER 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
DATE	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1																
2	0.42	0.69	0.40	0.50	0.26	0.45	0.16	0.36	0.25	0.55	0.63	0.84	0.68	0.74	0.76	0.37
3	0.65	0.85	0.48	0.81	0.28	0.46	0.25	0.30	4.21	0.69	0.68	0.92	0.49	0.84	0.70	0.26
4	0.30	0.97	0.35	0.93	0.25	0.59	0.29	0.34	0.90	0.28	0.58	1.17	0.45	1.09	0.62	0.22
5	0.57	1.02	0.52	0.98	0.26	0.70	0.28	0.43	0.31	0.29	0.38	1.24	0.34	1.14	0.56	0.29
6	0.21	1.12	0.26	1.09	0.32	0.74	0.18	0.55	0.19	0.45	0.33	1.22	0.27	1.15	0.37	0.69
7																
8																
9	0.61	0.85	0.78	0.81	0.84	0.60	0.30	0.60	0.31	0.25	1.91	0.87	0.63	0.72	0.37	0.79
10	1.78	1.06	0.64	1.03	0.53	0.60	0.43	0.46	0.74	0.23	1.58	1.09	0.51	0.81	0.43	0.27
11																
12	1.54	1.24	0.49	1.20	0.44	0.77	0.38	0.65	0.46	0.28	0.78	1.31	0.30	1.04	0.51	0.20
13	0.91	0.88	0.87	0.85	0.58	0.76	0.44	0.74	0.26	0.63	1.00	1.07	0.37	0.94	0.35	0.62
14																
15																
16	2.78	0.92	0.62	0.89	0.34	0.65	0.27	0.50	0.22	0.51	0.88	0.84	0.29	0.65	0.66	0.57
17	0.40	0.93	0.29	0.86	0.24	0.61	0.23	0.48	0.97	0.53	0.72	0.91	0.26	0.71	0.68	0.48
18	1.64	0.89	0.40	0.85	0.34	0.51	0.28	0.57	0.33	0.37	0.64	0.90	0.38	0.66	0.82	0.42
19	0.34	0.91	0.48	0.88	0.38	0.57	0.20	0.55	0.20	0.31	0.70	0.93	0.32	0.65	0.68	0.46
20	0.26	1.05	0.38	1.02	0.34	0.72	0.24	0.51	0.18	0.32	0.48	0.97	0.22	0.65	0.58	0.51
21																
22																
23	0.27	1.18	0.26	1.14	0.47	0.95	0.17	0.74	0.19	0.31	0.30	1.27	0.19	0.95	0.47	0.75
24	0.31	1.17	0.28	1.14	0.45	0.90	0.16	0.85	0.37	0.72	0.25	1.18	0.15	1.01	0.44	0.81
25	0.43	1.02	0.34	1.00	0.37	0.99	0.44	0.85	0.40	0.71	0.29	1.14	0.16	1.01	0.39	0.87
26	0.64	1.08	0.35	1.06	0.30	0.80	0.23	0.89	0.19	0.79	0.32	1.05	0.35	0.98	0.38	0.91
27	0.34	1.02	0.36	1.00	0.59	0.73	0.18	0.99	0.31	0.75	0.23	1.00	0.17	0.94	0.41	0.84
28																
29																
30	0.32	1.00	0.13	0.98	0.27	0.73	0.19	0.78	0.17	0.55	0.56	0.90	0.20	0.85	0.33	0.71

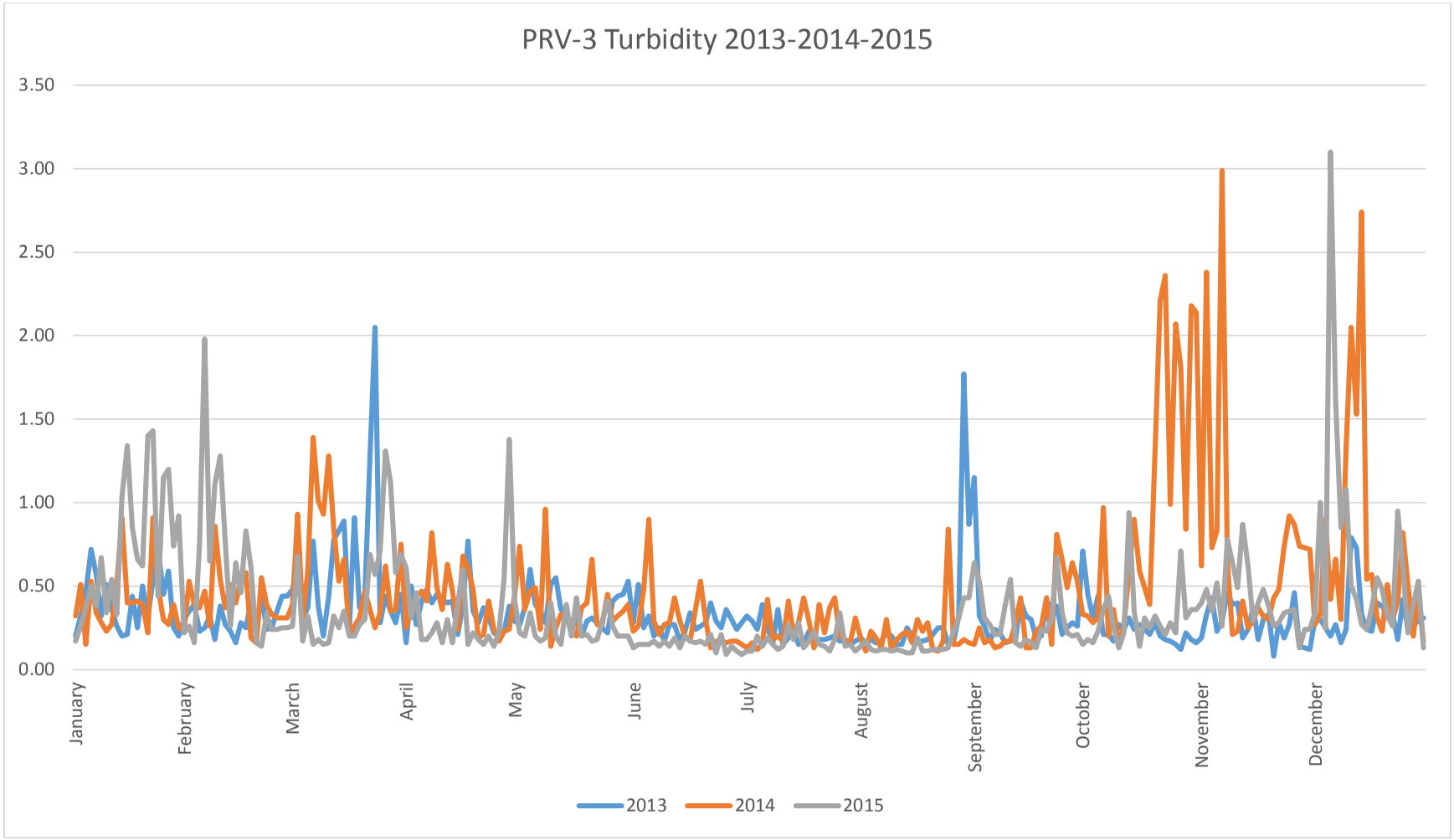
The Municipality of the Village of Lions Bay

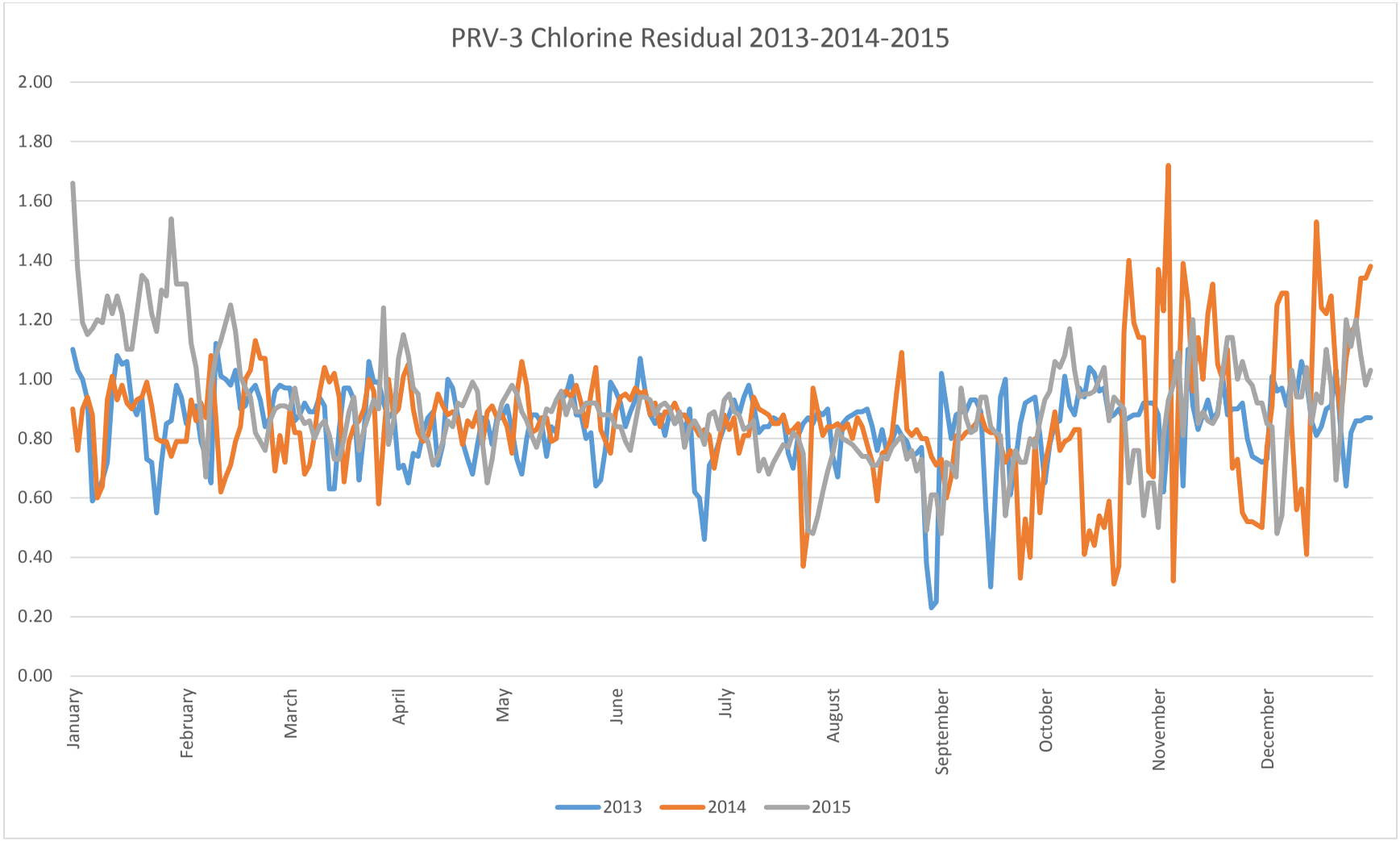
DATE	TREATED WATER FOR DECEMBER 2015															
	HARVEY										MAGNESIA					
	400 HAR. TANK		PRV-3		STORE/CAFÉ		LIONS BAY AVE.		KELVIN GROVE		100 MAG. TANK		PRV-5		BRUNSWICK B.	
	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)	Turbidity (NTU)	CL2 Res. (ppm)
1	0.58	0.89	0.34	0.85	0.22	0.77	0.19	0.74	0.15	0.73	0.19	0.88	0.31	0.81	0.34	0.71
2	2.44	0.87	1.00	0.84	0.29	0.62	0.49	0.75	0.22	0.72	0.23	0.85	0.20	0.77	0.33	0.66
3	0.29	0.55	0.25	0.48	0.27	0.40	0.21	0.69	0.27	0.52	0.34	0.84	0.32	0.58	0.43	0.70
4	2.45	0.56	3.10	0.54	1.54	0.30	0.58	0.50	0.26	0.29	1.58	0.70	1.66	0.40	0.59	0.67
5																
6																
7	8.10	0.83	1.61	0.80	0.86	0.48	0.70	0.43	0.77	0.27	1.39	0.97	0.73	0.70	0.62	0.35
8	0.64	1.06	0.85	1.03	0.70	0.76	1.25	0.51	0.66	0.33	1.51	0.75	0.85	0.82	0.70	0.37
9	1.04	0.96	1.08	0.94	0.74	0.58	1.15	0.50	0.45	0.37	1.49	0.69	1.35	0.94	0.55	0.23
10	1.04	1.14	0.50	0.94	0.49	0.92	0.47	0.61	0.51	0.37	1.08	2.20	0.49	0.96	0.41	0.25
11	0.49	1.18	0.42	1.04	0.48	0.88	0.41	0.62	0.66	0.57	1.06	1.87	0.37	1.04	0.42	0.32
12																
13																
14	0.27	0.92	0.27	0.85	0.29	0.59	0.26	0.69	0.26	0.40	1.11	0.82	0.25	0.84	0.27	0.51
15	0.21	0.95	0.24	0.95	0.21	0.62	0.27	0.55	0.18	0.51	1.04	0.74	0.21	0.89	0.22	0.46
16	0.42	0.95	0.37	0.92	0.41	0.67	0.28	0.58	0.34	0.55	1.43	0.65	0.29	0.91	0.26	0.31
17	1.05	1.13	0.55	1.10	0.35	0.79	0.37	0.64	0.50	0.50	1.19	0.58	0.29	1.02	0.22	0.41
18	2.43	1.02	0.48	0.98	0.25	0.73	0.21	0.69	0.20	0.60	1.18	0.60	0.26	0.98	0.24	0.33
19																
20																
21	0.46	0.68	0.32	0.66	0.29	0.46	0.15	0.72	0.20	0.43	0.95	1.04	0.36	0.67	0.21	0.63
22	0.58	0.87	0.26	0.84	0.21	0.59	0.18	0.56	0.18	0.40	0.85	1.12	0.31	0.78	0.25	0.51
23	1.54	1.22	0.95	1.20	0.23	0.91	0.47	0.47	0.61	0.47	0.83	1.15	0.24	1.07	0.24	0.33
24	0.93	1.14	0.62	1.11	0.42	0.96	0.25	0.64	0.35	1.06	0.54	1.34	0.50	1.29	0.22	0.33
25																
26	0.66	1.24	0.22	1.20	0.42	0.90	0.22	0.96	0.22	0.70	0.38	1.37	0.38	1.33	0.44	1.07
27																
28																
29	0.28	1.11	0.39	1.08	0.26	0.93	0.36	0.96	0.21	0.87	0.45	1.37	0.95	1.31	0.67	1.12
30	2.04	1.02	0.53	0.98	0.34	0.80	0.27	0.95	0.24	0.92	0.27	1.32	0.26	1.31	0.34	1.02
31	0.12	1.08	0.13	1.03	0.21	0.88	0.23	0.88	0.19	0.82	0.23	1.32	0.22	1.30	0.35	1.06

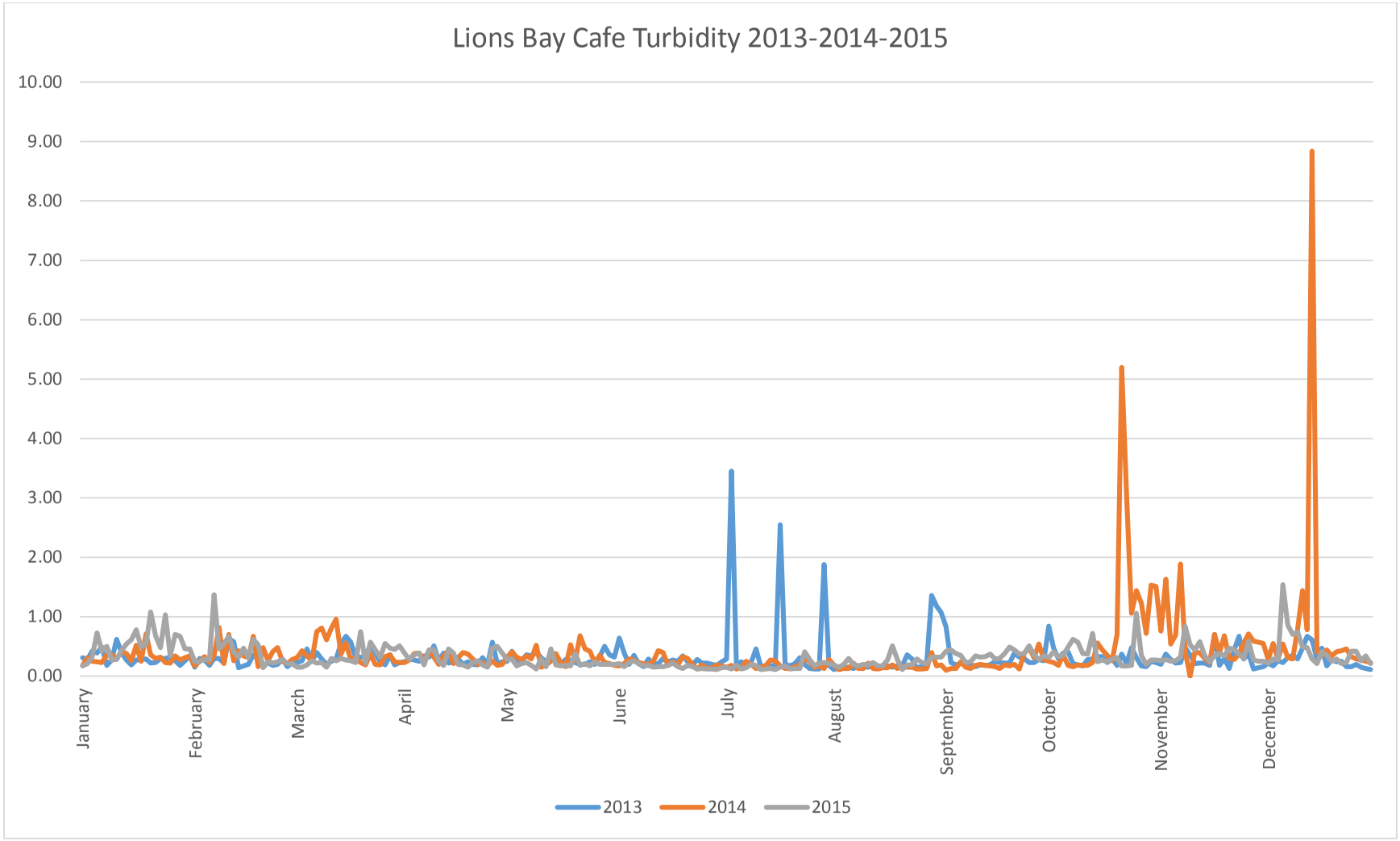
APPENDIX C: 3-YEAR COMPARISON GRAPHS – TURBIDITY AND CHLORINE RESIDUALS

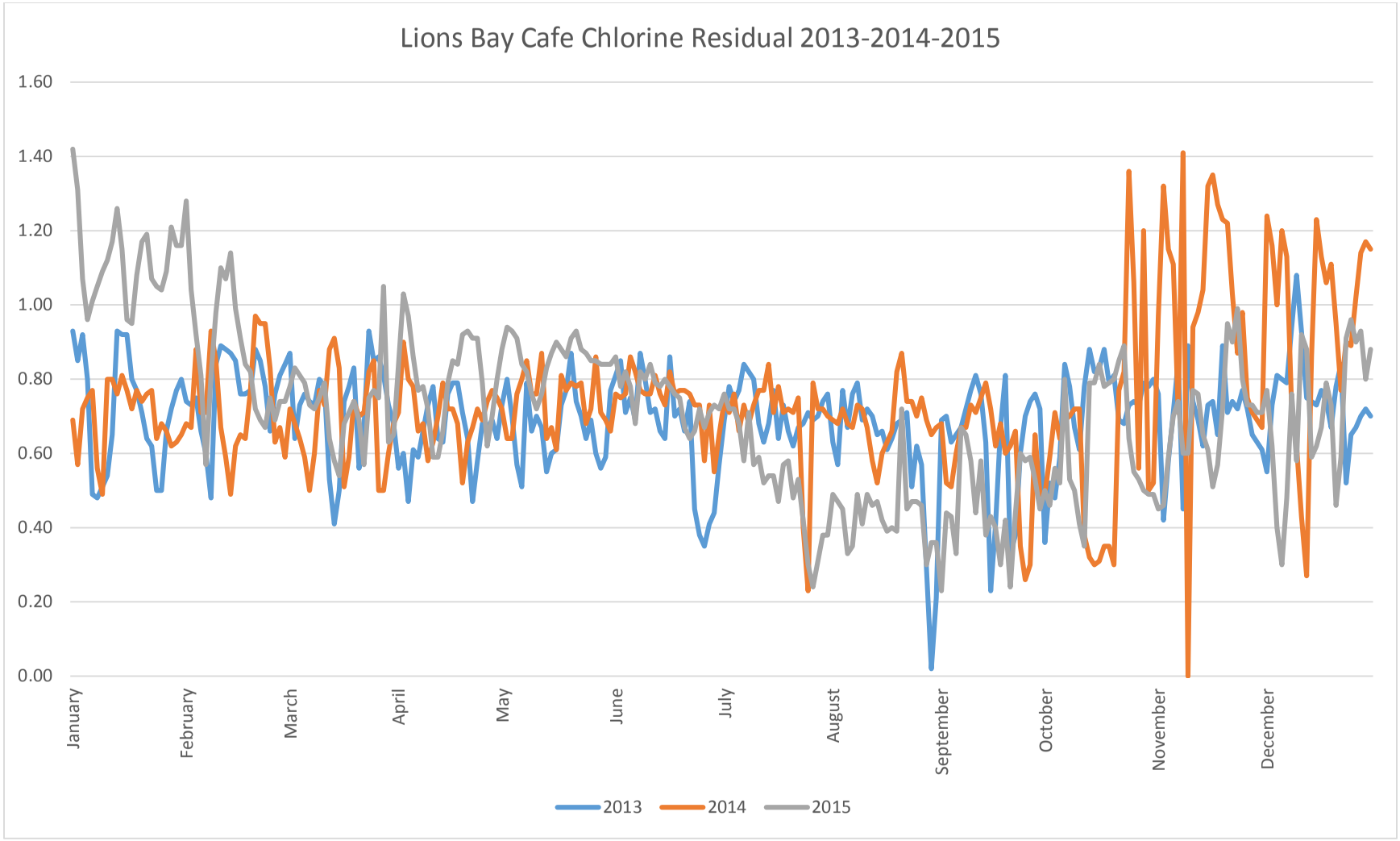

Harvey Reservoir Tank Turbidity 2013-2014-2015
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

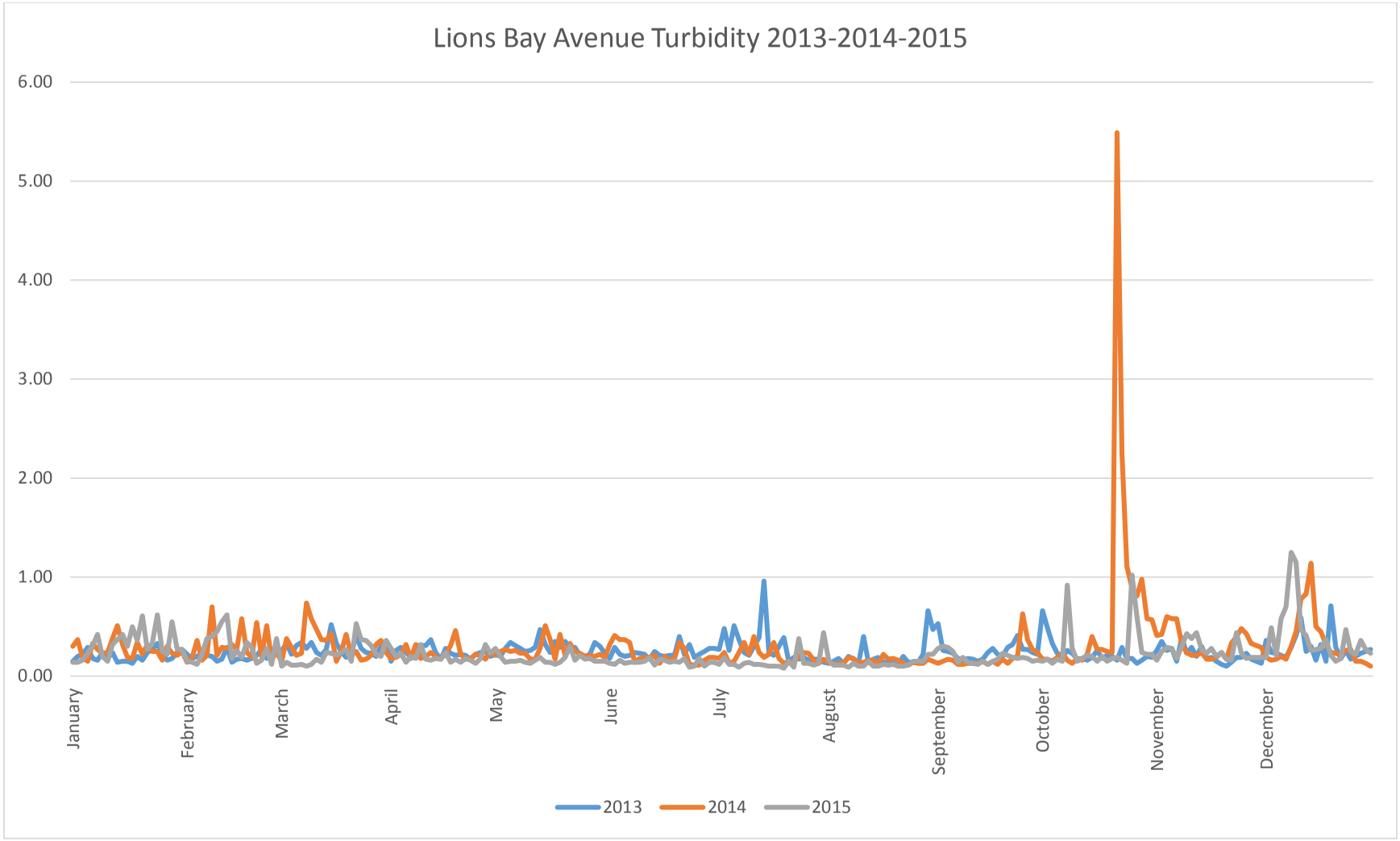

Harvey Reservoir Tank Chlorine Residual 2013-2014-2015
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

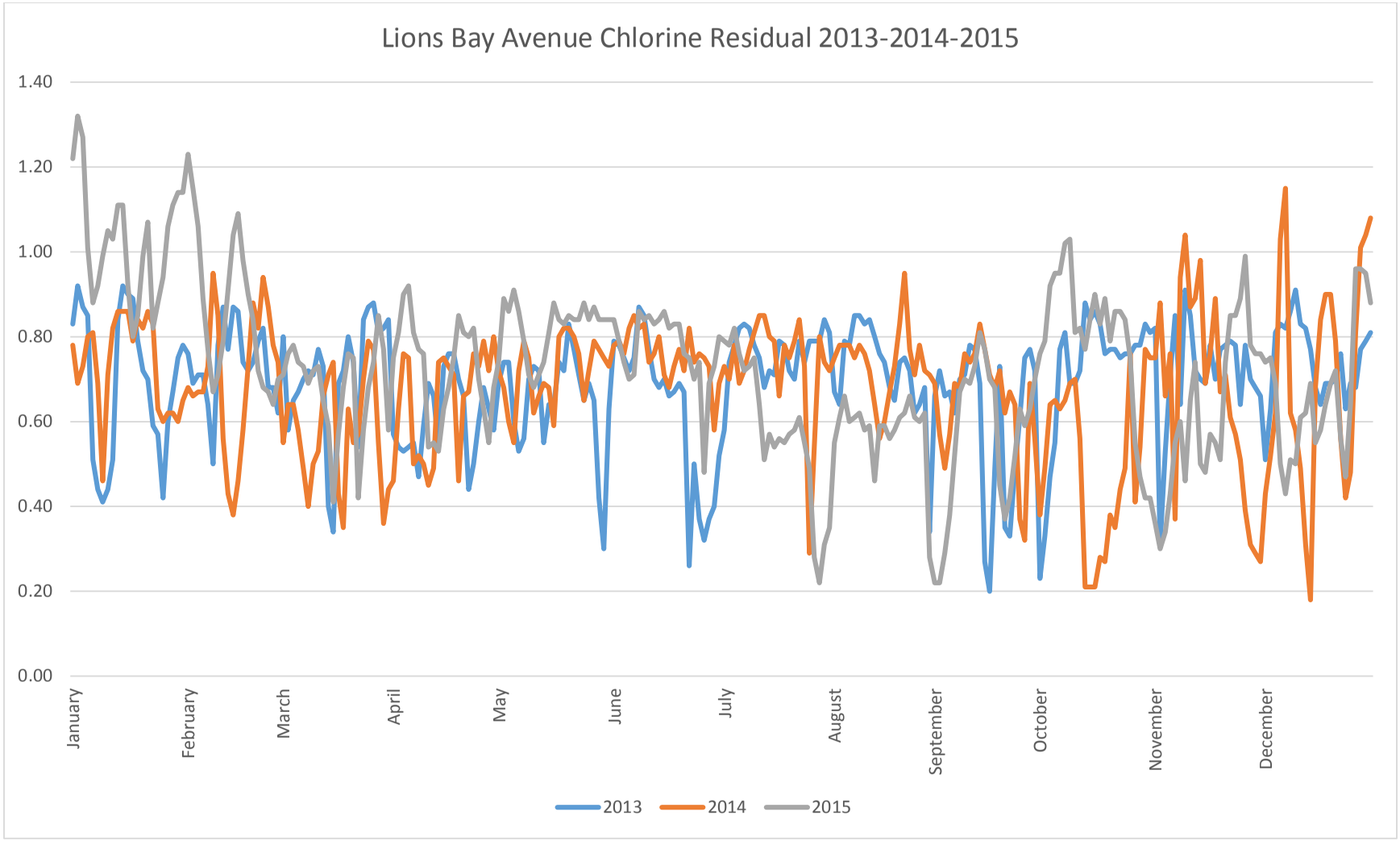

PRV-3 Turbidity 2013-2014-2015
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

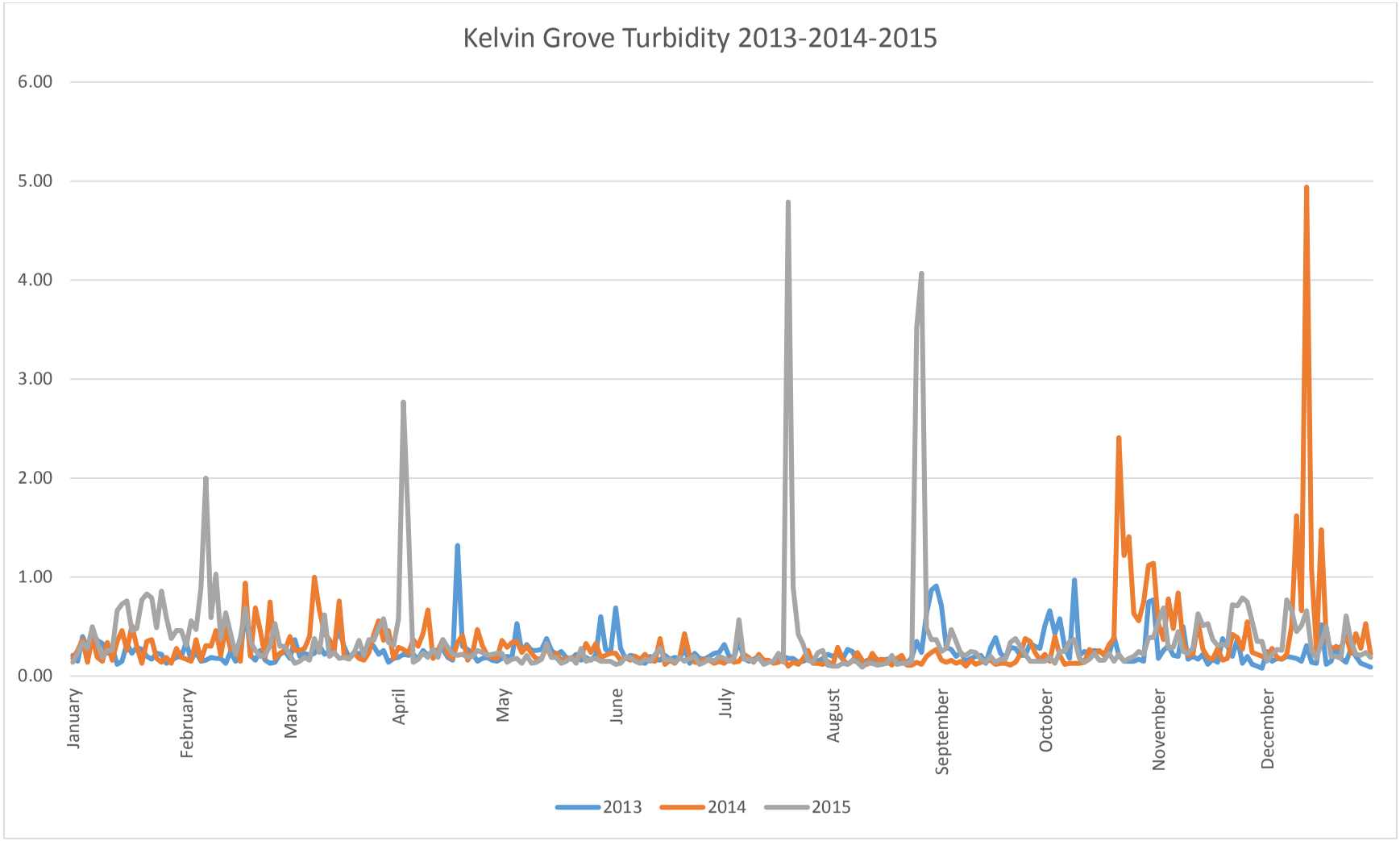

PRV-3 Chlorine Residual 2013-2014-2015
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

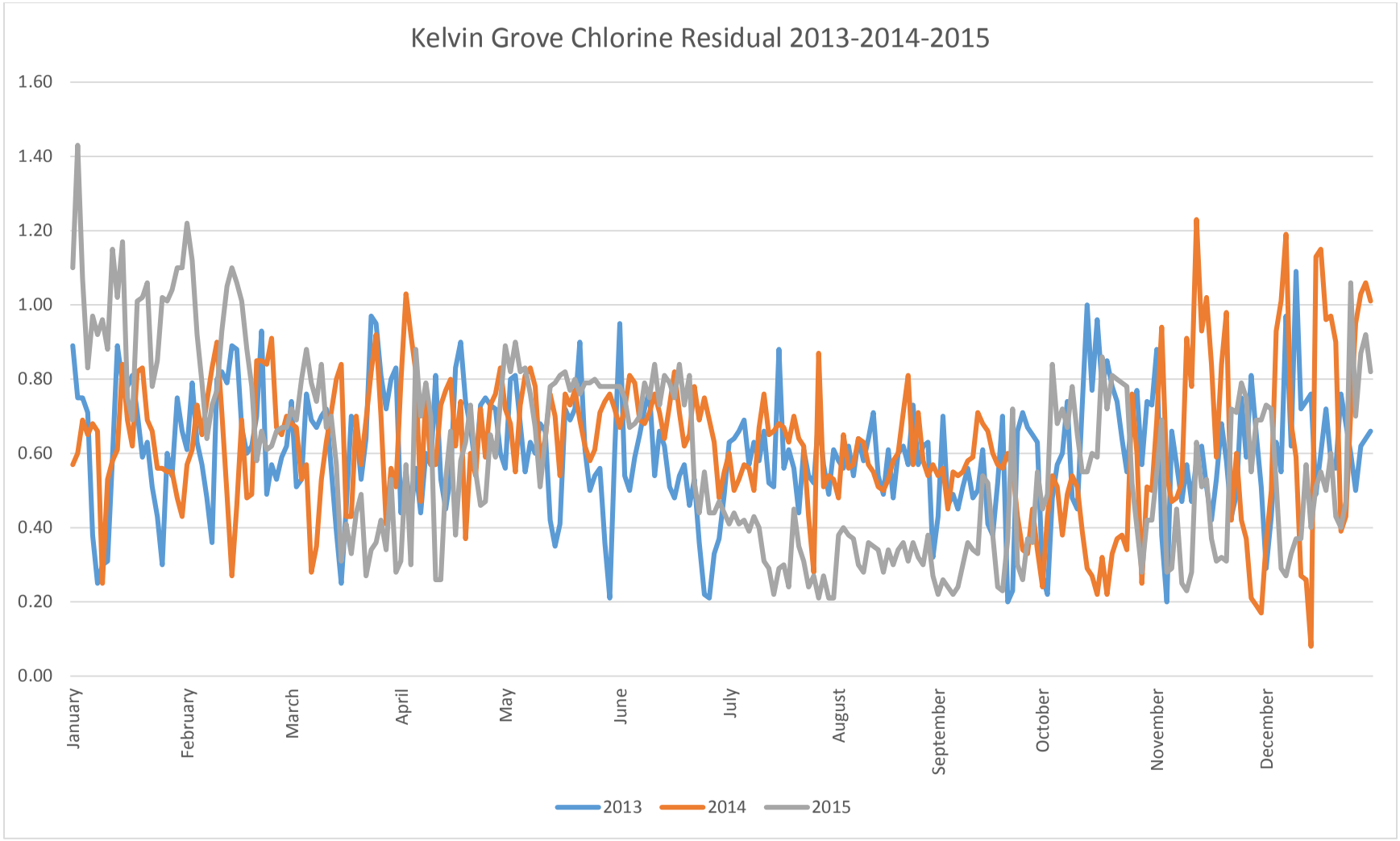

Lions Bay Cafe Turbidity 2013-2014-2015
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

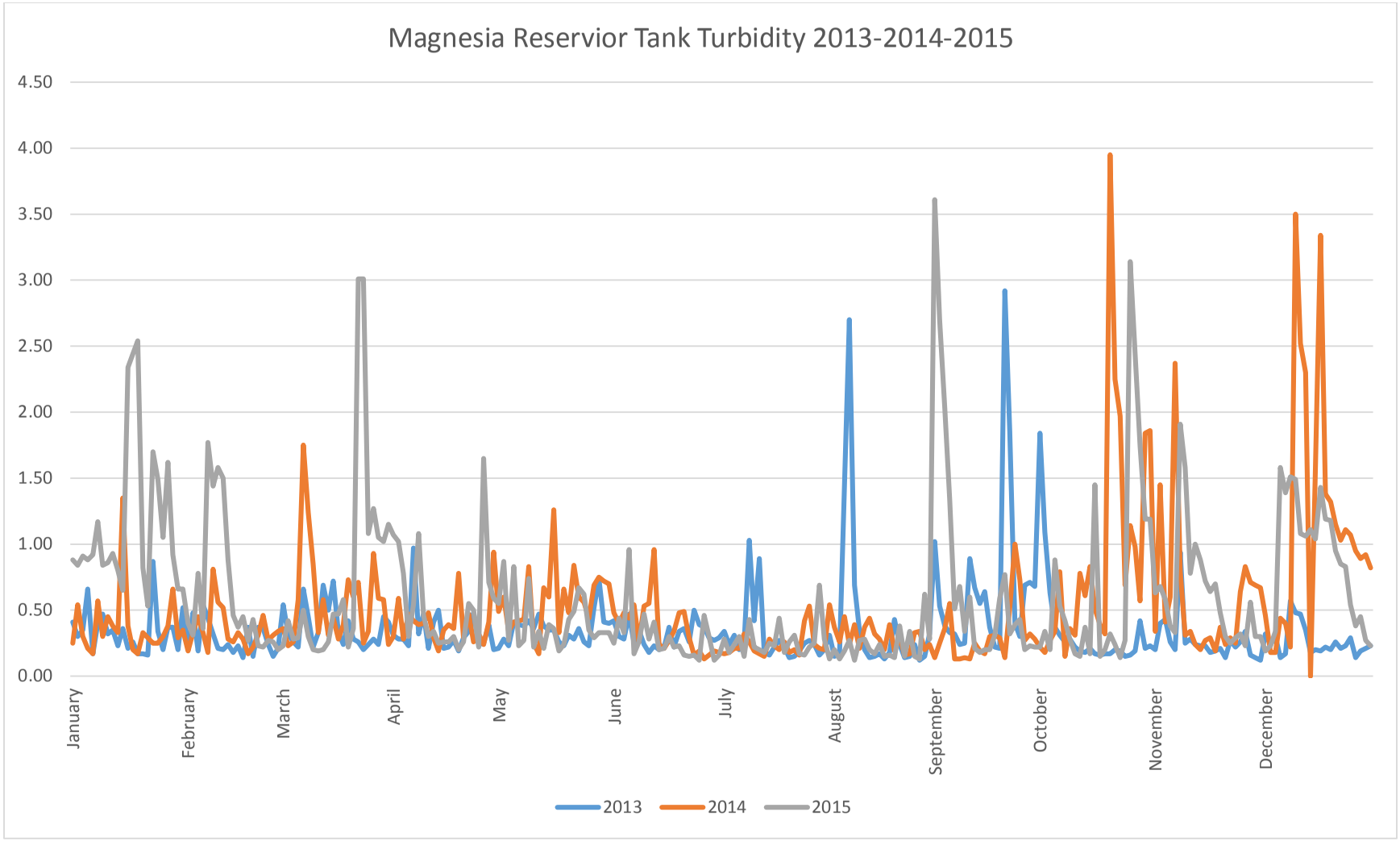

Lions Bay Cafe Chlorine Residual 2013-2014-2015
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

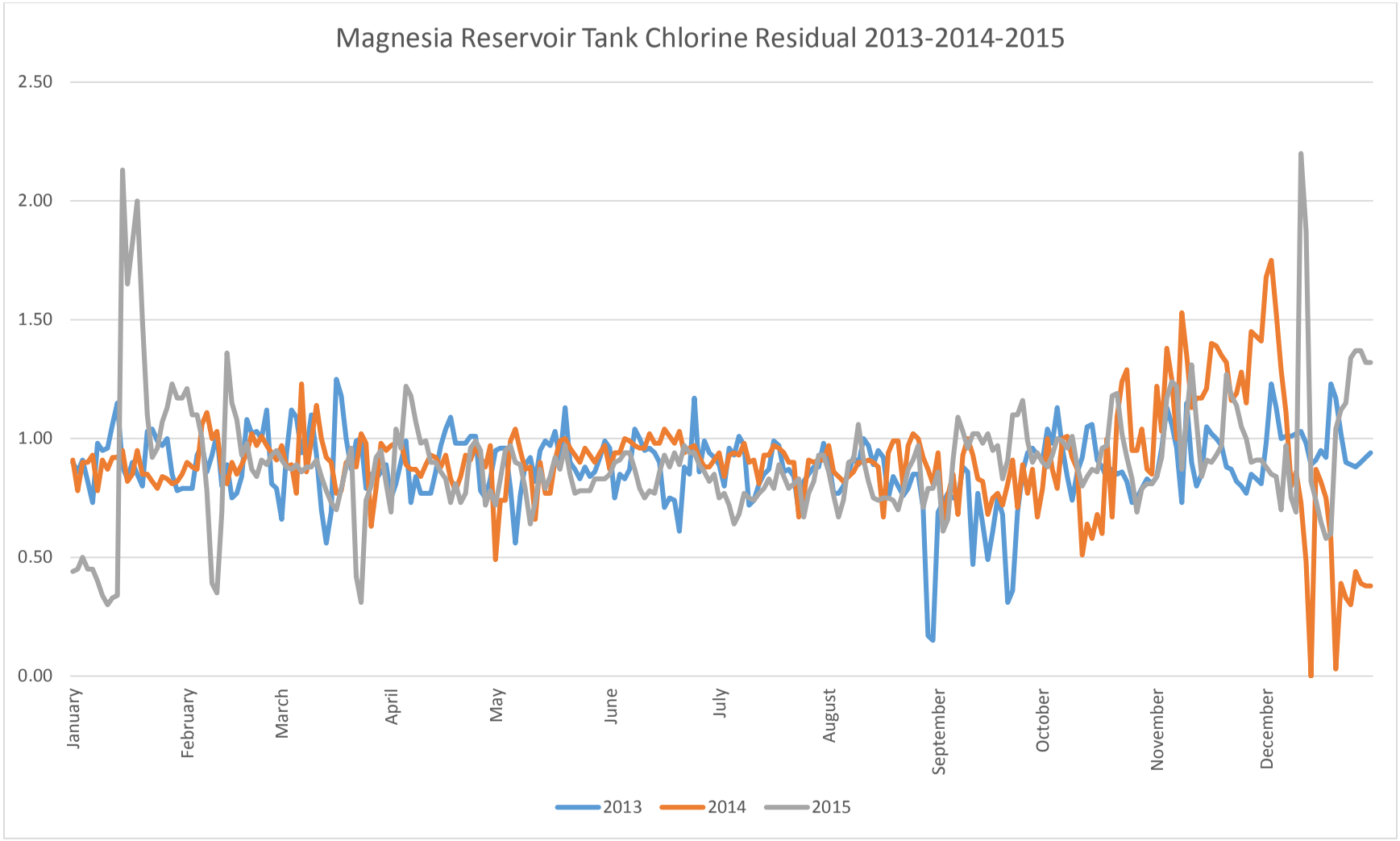

Lions Bay Avenue Turbidity 2013-2014-2015
6.00
5.00
4.00
3.00
2.00
1.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

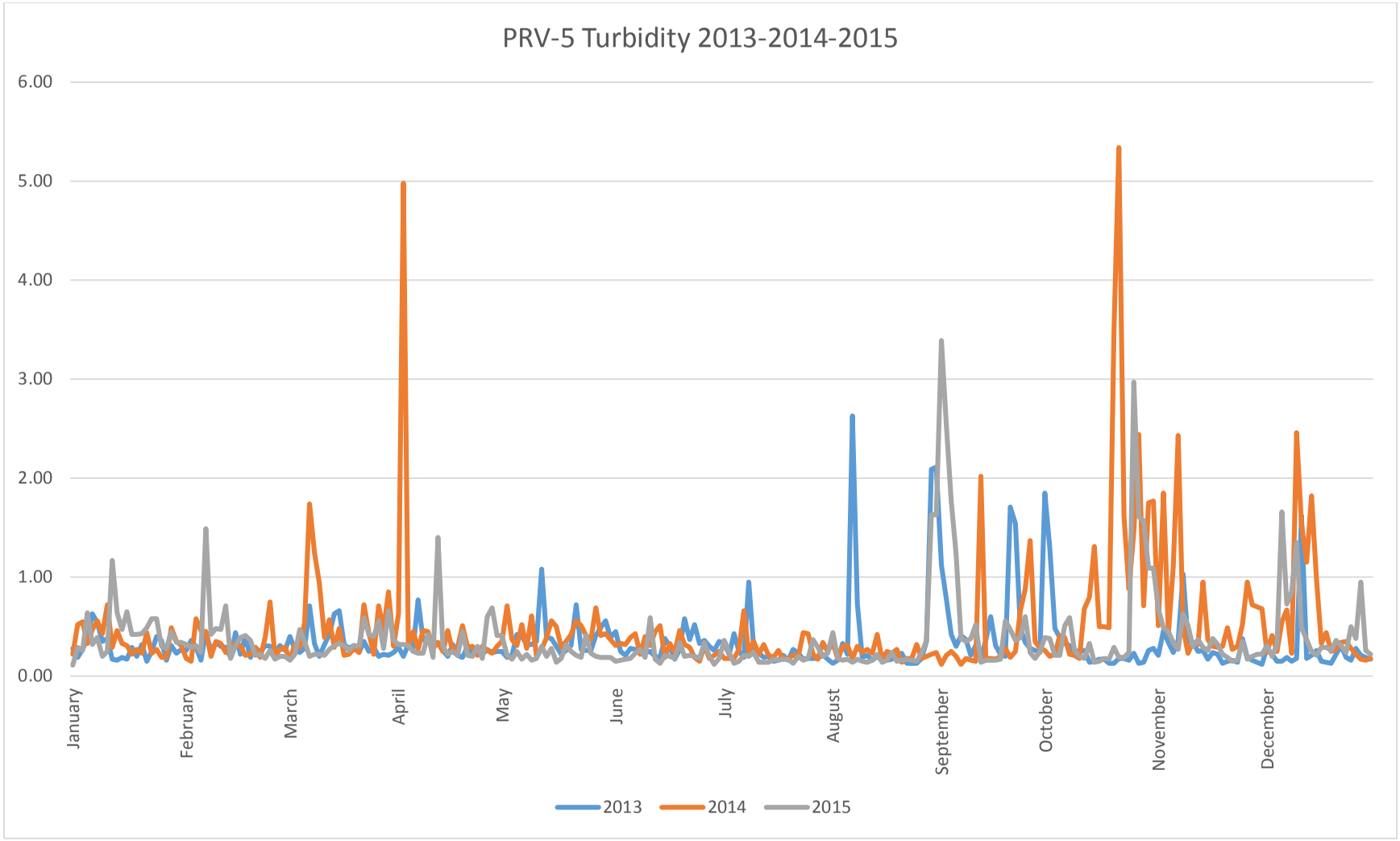

Lions Bay Avenue Chlorine Residual 2013-2014-2015
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

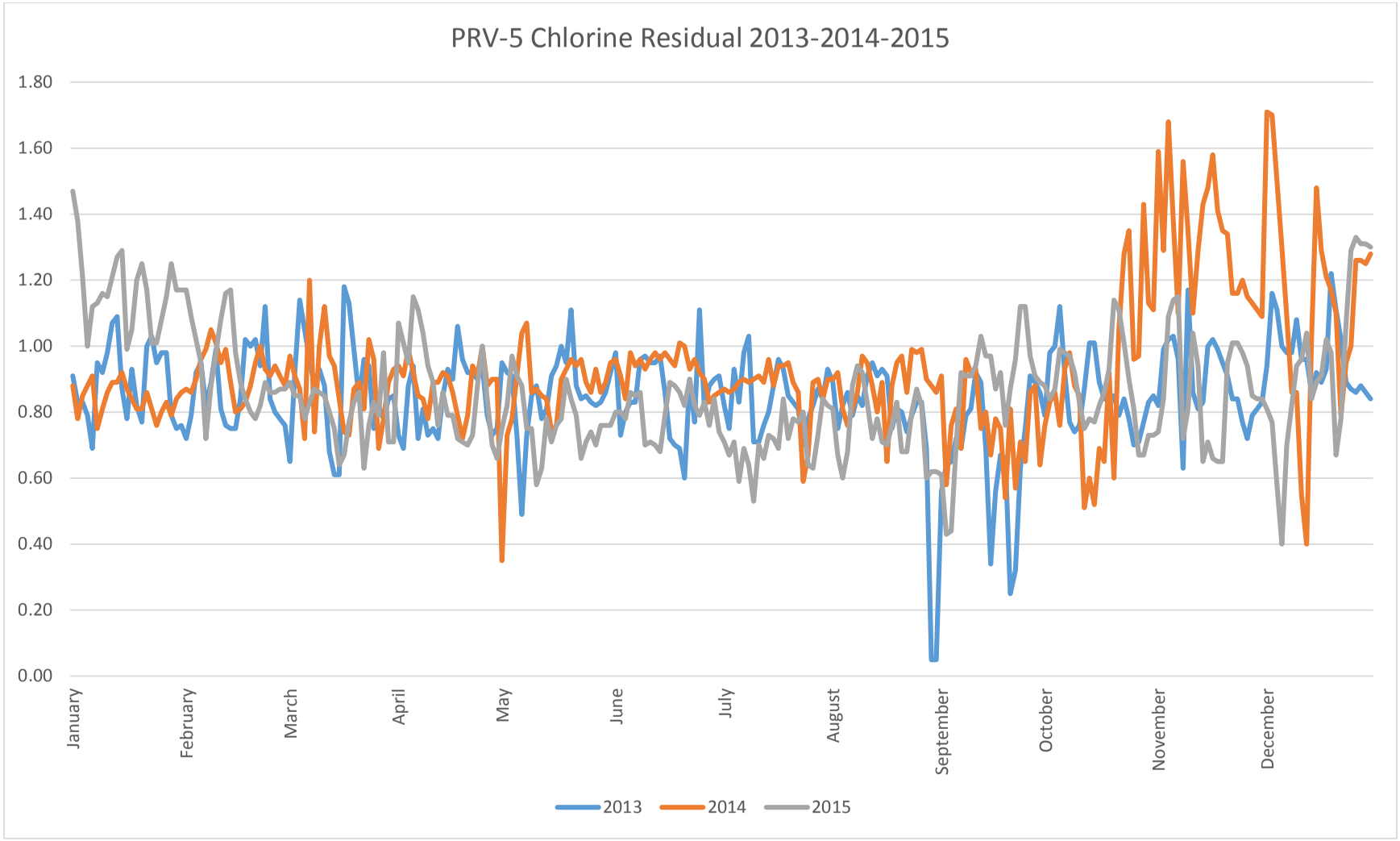

Kelvin Grove Turbidity 2013-2014-2015
6.00
5.00
4.00
3.00
2.00
1.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

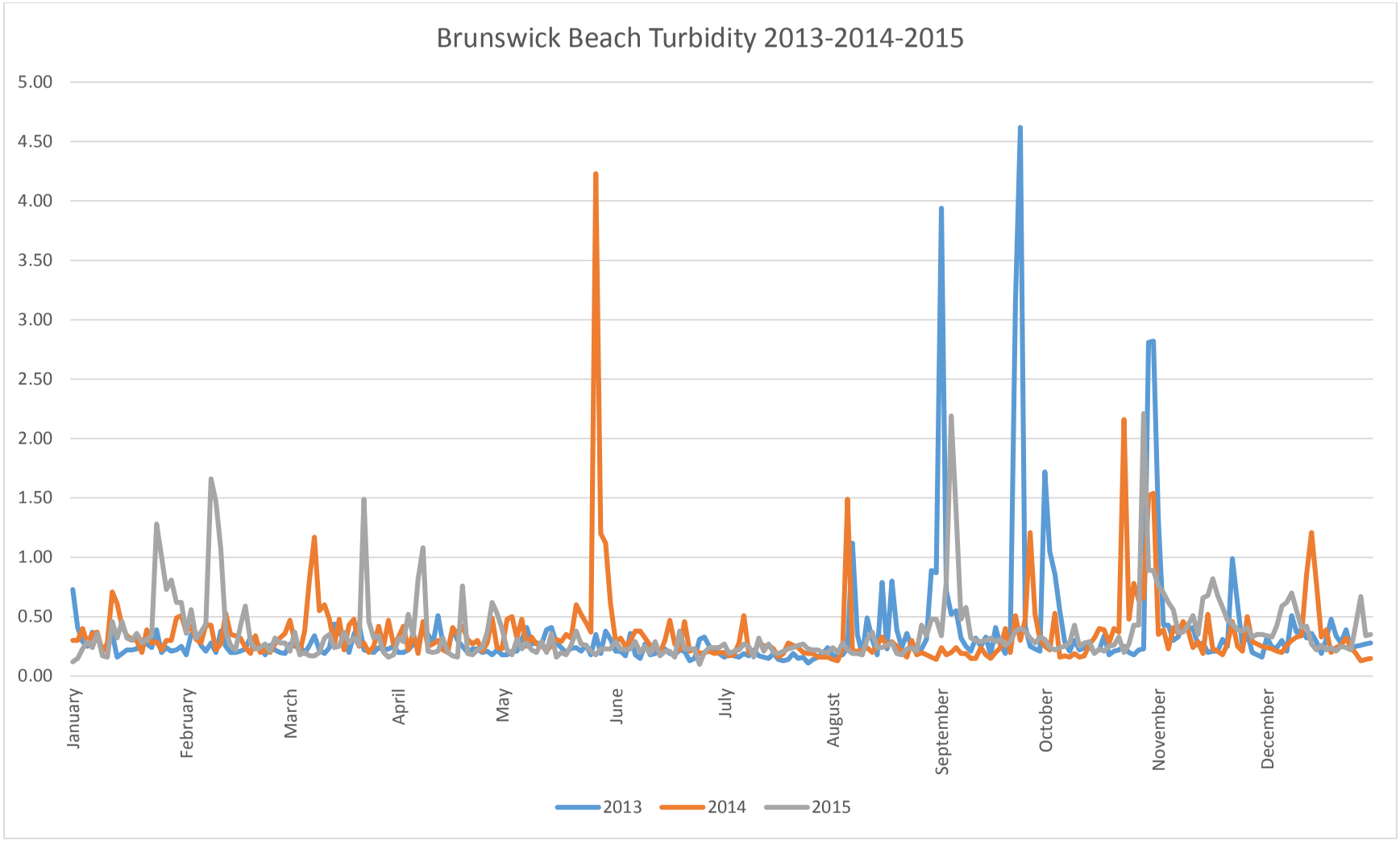

Kelvin Grove Chlorine Residual 2013-2014-2015
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

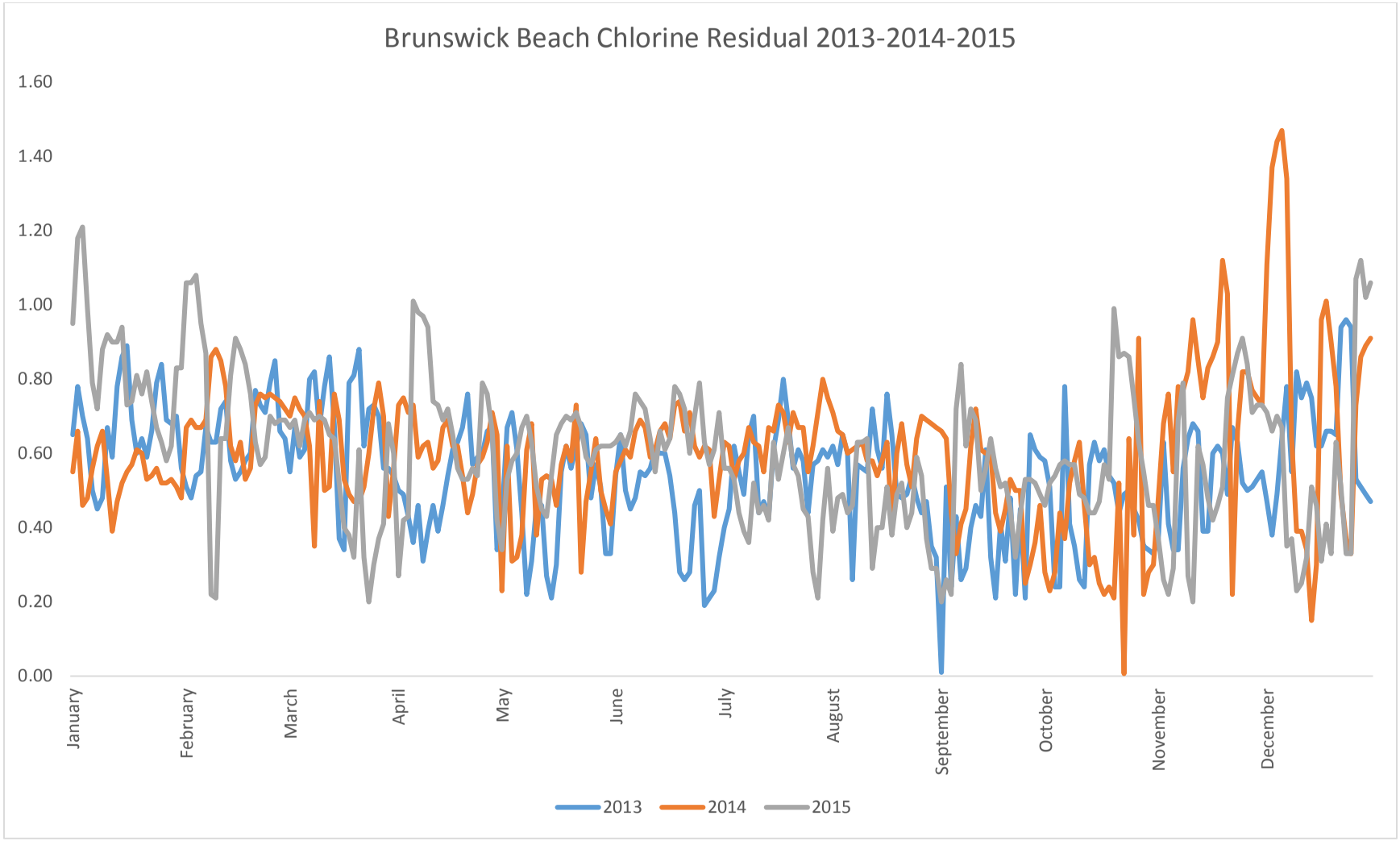

Magnesia Reservior Tank Turbidity 2013-2014-2015
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

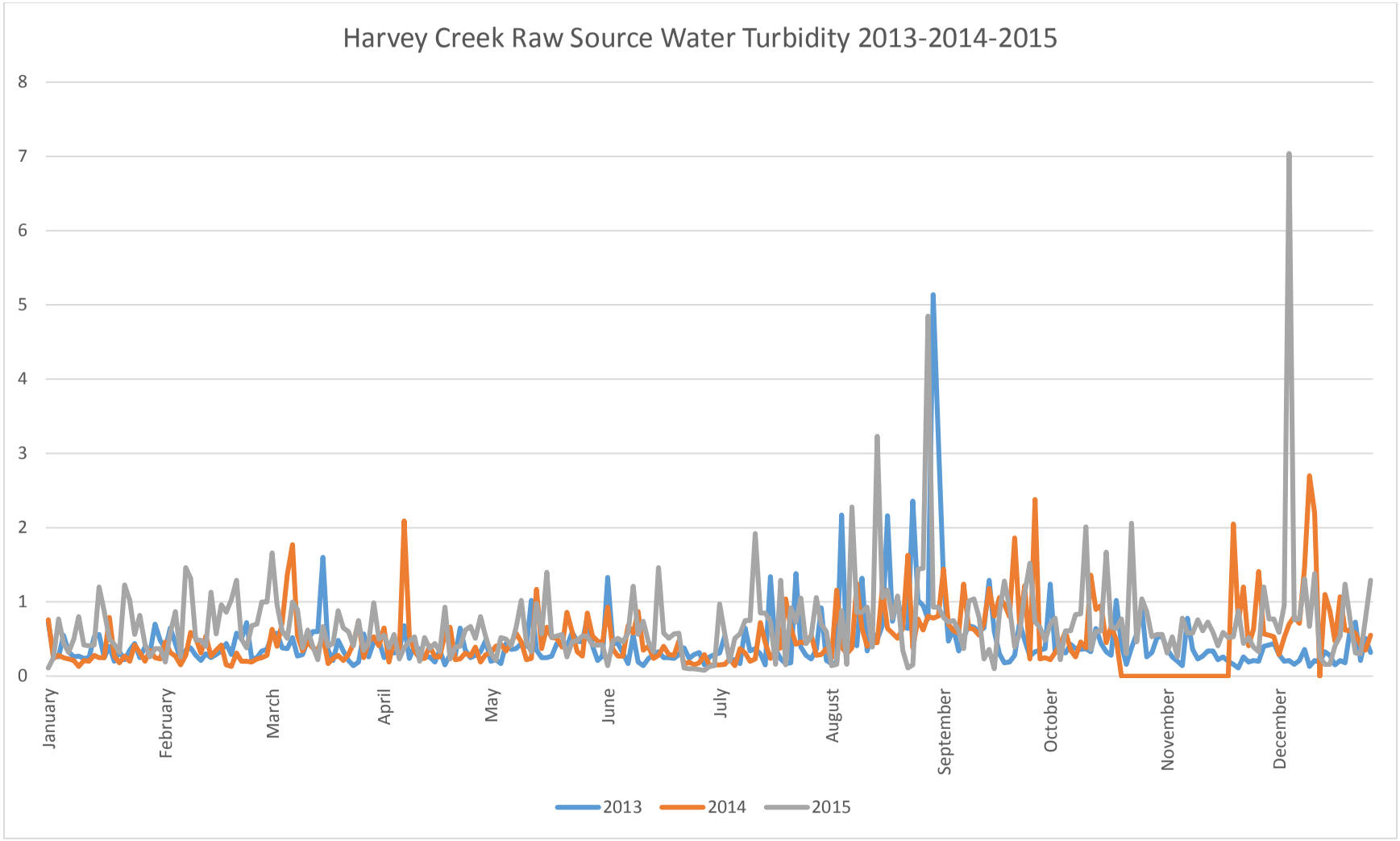

Magnesia Reservoir Tank Chlorine Residual 2013-2014-2015
2.50
2.00
1.50
1.00
0.50
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

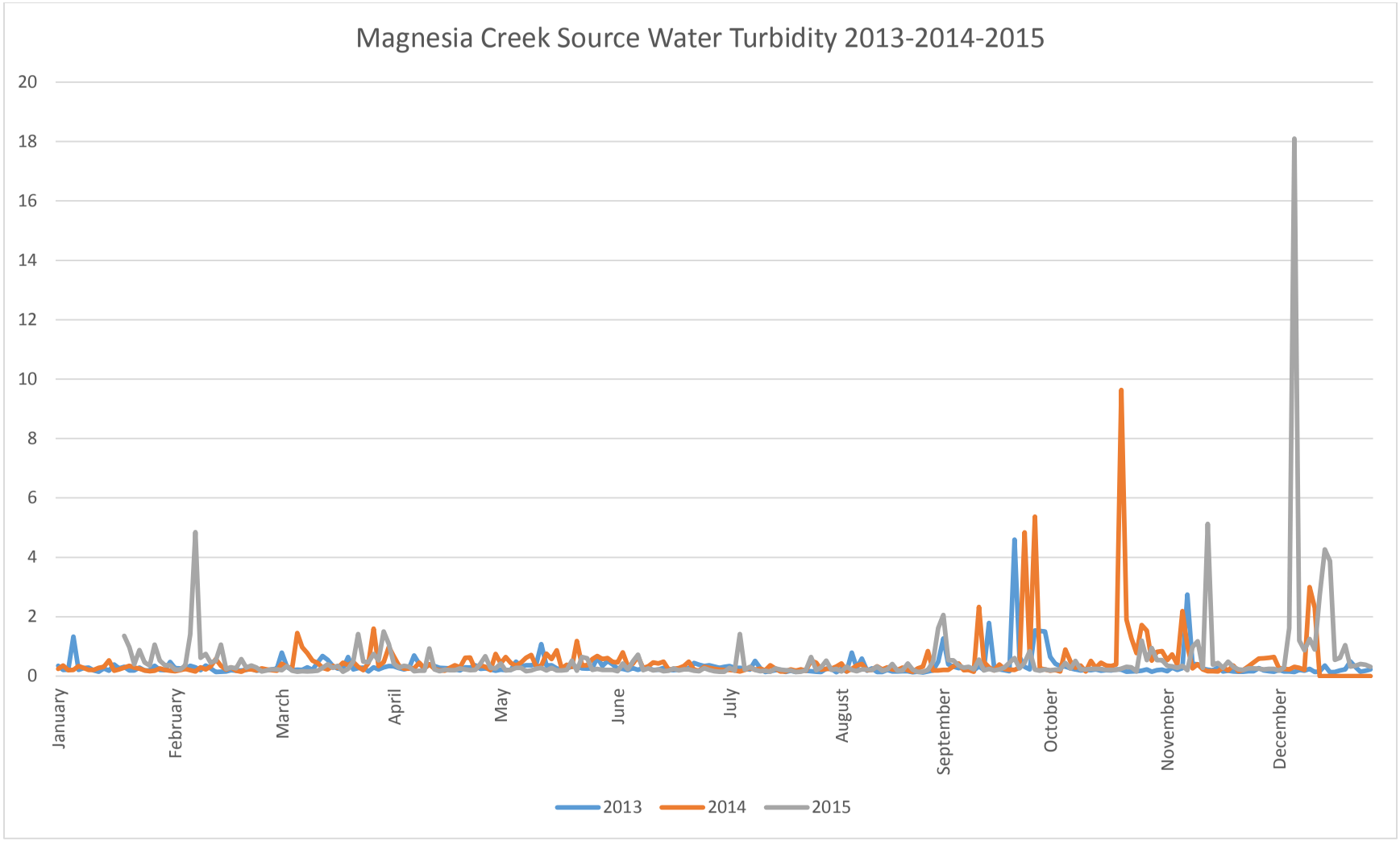

PRV-5 Turbidity 2013-2014-2015
6.00
5.00
4.00
3.00
2.00
1.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015


PRV-5 Chlorine Residual 2013-2014-2015
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015


Brunswick Beach Turbidity 2013-2014-2015
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015


Brunswick Beach Chlorine Residual 2013-2014-2015
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015


Harvey Creek Raw Source Water Turbidity 2013-2014-2015
8
7
6
5
4
3
2
1
0
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015


Magnesia Creek Source Water Turbidity 2013-2014-2015
20
18
16
14
12
10
8
6
4
2
0
January
February
March
April
May
June
July
August
September
October
November
December
2013
2014
2015

APPENDIX D: METALS & WATER CHEMISTRY TEST RESULTS

VILLAGE OF LIONS BAY
ATTN: Nikii Hoglund
PO Box 141, 400 Center Road
Lions Bay BC V0N 2E0

Date Received: 10-MAR-15
Report Date: 20-MAR-15 16:33 (MT)
Version: FINAL

Client Phone: 604-921-9833

Certificate of Analysis

Lab Work Order #: L1585925

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Courtney Duncan
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1585925-1	L1585925-2	L1585925-3	L1585925-4	L1585925-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	10-MAR-15	10-MAR-15	10-MAR-15	10-MAR-15	10-MAR-15
	Sampled Time	09:10	09:10	11:55	11:55	11:35
	Client ID	HARVEY TANK (FIRST DRAW)	HARVEY TANK (AFTER FLUSH)	STORE/CAFE (FIRST DRAW)	STORE/CAFE (AFTER FLUSH)	LIONS BAY AVE. (FIRST DRAW)
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.64	6.76	6.56	6.66	6.78
	pH (pH)	7.33		7.25		7.25
	Total Suspended Solids (mg/L)	<3.0		<3.0		<3.0
	Turbidity (NTU)	0.11		0.10		0.12
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	7.1		6.4		7.0
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	0.80		0.76		0.55
Total Metals	Aluminum (Al)-Total (mg/L)	0.033	0.029	0.026	0.027	0.024
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Total (mg/L)	0.00010	0.00012	<0.00010	<0.00010	<0.00010
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	2.20	2.26	2.19	2.23	2.28
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0819	0.0028	0.0472	0.0180	0.148
	Iron (Fe)-Total (mg/L)	<0.030	<0.030	0.032	0.035	<0.030
	Lead (Pb)-Total (mg/L)	0.00073	<0.00050	0.00174	<0.00050	<0.00050
	Magnesium (Mg)-Total (mg/L)	0.28	0.27	0.26	0.27	0.26
	Manganese (Mn)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Mercury (Hg)-Total (mg/L)		<0.00020		<0.00020	
	Potassium (K)-Total (mg/L)	0.13	0.13	0.13	0.13	0.12
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Aggregate Organics	BOD (mg/L)	<2.0		<2.0		<2.0
Trihalomethanes	Bromodichloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Bromoform (mg/L)	<0.0010		<0.0010		<0.0010
	Dibromochloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Chloroform (mg/L)	0.0226		0.0244		0.0265
	Total THMs (mg/L)	0.0226		0.0244		0.0265

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1585925-6 WATER 10-MAR-15 11:35 LIONS BAY AVE. (AFTER FLUSH)	L1585925-7 WATER 10-MAR-15 08:10 KELVIN GROVE (FIRST DRAW)	L1585925-8 WATER 10-MAR-15 08:10 KELVIN GROVE (AFTER FLUSH)	L1585925-9 WATER 10-MAR-15 07:30 COMMUNITY CENTRE (FIRST DRAW)	L1585925-10 WATER 10-MAR-15 07:30 COMMUNITY CENTRE (AFTER FLUSH)
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	6.71	8.12	7.60	6.86	6.78
	pH (pH)		7.46		7.22	
	Total Suspended Solids (mg/L)		<3.0		<3.0	
	Turbidity (NTU)		0.12		0.12	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		7.6		6.7	
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)		0.64		0.59	
Total Metals	Aluminum (Al)-Total (mg/L)	0.028	0.029	0.032	0.019	0.027
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010	0.00011	<0.00010	0.00011
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	2.25	2.83	2.65	2.30	2.30
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0034	0.126	0.0038	0.121	0.0352
	Iron (Fe)-Total (mg/L)	<0.030	<0.030	0.038	<0.030	0.043
	Lead (Pb)-Total (mg/L)	<0.00050	0.0124	0.00111	0.00874	0.00099
	Magnesium (Mg)-Total (mg/L)	0.26	0.25	0.24	0.27	0.25
	Manganese (Mn)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Mercury (Hg)-Total (mg/L)	<0.00020		<0.00020		<0.00020
	Potassium (K)-Total (mg/L)	0.13	0.12	0.12	0.12	0.12
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	<2.0	<2.0	<2.0	<2.0	<2.0
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050	0.341	<0.050
Aggregate Organics	BOD (mg/L)		<2.0		<2.0	
Trihalomethanes	Bromodichloromethane (mg/L)		<0.0010		<0.0010	
	Bromoform (mg/L)		<0.0010		<0.0010	
	Dibromochloromethane (mg/L)		<0.0010		<0.0010	
	Chloroform (mg/L)		0.0313		0.0266	
	Total THMs (mg/L)		0.0313		0.0266	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1585925-11 WATER 10-MAR-15 10:20 MAGNESIA TANK (FIRST DRAW)	L1585925-12 WATER 10-MAR-15 10:20 MAGNESIA TANK (AFTER FLUSH)	L1585925-13 WATER 10-MAR-15 12:30 BRUNSWICK BEACH (FIRST DRAW)	L1585925-14 WATER 10-MAR-15 12:30 BRUNSWICK BEACH (AFTER FLUSH)	L1585925-15 WATER 10-MAR-15 07:50 ELEMENTARY SCHOOL (FIRST DRAW)
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	14.3	14.1	14.8	14.7	15.7
	pH (pH)	7.15		7.28		7.44
	Total Suspended Solids (mg/L)	<3.0		<3.0		<3.0
	Turbidity (NTU)	0.14		0.21		2.49
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	6.9		7.3		7.5
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	<0.50		<0.50		<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	<0.010	0.020	0.013	0.018	<0.010
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00084
	Arsenic (As)-Total (mg/L)	<0.00010	0.00011	<0.00010	0.00010	0.00045
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	0.00027	<0.00020	<0.00020	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	4.74	4.66	4.98	4.94	5.40
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.598	0.0077	0.262	0.0034	0.325
	Iron (Fe)-Total (mg/L)	0.084	<0.030	<0.030	<0.030	0.032
	Lead (Pb)-Total (mg/L)	0.00503	<0.00050	0.00172	<0.00050	2.01
	Magnesium (Mg)-Total (mg/L)	0.59	0.59	0.58	0.58	0.54
	Manganese (Mn)-Total (mg/L)	0.0022	<0.0020	<0.0020	<0.0020	0.0028
	Mercury (Hg)-Total (mg/L)		<0.00020		<0.00020	
	Potassium (K)-Total (mg/L)	0.10	0.10	0.11	0.11	0.12
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	2.8	2.8	2.7	2.7	3.0
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	0.330	<0.050	<0.050	<0.050	<0.050
Aggregate Organics	BOD (mg/L)	<2.0		<2.0		<2.0
Trihalomethanes	Bromodichloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Bromoform (mg/L)	<0.0010		<0.0010		<0.0010
	Dibromochloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Chloroform (mg/L)	0.0161		0.0216		0.0305
	Total THMs (mg/L)	0.0161		0.0216		0.0305

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1585925-16	L1585925-17	L1585925-18		
	Description	WATER	SURFACE WATE	SURFACE WATE		
	Sampled Date	10-MAR-15	10-MAR-15	10-MAR-15		
	Sampled Time	07:50	09:20	10:30		
	Client ID	ELEMENTARY SCHOOL (AFTER FLUSH)	HARVEY RAW WATER (AFTER FLUSH)	MAGNESIA RAW WATER (AFTER FLUSH)		
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	15.2	6.46	14.5		
	pH (pH)		7.23	6.93		
	Total Suspended Solids (mg/L)		<3.0	<3.0		
	Turbidity (NTU)		0.15	0.12		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		5.6	5.2		
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)		0.55	0.81		
Total Metals	Aluminum (Al)-Total (mg/L)	0.063	0.029	0.019		
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Arsenic (As)-Total (mg/L)	0.00018	<0.00010	0.00011		
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020		
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10		
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Calcium (Ca)-Total (mg/L)	5.21	2.13	4.83		
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020		
	Copper (Cu)-Total (mg/L)	0.0738	0.0059	0.0051		
	Iron (Fe)-Total (mg/L)	0.518	<0.030	<0.030		
	Lead (Pb)-Total (mg/L)	0.00492	<0.00050	<0.00050		
	Magnesium (Mg)-Total (mg/L)	0.53	0.28	0.61		
	Manganese (Mn)-Total (mg/L)	0.0040	<0.0020	<0.0020		
	Mercury (Hg)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Potassium (K)-Total (mg/L)	0.10	0.13	0.10		
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010		
	Sodium (Na)-Total (mg/L)	2.7	<2.0	<2.0		
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050		
Aggregate Organics	BOD (mg/L)		<2.0	<2.0		
Trihalomethanes	Bromodichloromethane (mg/L)					
	Bromoform (mg/L)					
	Dibromochloromethane (mg/L)					
	Chloroform (mg/L)					
	Total THMs (mg/L)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Total Organic Carbon	MS-B	L1585925-1, -11, -13, -15, -17, -18, -3, -5, -7, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

BOD5-VA Water Biochemical Oxygen Demand- 5 day APHA 5210 B- "BIOCHEMICAL OXYGEN DEMAND"

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

BOD5-VA Water Biochemical Oxygen Demand- 5 day APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-TOT-CVAFS-VA Water Total Mercury in Water by CVAFS EPA 245.7

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-TOT-LOW-MS-VA Water Total Metals in Water by ICPMS(Low) EPA SW-846 3005A/6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

THM-HSMS-VA Water VOC (THM) by Headspace GCMS EPA SW-846, METHOD 8260

This procedure is suitable for the analysis of trihalomethanes (chloroform, bromodichloromethane, dibromochloromethane, and bromoform) in chlorinated waters that have been treated to prevent the formation of trihalomethanes after sample collection. The analysis involves the headspace extraction of the sample prior to analysis by capillary column gas chromatography with mass spectrometric detection (GC/MS). The trihalomethanes analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Reference Information

THM-SUM-CALC-VA	Water	Total Trihalomethane-THM	CALCULATION

Total Trihalomethanes (where not conducted as part of a formation potential analysis) is equal to the sum of the individual parameter concentrations with non-detect results treated as zero.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

L1585925-COFC

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Village of Lions Bay	☐ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Nikii Hoglund	☑ PDF ☐ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	400 Centre Rd	Email 1: aurrutia@lionsbay.ca	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Lions Bay, BC V0N 2E0	Email 2: works@lionsbay.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604 921 9833 Fax:	Email 3:	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Courtney Duncan	Sampler: Alberto Urrutia

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hardness	pH	TSS	BOD	Turbidity	Alkalinity Total	Total Metals (First Draw)	Total Metals (After Flush)	Mercury	Total Organic Carbon	Trihalomethanes		Number of Containers
	Harvey Tank	10-Mar-15	9:10	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Store / Café	10-Mar-15	11:55	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Lions Bay Ave.	10-Mar-15	11:35	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Kelvin Grove	10-Mar-15	8:10	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Community Centre	10-Mar-15	7:30	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Magnesia Tank	10-Mar-15	10:20	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Brunswick Beach	10-Mar-15	12:30	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Elementary School	10-Mar-15	7:50	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Harvey Raw Water	10-Mar-15	9:20	Surface Water	X	X	X	X	X	X		X	X	X			4
	Magnesia Raw Water	10-Mar-15	10:30	Surface Water	X	X	X	X	X	X		X	X	X			4

Short Holding Time

Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
				Mar 10	14:36	5.4 °C				

6.0

VILLAGE OF LIONS BAY
ATTN: Nikii Hoglund
PO Box 141, 400 Center Road
Lions Bay BC V0N 2E0

Date Received: 15-SEP-15
Report Date: 28-SEP-15 15:12 (MT)
Version: FINAL

Client Phone: 604-921-9833

Certificate of Analysis

Lab Work Order #: L1673190
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Courtney Duncan
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1673190-1 Water 15-SEP-15 10:55 HARVEY TANK (FIRST DRAW)	L1673190-2 Water 15-SEP-15 10:55 HARVEY TANK (AFTER FLUSH)	L1673190-3 Water 15-SEP-15 08:10 STORE/CAFE (FIRST DRAW)	L1673190-4 Water 15-SEP-15 08:10 STORE/CAFE (AFTER FLUSH)	L1673190-5 Water 15-SEP-15 12:15 LIONS BAY AVE. (FIRST DRAW)
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	7.34	7.43	16.3	16.0	7.39
	pH (pH)	7.09		7.01		7.06
	Total Suspended Solids (mg/L)	<3.0		<3.0		<3.0
	Turbidity (NTU)	0.10		0.33		0.11
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	6.6		6.0		7.4
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	0.92		0.69		0.86
Total Metals	Aluminum (Al)-Total (mg/L)	0.043	0.028	0.044	0.033	0.013
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Total (mg/L)	0.00023	0.00023	0.00024	0.00025	0.00015
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	2.50	2.53	5.63	5.57	2.55
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0098	0.0036	0.0636	0.0106	0.351
	Iron (Fe)-Total (mg/L)	0.041	<0.030	0.157	0.223	<0.030
	Lead (Pb)-Total (mg/L)	<0.00050	<0.00050	0.0107	<0.00050	0.00137
	Magnesium (Mg)-Total (mg/L)	0.27	0.27	0.55	0.50	0.25
	Manganese (Mn)-Total (mg/L)	<0.0020	<0.0020	0.0024	0.0025	<0.0020
	Mercury (Hg)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Potassium (K)-Total (mg/L)	0.19	0.19	0.13	0.13	0.19
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	3.0	3.0	3.6	3.4	2.9
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Aggregate Organics	BOD (mg/L)	<2.0		<2.0		<2.0
Trihalomethanes	Bromodichloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Bromoform (mg/L)	<0.0010		<0.0010		<0.0010
	Dibromochloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Chloroform (mg/L)	0.0423		0.0500		0.0440
	Total THMs (mg/L)	0.0423		0.0500		0.0440

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1673190-6 Water 15-SEP-15 12:15 LIONS BAY AVE. (AFTER FLUSH)	L1673190-7 Water 15-SEP-15 08:40 KELVIN GROVE (FIRST DRAW)	L1673190-8 Water 15-SEP-15 08:40 KELVIN GROVE (AFTER FLUSH)	L1673190-9 Water 15-SEP-15 09:45 MAGNESIA TANK (FIRST DRAW)	L1673190-10 Water 15-SEP-15 09:45 MAGNESIA TANK (AFTER FLUSH)
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	7.30	9.14	9.40	16.0	16.3
	pH (pH)		7.46		6.99	
	Total Suspended Solids (mg/L)		<3.0		<3.0	
	Turbidity (NTU)		<0.10		<0.10	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		8.5		5.9	
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)		0.93		0.70	
Total Metals	Aluminum (Al)-Total (mg/L)	0.028	0.044	0.043	0.014	0.025
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Total (mg/L)	0.00020	0.00019	0.00022	0.00015	0.00021
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	2.51	3.32	3.41	5.51	5.60
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0031	0.0062	0.0014	0.461	0.0078
	Iron (Fe)-Total (mg/L)	<0.030	0.061	0.044	0.204	<0.030
	Lead (Pb)-Total (mg/L)	<0.00050	0.0306	0.00080	0.00163	<0.00050
	Magnesium (Mg)-Total (mg/L)	0.25	0.21	0.21	0.54	0.55
	Manganese (Mn)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0032	<0.0020
	Mercury (Hg)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Potassium (K)-Total (mg/L)	0.18	0.18	0.19	0.13	0.13
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	2.9	2.8	3.0	3.6	3.4
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050	0.186	<0.050
Aggregate Organics	BOD (mg/L)		<2.0		<2.0	
Trihalomethanes	Bromodichloromethane (mg/L)		<0.0010		<0.0010	
	Bromoform (mg/L)		<0.0010		<0.0010	
	Dibromochloromethane (mg/L)		<0.0010		<0.0010	
	Chloroform (mg/L)		0.0626		0.0313	
	Total THMs (mg/L)		0.0626		0.0313	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1673190-11 Water 15-SEP-15 12:55 BRUNSWICK BEACH (FIRST DRAW)	L1673190-12 Water 15-SEP-15 12:55 BRUNSWICK BEACH (AFTER FLUSH)	L1673190-13 Water 15-SEP-15 07:40 ELEMENTARY SCHOOL (FIRST DRAW)	L1673190-14 Water 15-SEP-15 07:40 ELEMENTARY SCHOOL (AFTER FLUSH)	L1673190-15 Water 15-SEP-15 07:55 COMMUNITY CENTRE (FIRST DRAW)
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	15.4	16.3	13.7	16.4	16.6
	pH (pH)	7.21		6.96		7.02
	Total Suspended Solids (mg/L)	<3.0		<3.0		<3.0
	Turbidity (NTU)	0.21		0.12		0.36
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	6.4		5.9		6.3
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)	0.69		0.77		0.65
Total Metals	Aluminum (Al)-Total (mg/L)	0.016	0.027	0.028	0.019	0.035
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Total (mg/L)	0.00018	0.00022	0.00019	0.00020	0.00023
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020	<0.020	<0.020
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	0.00042	<0.00020	<0.00020
	Calcium (Ca)-Total (mg/L)	5.39	5.70	4.80	5.68	5.79
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.292	0.0058	0.0142	0.0719	0.110
	Iron (Fe)-Total (mg/L)	0.061	0.058	<0.030	0.030	0.162
	Lead (Pb)-Total (mg/L)	0.00343	<0.00050	0.00918	0.00147	0.0117
	Magnesium (Mg)-Total (mg/L)	0.48	0.50	0.43	0.54	0.53
	Manganese (Mn)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0023
	Mercury (Hg)-Total (mg/L)			<0.00020	<0.00020	<0.00020
	Potassium (K)-Total (mg/L)	0.15	0.14	0.18	0.13	0.14
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sodium (Na)-Total (mg/L)	3.5	3.5	3.4	3.5	3.6
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	0.172	<0.050	0.225
Aggregate Organics	BOD (mg/L)	<2.0		<2.0		<2.0
Trihalomethanes	Bromodichloromethane (mg/L)	0.0011		<0.0010		<0.0010
	Bromoform (mg/L)	<0.0010		<0.0010		<0.0010
	Dibromochloromethane (mg/L)	<0.0010		<0.0010		<0.0010
	Chloroform (mg/L)	0.0591		0.0471		0.0543
	Total THMs (mg/L)	0.0601		0.0471		0.0543

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1673190-16	L1673190-17	L1673190-18		
	Description	Water	Surface Water	Surface Water		
	Sampled Date	15-SEP-15	15-SEP-15	15-SEP-15		
	Sampled Time	07:55	11:00	09:40		
	Client ID	COMMUNITY CENTRE (AFTER FLUSH)	HARVEY RAW WATER	MAGNESIA RAW WATER		
Grouping	**Analyte**					
WATER						
Physical Tests	Hardness (as CaCO3) (mg/L)	16.5	6.69	16.4		
	pH (pH)		6.92	6.86		
	Total Suspended Solids (mg/L)		<3.0	<3.0		
	Turbidity (NTU)		0.36	0.11		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)		5.6	4.6		
Organic / Inorganic Carbon	Total Organic Carbon (mg/L)		1.46	0.64		
Total Metals	Aluminum (Al)-Total (mg/L)	0.035	0.068	0.023		
	Antimony (Sb)-Total (mg/L)	<0.00050	<0.00050	<0.00050		
	Arsenic (As)-Total (mg/L)	0.00027	0.00023	0.00021		
	Barium (Ba)-Total (mg/L)	<0.020	<0.020	<0.020		
	Boron (B)-Total (mg/L)	<0.10	<0.10	<0.10		
	Cadmium (Cd)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Calcium (Ca)-Total (mg/L)	5.77	2.26	5.64		
	Chromium (Cr)-Total (mg/L)	<0.0020	<0.0020	<0.0020		
	Copper (Cu)-Total (mg/L)	0.0285	0.0071	0.0052		
	Iron (Fe)-Total (mg/L)	0.219	<0.030	<0.030		
	Lead (Pb)-Total (mg/L)	0.00107	<0.00050	<0.00050		
	Magnesium (Mg)-Total (mg/L)	0.51	0.25	0.56		
	Manganese (Mn)-Total (mg/L)	0.0024	<0.0020	<0.0020		
	Mercury (Hg)-Total (mg/L)	<0.00020	<0.00020	<0.00020		
	Potassium (K)-Total (mg/L)	0.14	0.17	0.12		
	Selenium (Se)-Total (mg/L)	<0.0010	<0.0010	<0.0010		
	Sodium (Na)-Total (mg/L)	3.5	<2.0	<2.0		
	Uranium (U)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Zinc (Zn)-Total (mg/L)	<0.050	<0.050	<0.050		
Aggregate Organics	BOD (mg/L)		<2.0	<2.0		
Trihalomethanes	Bromodichloromethane (mg/L)					
	Bromoform (mg/L)					
	Dibromochloromethane (mg/L)					
	Chloroform (mg/L)					
	Total THMs (mg/L)					

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1673190-10	MAGNESIA TANK (AFTER F	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-14	ELEMENTARY SCHOOL (AF	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-16	COMMUNITY CENTRE (AFT	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-2	HARVEY TANK (AFTER FLU	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-4	STORE/CAFE (AFTER FLUS	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-6	LIONS BAY AVE. (AFTER FL	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1673190-8	KELVIN GROVE (AFTER FLI	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Lead (Pb)-Total	MS-B	L1673190-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Copper (Cu)-Total	MS-B	L1673190-10, -11, -12, -13, -14, -15, -16, -17, -18, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BOD5-VA Water Biochemical Oxygen Demand- 5 day APHA 5210 B- "BIOCHEMICAL OXYGEN DEMAND"

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

BOD5-VA Water Biochemical Oxygen Demand- 5 day APHA 5210 B- BIOCHEMICAL OXYGEN DEMAND

This analysis is carried out using procedures adapted from APHA Method 5210 B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation.

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-TOT-CVAFS-VA Water Total Hg in Water by CVAFS LOR=50ppt EPA 1631E (mod)

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-ICP-VA Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method

Reference Information

6010B).

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

THM-HSMS-VA	Water	VOC (THM) by Headspace GCMS	EPA SW-846, METHOD 8260

This procedure is suitable for the analysis of trihalomethanes (chloroform, bromodichloromethane, dibromochloromethane, and bromoform) in chlorinated waters that have been treated to prevent the formation of trihalomethanes after sample collection. The analysis involves the headspace extraction of the sample prior to analysis by capillary column gas chromatography with mass spectrometric detection (GC/MS). The trihalomethanes analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

THM-SUM-CALC-VA	Water	Total Trihalomethane-THM	CALCULATION

Total Trihalomethanes (where not conducted as part of a formation potential analysis) is equal to the sum of the individual parameter concentrations with non-detect results treated as zero.

TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analy
Canada Toll Free: 1
www.alsglob

L1673190-COFC

COC # _____

Page 1 of 1

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Village of Lions Bay			☐ Standard ☐ Other				◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Nikii Hoglund			☑ PDF ☐ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	400 Centre Rd			Email 1: aurrutia@lionsbay.ca				○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Lions Bay, BC V0N 2E0			Email 2: works@lionsbay.ca				○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604 921 9833	Fax:		Email 3:				**Analysis Request**
Invoice To	Same as Report ?	☑ Yes	☐ No	**Client / Project Information**				Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:				
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:				
Lab Work Order # (lab use only)				**ALS Contact:** Courtney Duncan		**Sampler:**	Alberto Urrutia	

Sample #	Sample Identification (This description will appear on the re	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Hardness	pH	TSS	BOD	Turbidity	Alkalinity Total	Total Metals (First Draw)	Total Metals (After Flush)	Mercury	Total Organic Carbon	Trihalomethanes		Number of Containers
	Harvey Tank	15-Sep-15	10:55	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Store / Café	15-Sep-15	8:10	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Lions Bay Ave.	15-Sep-15	12:15	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Kelvin Grove	15-Sep-15	8:40	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Magnesia Tank	15-Sep-15	9:45	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Brunswick Beach	15-Sep-15	12:55	Water	X	X	X	X	X	X	X	X		X	X		7
	Elementary School	15-Sep-15	7:40	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Community Centre	15-Sep-15	7:55	Water	X	X	X	X	X	X	X	X	X	X	X		8
	Harvey Raw Water	15-Sep-15	11:00	Surface Water	X	X	X	X	X	X		X	X	X			4
	Magnesia Raw Water	15-Sep-15	9:40	Surface Water	X	X	X	X	X	X		X	X	X			4

Short Holding Time
Rush Processing

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			Shayan	Sept. 15	1520	6-7 °C				

GENF 18.01 Front

APPENDIX E: BOIL WATER ADVISORIES ISSUED

APPENDIX F: EMERGENCY RESPONSE PLAN

APPENDIX F: EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN

Table 1 below outlines the notification process for unusual situations that could potentially affect the Village's potable water system.

Table 1. Notification of Unusual Situations Potentially Affecting Water Quality

Situation	Notifying Agency	Agency Notified	Notification Time Frame
E. coli – positive sample	VCH/Lab	VoLB and VCH	Immediate
Total coliform >10/100ml & low chlorine residual	VoLB	VCH	Immediate
Chemical contamination	VoLB	VCH	Immediate
Turbidity events >5 NTU	VoLB	VCH	Immediate
Disinfection failures/continued loss of residual	VoLB	VCH	Immediate for continued loss of residual
Loss of pressure due to high demand	VoLB	VCH	Immediate
Water main breaks	VoLB	VCH	Immediate
Lack of water due to drought or other causes	VoLB	EMBC & VCH	Information only; as drought situation progresses

E. COLI POSITIVE SAMPLES

1. Any interim samples (samples that have been taken in the period between the time the E. coli sample was first drawn and when the laboratory determined it to be positive) that have been taken from the same sampling station will be immediately examined by the laboratory.
2. The chlorine residual noted on the Water Operator's field sheet will be reviewed by the laboratory and compared to previous test results to determine if there is any localized loss of disinfectant residual.
3. The Public Works Manager (or designate) and VCH will be notified immediately by the laboratory.
4. Arrangements will be made for the immediate collection of a repeat sample, and, where possible, both upstream and downstream of the E. coli positive sample location.
5. VCH and the Public Works Manager (or designate) will liaise and determine the need for a Boil Water Advisory (BWA) to be issued. If it is determined to be warranted, VCH will issue the BWA.
6. The laboratory will continue to test the subsequent samples. Once consecutive negative sample results are returned, the Public Works Manager (or designate) will liaise again with VCH and determine whether the BWA can be lifted.

APPENDIX F: EMERGENCY RESPONSE PLAN

CHEMICAL CONTAMINATION

In the event of chemical contamination of the Village's water supply or distribution system, VCH will immediately be notified, and steps will commence to isolate the contaminated area. The level of contamination will be determined through water sampling and testing; identified; and any public health risk factors associated with the chemical presence and level will be determined. A public advisory will be issued and carried out by the Public Works Manager (or designate) under the guidance of VCH. Once the contamination is remedied and consecutive negative sample results are returned from the laboratory, the Public Works Manager (or designate) will again liaise with VCH and determine whether the public advisory can be lifted.

TURBIDITY EVENTS

Turbidity in the Village's treated water system is monitored on a regular basis through the water sampling and testing program. Water sample turbidity results that register >1 - 3 NTU are scrutinized, along with corresponding chlorine residual levels, and actively monitored. Any sections of the water system generating high turbidity results are field-checked and flushed if required.

Turbidity events in the raw source water impact the Village's water treatment plants. The performance of the primary UV treatment is affected by increased turbidity because water that that has higher turbidity absorbs a significant amount of UV light, and will therefore have a correspondingly low UV transmittance (UVT) rate. The UV system automatically increases lamp intensity to counter the lower UVT. If turbidity exceeds 5 NTUs entering the plants, the UV system will send an alarm through SCADA to notify the Water Operator, and the UV reactors will shut down. The Water Operator will immediately inform the Public Works Manager (or designate) and investigate the alarm at the plant.

During turbidity events in excess of 5 NTU, microbiological sampling and testing is increased at all sampling locations; chlorine residual sampling and testing is likewise increased; and the Village will contact VCH, who may issue a Boil Water Advisory.

DISINFECTION FAILURES

Chlorine residuals in the Village's treated water system are monitored on a regular basis through the water sampling and testing program. If a daily sample registers below the generally accepted minimum chlorine residual of 0.2ppm, the Water Operator will first flush water through the system to attempt to bring the chlorine residual up to the minimum required. Should the results continue to not meet the minimum, the Village will immediately commence increased monitoring of all chlorine residuals in the system, including the reservoir tank, and determine the root cause of the problem. Chlorine will be added manually to the reservoir tank if required; and residuals checked frequently at all locations. The Public Works Manager (or designate) will contact VCH, who may issue a Boil Water Advisory if continued loss of residual is observed.

LOSS OF PRESSURE DUE TO HIGH DEMAND

In the event of adverse pressure loss due to high demand, Village crews will make adjustments to the system to isolate the affected section, and then take measures to supplement pressure in the affected area. The Public Works Manager (or designate) will immediately consult with VCH regarding further actions; and all water quality complaints from the public will be immediately and thoroughly investigated for potential contamination.

WATER MAIN BREAKS

In the event of a water main break where chemical or microbiological contamination of the system is suspected, Village crews will make adjustments to the system to isolate the contaminated section from the rest of the distribution system. The Public Works Manager (or designate) will immediately consult with VCH regarding further actions; and all water quality complaints from the public will be immediately and thoroughly investigated for potential contamination. Water samples will be taken from the vicinity and downstream of the break if possible, and tested for the suspected contamination. The same procedures as noted under E. coli positive samples above will be implemented if required.

LACK OF WATER DUE TO DROUGHT OR OTHER CAUSES

In the event of a lack of water due to low streamflow or other causes affecting supply (such as debris torrents, lack of safe access to intakes, or Village-wide water use in excess of supply), an escalating conservation system is implemented to address the lack of water in the system.

Conservation efforts now commence annually from June 1 through to September 30 of each year, in accordance with Level One of the Village's Outdoor Water Use Bylaw. Further stages of conservation are then utilized as required to reduce the outdoor use of water in the Village, combined with extensive public notification (via electronic notifications, printed media delivered to every home, and town hall meetings). The highest level of restrictions are intended for emergent situations which directly affect the supply of water in the system. Table 2 outlines the Village's 2015 outdoor water use conservation levels. Conservation Level 2 was in effect from July to September in 2015.

Village Public Works crews can switch valves within the water system itself, based on water availability from either creek, to ensure continuous Village supply. This "balancing" of supply vs. demand occurred often during the drought conditions of 2015.

The GPM of the water flowing from the creek intakes to the respective water treatment plants is monitored daily, during the water sampling and testing program. If the water flow entering either plant is compromised, Village crews ascertain the root cause of the problem (i.e. whether the decrease is due to a blockage or drought) and work to either repair (if blocked) and/or mitigate the impact on the system as a whole by implementing conservation measures noted in Table 2.

APPENDIX F: EMERGENCY RESPONSE PLAN

Table 2 Outdoor Water Use Conservation Levels

	ACTIVITY	CONSERVATION LEVEL 1	CONSERVATION LEVEL 2	CONSERVATION LEVEL 3
RESIDENTIAL & COMMERICAL USES	Watering lawns, 4am – 9am only Newly planted lawns may be watered outside allowed times with a municipal permit displayed	Even-numbered addresses: Monday, Wednesday and Saturday. Odd-numbered addresses: Tuesday, Thursday and Sunday.	Even-numbered addresses: Monday only Odd-numbered addresses: Thursday only	Prohibited
	Watering flowers, vegetables, planters, shrubs, trees	No restrictions	Only by hand using spring-loaded nozzle, containers, or drip irrigation. Sprinklers and soaker hoses prohibited	Prohibited
	Use of pools, spas, fountains/ponds	No restrictions. Must have a recirculation pump. "One-time-through" uses are prohibited at all times		Filling prohibited
	Washing outdoor impermeable surfaces such as driveways, buildings, sidewalks and roads, including pressure washing	No restrictions	Only for health and safety purposes, or to prepare a surface for painting or similar treatment	Prohibited
	Washing vehicles and boats	Only with a hose using spring-loaded shut off	Only by bucket	Prohibited, except for windows, lights, and license plates
	Flushing boat engines	No restrictions		4 minutes maximum
	Filling outdoor water storage	No restrictions		Prohibited
PUBLIC USES	Watering of school property, including Lions Bay Field	No restrictions	Minimum to maintain in useable condition	Prohibited
	Watering of parks, municipal lawns, and grassed boulevards 1am to 6am only	Even-numbered addresses: Monday and Wednesday. Odd-numbered addresses: Tuesday and Thursday. Parks Friday only	Even-numbered addresses: Monday only Odd-numbered addresses: Thursday only	Prohibited
	Flushing of water mains and hydrants	Only for safety or public health reasons		

APPENDIX F: EMERGENCY RESPONSE PLAN

During the drought of 2015, Village crews also repurposed 2 water storage tanks located at Brunswick (42,000 USG) and at the top of Oceanview Road (100,000 USG) to be used as stand-alone emergency non-potable water supply in the event of a fire. Both of these tanks are kept filled during the summer months, and are entirely separate from the potable water system.

Village crews also capture water from the daily water sampling program, store it in truck-mounted totes, and then use it to water municipal planted areas. Crews also fill rain barrels and totes located at the community garden and the native plant garden, so that recycled water is used for irrigation of these areas, as opposed to drinking water. Lions Bay Fire Rescue also discontinue any training activities that draw water from the potable water system.

When a lack of water continues despite conservation efforts, Village staff will liaise with EMBC, VCH, and FLNRO for both information and a consolidated response to events as they unfold. Village staff then arrange water tankers to truck in potable water and use this method to fill one or both reservoir tanks to keep potable water in the water system. Neighboring municipalities are also informed in the event they can lend assistance. As an example, in late 2014 after debris torrents had compromised one intake and the remaining intake's flow was similarly compromised, the District of West Vancouver allowed potable water to be drawn from their system via tanker trucks to the Village to fill the Village reservoir tanks and also allowed Lions Bay residents to utilize shower facilities at no charge at Gleneagles Community Centre during this isolated event.

Increased testing and monitoring of the water system is undertaken, in conjunction with VCH, until the system as a whole is once again restored.

APPENDIX G: VANCOUVER COASTAL HEALTH PERMIT TO OPERATE

Vancouver Coastal Health

Promoting wellness. Ensuring care.

Vancouver Coastal Health

PERMIT

TO OPERATE

Drinking Water System 301-10,000 Connections

Facility Number:	3317552348
Name of Facility:	Lions Bay Harvey Creek Water System
Address:	Upper Oceanview Road Lions Bay, BC
Owner:	Municipality of The Village of Lions Bay

Conditions:

1. Submit weekly water samples for bacteriological testing at sites approved by VCH.
2. Chlorine residuals must be recorded daily at locations approved by VCH.
3. Biannual flushing on the entire distribution system.
4. Daily turbidity testing.
5. Annual chemical testing of source
6. Submit annual updated ERP to VCH.

September 29, 2010

Effective Date

Rod Schluter
Environmental Health Officer

This permit must be displayed in a conspicuous place and is nontransferable.

Vancouver Coastal Health
Expires March 2016
8885

ENV20 - 08/03

Vancouver Coastal Health

Promoting wellness. Ensuring care.

Vancouver Coastal Health

PERMIT

TO OPERATE

Drinking Water System 301-10,000 Connections

Facility Number:	3317552347
Name of Facility:	Lions Bay Magnesia Creek Water System
Address:	Upper Sunset Road Lions Bay, BC
Owner:	Municipality of The Village of Lions Bay

Conditions:

1. Submit weekly water samples for bacteriological testing at sites approved by VCH.
2. Chlorine residuals must be recorded daily at locations approved by VCH.
3. Biannual flushing on the entire distribution system.
4. Daily turbidity testing.
5. Annual chemical testing of source
6. Submit annual updated ERP to VCH.

September 29, 2010

Effective Date

Rod Schluter
Environmental Health Officer

This permit must be displayed in a conspicuous place and is nontransferable.

Vancouver Coastal Health
Expires March 2016
8884

ENV20 - 08/03

APPENDIX H: EOCP FACILITY CLASSIFICATION

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Facility Classification

THIS IS TO CERTIFY THAT

Village of Lions Bay Water System

has been classified by the Environmental Operators Certification Program in accordance with the guidelines established in co-operation with the Association of Boards of Certification (A.B.C.) as

Class II

Dated at Burnaby, B.C.on July 28, 2003

Secretary - Certification Board

Chairman - Certification Board

CERTIFICATE NO.675

eocp

MEMBER OF ASSOCIATION OF BOARDS OF CERTIFICATION
AFFILIATE OF B.C. WATER AND WASTE ASSOCIATION
A Society Incorporated under the Society Act, S.B.C. S-28724

APPENDIX I: EOCP OPERATOR CERTIFICATES

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Certificate of Qualification

This is to certify that:

Alberto Urrutia

By Examination Has Qualified As A

Water Distribution System Operator

and certifies that he/she has met the established qualifications and has the ability to efficiently operate and maintain a specified maximum size and type of water distribution system designated as follows:

Level II

Secretary - Certification Board

Chairman - Certification Board

July 12, 2006

Certificate No: 4766

eocp

Member of Association of Boards of Certification
Affiliate of B.C. Water and Waste Association

This certificate shall be in full force and effect when accompanied by an annual renewal seal

A Society Incorporated under the Society Act, S.B.C. S-28724

ENVIRONMENTAL OPERATORS CERTIFICATION PROGRAM

Course Completion Certificate

This is to certify that

Alberto Urrutia

By Examination Has Qualified As A

Chlorine Handler

Secretary - Certification Board

Chairman - Certification Board

May 6, 2005

Certificate No. CH-4766

eocp

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