REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2018

Surfside Water System

June 2019

REGIONAL DISTRICT OF NANAIMO
Water & Utility Services Department
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1. Introduction

The following annual report describes the Surfside Water Service Area and summarizes the water quality and production data from 2018. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response Plan, and the Cross Connection Control Program.

This report is to be submitted to Island Health by the spring of 2019.

2. Surfside Water Service Area

The Surfside Water Service Area was established in 1986 and comprises an area northwest of Qualicum Beach on Surfside Drive and part of McFeely Drive. There are 38 water service connections in the Surfside Water Service Area. The water source comes from two groundwater wells located nearby. The water source is chlorinated (as of September 2012) and pumped into the system on demand via two pressure tanks. A back-up generator is present at the pumphouse, should it be required. A map of the Surfside Water Service Area is provided in Appendix A for reference.

2.1 Groundwater Wells

Two groundwater production wells are present in the well field at 3547 West Island Highway, north of Qualicum Beach, B.C.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
#1	9.4 m	Yes	Treated
#2	9.8 m	Yes	Treated

2.2 Reservoirs

There is no reservoir in the Surfside Water Service Area. Water supply is pumped into the system via a dual pressure tank arrangement.

2.3 Distribution System

The water distribution system in Surfside is summarized in the table below. Flushouts are present, but there are no fire hydrants on the system.

Watermain Material	Length of mains in Surfside Water Service Area	Prevalence in Water Service Area
AC: 150mm or smaller AC: 200mm or larger	0.8 km none	72.5% n/a
PVC: 150mm or smaller PVC: 200mm or larger	0.006 km 0.3 km	0.5% 27%

Note: 'AC' is Asbestos-Concrete, 'PVC' is poly-vinylchloride (plastic)

3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. Notably, the chlorine residual levels are tested weekly to ensure the absence of bacterial regrowth in the watermains. The following table includes a summary of all testing:

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total coliforms, E.Coli Temperature, pH, Conductivity Free chlorine residual, Salinity, TDS Monthly- Total Iron and Manganese
Weekly (or as required)	BC Centre for Disease Control	Total coliforms, E.Coli
Monthly/Quarterly (well water only)	Bureau Veritas (formerly Maxxam)	Monthly- Chloride Quarterly- Chloride, Sodium, Conductivity, TDS
Annual Source Water Testing (every Fall)	Bureau Veritas (formerly Maxxam)	Complete potability testing of raw well water, including T-Ammonia
Annual System Water Testing (every Spring)	Bureau Veritas (formerly Maxxam)	Complete potability testing of distribution system , including T-Ammonia

4. Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca in the Regional Services section, under "Water & Utility Services" then "WaterSmart Communities". Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

5. Water Quality Inquiries and Complaints

Very few complaints and inquiries were received from the Surfside water service area, and were typically related to watering restriction times.

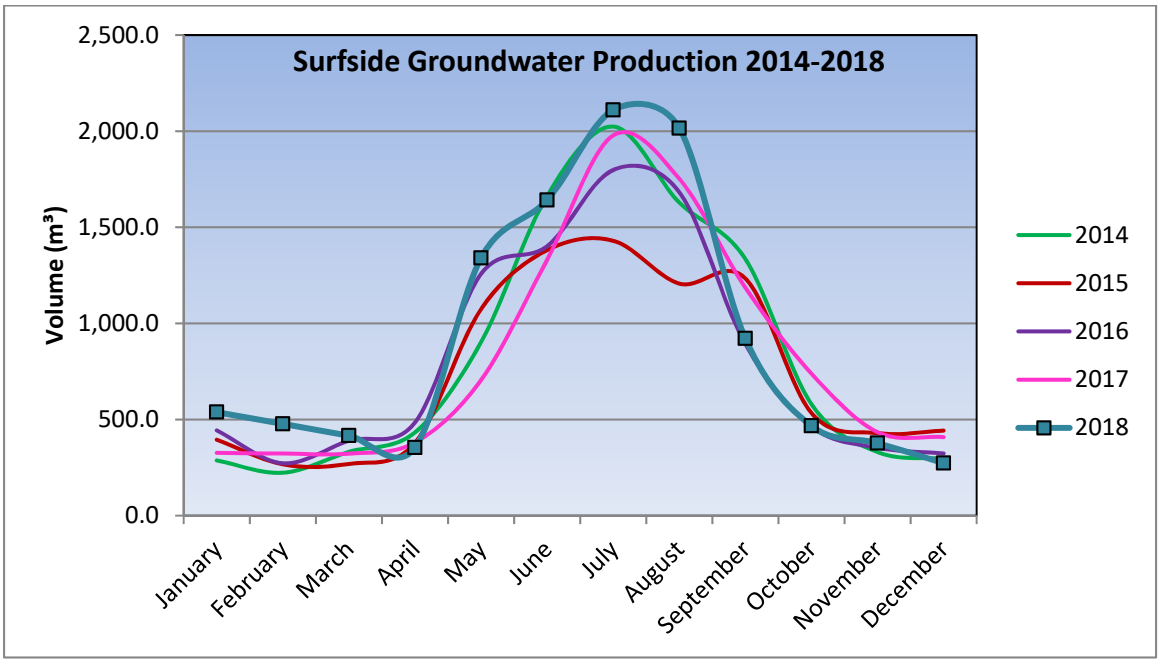
Surfside Pumphouse

A summary of the water system incidents in 2018 is given in the table below.

Activity in 2018	Date(s)	History/Notes
Boil Water Advisories	None	None
High Turbidity Events	None	None
Equipment Malfunction	None	None
Water Main Breaks	None	None
Pump Failures	None	None

6. Groundwater Production

Monthly groundwater production in the Surfside Water Service Area for the past 5 years is shown in the chart below. Groundwater production in 2018 was above average in comparison to some past years, likely due to outdoor watering beginning earlier in the season.



In the Fall/Winter of 2018, the average usage per home in Surfside was 0.4 cubic metres per day (88 imperial gallons). In the summer, the average water usage was 1.56 cubic metres per day (343.2 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 329 L/day (based on 2.4 people/household). This consumption is *12% more* than all the other RDN system averages of 294 L/day/capita in 2018.

7. Maintenance Program

A weekly pump station inspection is carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Watermains are flushed once annually in the spring. There are no fire hydrants in this water service area due to insufficient supply and capacity for fire flows. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Operator Certification

The Regional District Water & Utility Services staff is comprised of one Manager, one Project Engineer, one Engineering Technologist, one Chief Operator, one Engineering Technician, and seven certified operators. The operators receive ongoing training and certification in:

- ✓ Water Treatment
- ✓ Water Distribution
- ✓ Wastewater Collection
- ✓ Cross Connection Control
- ✓ Asbestos Awareness
- ✓ Chlorine Handling
- ✓ WHMIS (Workplace Hazardous Material Information System)
- ✓ TDG (Transportation of Dangerous Goods)
- ✓ Confined Space Awareness
- ✓ Traffic Control
- ✓ Fall Protection
- ✓ First Aid

9. Water Service Area Projects

9.1 2018 Completed Studies & Projects

- Received a conditional groundwater license from FLNRO for Surfside wells;
- Corresponded with residents regarding well level and water conservation;
- Completed irrigation checks for high-water users;
- Completed Water Conservation Evaluation Report;
- Advised residents regarding water leak repairs;
- Completed Cross Connection Control Bylaw in draft format;
- Completed regular watermain flushing projects;
- Enforced outdoor sprinkling regulations;
- Updated the online GIS Water Map update for aquifer and watershed info;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Began Water Systems SCADA Master Plan project;
- New Drinking Water and Watershed Protection Action Plan preparation initiated;
- Began Water Systems Condition Assessment project.

9.2 2019 Proposed Projects & Upgrades

- New Service Area reservoir installation planned;
- Continue watermain flushing program;
- Adopt Cross Connection Control Bylaw;
- Implement a Water Systems SCADA Master Plan;
- Review well protection plans;
- Complete Water Systems Condition Assessment project;

- Begin DWWP Water Conservation Plan development;
- Implement new Drinking Water and Watershed Protection Action Plan;
- Continue to offer numerous water-saving incentives via rebates;
- Develop Cross Connection Control educational material.

10. Emergency Response Plan

The Regional District Emergency Response Plan (ERP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERP was reviewed and updated in 2018, and copies are available on our website, at each RDN office, in each pump house, and in each Water Services vehicle. A copy of the ERP is also attached to this report in Appendix C.

Waterfront access from Surfside Drive

11. Cross Connection Control

In 2017, a more robust Cross Connection Control Plan was prepared that fully defines the CCC program, including standard operating procedures, plumbing code references, reporting procedures, survey schedules, backflow prevention standards, detailed installation schematics, blank test forms, testing reminders, and non-compliance letters. A minimum of two RDN Operators are certified in Backflow Assembly Testing at all times. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

In 2019, a stand-alone Cross Connection Control Bylaw will be adopted that contains definitions, authorizations, applications, liability, rules, regulations, testing requirements, and reporting requirements. The bylaw will address retrofits, prohibitions, special circumstances, reclaimed water use, alternate water sources, failure to comply, inspections, testing, offences, penalties and more. A webpage will be established on the Water Services website that will educate RDN customers about cross connections and list the relevant links to current standards and resources.

12. Cyber Security

The RDN uses a multi-level approach to cyber-security. Corporate network security is employed via a universal threat management gateway that implements various methods of data security, which includes daily definition updates to block known cyber threats. In addition, all RDN PC's are protected with anti-virus software. RDN water systems are connected to the corporate network via IP-Sec VPN's for remote management by information technology and equipment operators. Future infrastructure upgrades will see our water systems located on segregated networks to limit the vulnerability from cybersecurity threats.

13. Closing

An annual report for the year 2019 will be prepared and submitted to Island Health in the spring of 2020. Annual reports are also available on our website at: https://www.rdn.bc.ca/surfside.

Surfside Well #2

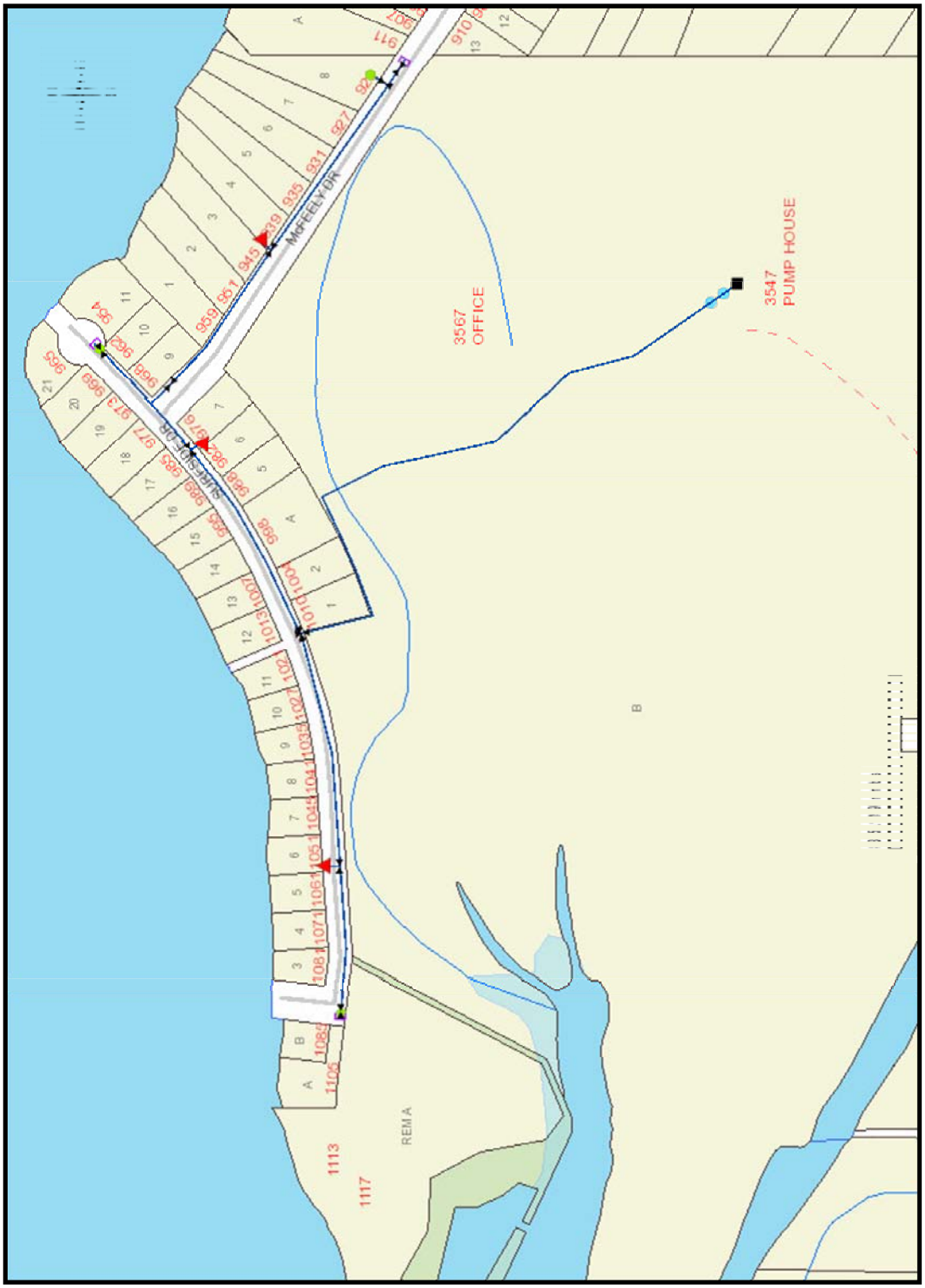
APPENDIX A

MAP OF SURFSIDE

WATER SERVICE AREA

SURFSIDE

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

SURFSIDE WATER SERVICE AREA

Facility Location:
3547 Island Highway West
Parksville

Facility Information:

Facility Type: DWC

Facility Sampling History:

Location	Date	Total Coliform	E. Coli
962 Surfside Drive	18-Dec-2018	L1	L1
923 McFeely, 923 McFeely	3-Dec-2018	L1	L1
962 Surfside Drive	19-Nov-2018	L1	L1
923 McFeely, 923 McFeely	14-Nov-2018	L1	L1
1105 Surfside Drive, Parksville BC	7-Nov-2018	L1	L1
1105 Surfside Drive, Parksville BC	15-Oct-2018	L1	L1
962 Surfside Drive	9-Oct-2018	L1	L1
923 McFeely, 923 McFeely	1-Oct-2018	L1	L1
962 Surfside Drive	17-Sep-2018	L1	L1
923 McFeely, 923 McFeely	10-Sep-2018	L1	L1
1105 Surfside Drive, Parksville BC	5-Sep-2018	L1	L1
923 McFeely, 923 McFeely	20-Aug-2018	L1	L1
1105 Surfside Drive, Parksville BC	13-Aug-2018	L1	L1
962 Surfside Drive	7-Aug-2018	L1	L1
962 Surfside Drive	16-Jul-2018	L1	L1
923 McFeely, 923 McFeely	9-Jul-2018	L1	L1
1105 Surfside Drive, Parksville BC	3-Jul-2018	L1	L1
923 McFeely, 923 McFeely	18-Jun-2018	L1	L1
1105 Surfside Drive, Parksville BC	11-Jun-2018	L1	L1
962 Surfside Drive	5-Jun-2018	L1	L1
962 Surfside Drive	14-May-2018	L1	L1
1105 Surfside Drive, Parksville BC	7-May-2018	L1	L1
923 McFeely, 923 McFeely	1-May-2018	L1	L1
1105 Surfside Drive, Parksville BC	16-Apr-2018	L1	L1
923 McFeely, 923 McFeely	9-Apr-2018	L1	L1
962 Surfside Drive	4-Apr-2018	L1	L1

923 McFeely, 923 McFeely	20-Mar-2018	L1	L1
962 Surfside Drive	12-Mar-2018	L1	L1
1105 Surfside Drive, Parksville BC	5-Mar-2018	L1	L1
962 Surfside Drive	20-Feb-2018	L1	L1
1105 Surfside Drive, Parksville BC	14-Feb-2018	L1	L1
923 McFeely, 923 McFeely	5-Feb-2018	L1	L1
923 McFeely, 923 McFeely	15-Jan-2018	L1	L1
962 Surfside Drive	8-Jan-2018	L1	L1
1105 Surfside Drive, Parksville BC	2-Jan-2018	L1	L1

Interpreting Sample Reports

In VIHA, the results of drinking water sampling are reported using the following coding system:

L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present
OG Overgrown - Meaning: Too many background bacteria to give an accurate count
EST Estimated Count
A Sample not tested; Too long in transit
C Sample leaked/broken in transit
D Sample not tested; No collection date given
T Sample submitted unsatisfactory. Exceeded 30 hours holding time, please resample.
NS No sample received with requisition

REGIONAL DISTRICT OF NANAIMO

Surfside Distribution Water Analysis
1105 Surfside Drive

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
AO= Asthetic Objective.

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		May 13 2014	May 19 2015	May 10 2016	May 8 2017	May 7 2018	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<0.05	0.024	0.026	0.029	0.026	
Alkalinity (total as $CaCO_3$)	mg/L			54	53.7	61.4	66.7	51.8	
Anions									
Dissolved Sulphate	mg/L	500	AO	4.1	5.19	5.38	5.11	5.7	
Dissolved Chloride	mg/L	250	AO	9	10	8.6	13	11	
Nitrite	mg/L	1	MAC	<0.05	<0.0050	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			<5	<5	10	10	5	
Nutrients									
Total Ammonia	mg/L			0.02	0.017	0.017	0.091	<0.020	
Physical Properties									
Conductivity	µS/cm			161	154	157	184	157	
pH	pH	7.0:10.5	AO	7	7.68	7.55	7.85	7.72	
TDS	mg/L	500	AO	126	90	78	108	98	
Turbidity	NTU			<0.5	<0.10	0.2	0.17	0.27	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			66	59.4	60	85.3	61	
Nitrate	mg/L	10	MAC	0.71	0.533	0.555	0.529	0.637	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.000002	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.025	0.003	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	<0.00025	<0.0001	<0.0001	<0.001	<0.0001	
Total Barium	mg/L	1	MAC	0.00357	0.0011	0.0017	0.0035	0.0018	
Total Beryllium	mg/L			<0.00025	<0.0001	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0005	<0.001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.023	<0.050	<0.050	<0.050	<0.050	
Total Cadmium	mg/L	0.005	MAC	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0025	<0.001	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	
Total Copper	mg/L	1	AO	0.0088	0.00594	0.00898	0.00451	0.00513	
Total Iron	mg/L	0.3	AO	0.068	0.011	0.0288	0.0483	0.0137	
Total Lead	mg/L	0.01	MAC	0.0019	0.00054	0.00101	0.0003	0.00034	
Total Manganese	mg/L	0.05	AO	<0.0050	<0.001	<0.001	<0.001	<0.001	
Total Molybdenum	mg/L			<0.00025	<0.001	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.0010	<0.001	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			8.18	7.91	8.16	10.4	7.87	
Total Silver	mg/L			0.00031	<0.00002	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.065	0.0495	0.0551	0.0799	0.0549	
Total Thallium	mg/L			<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	
Total Tin	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0025	<0.005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.0229	<0.005	<0.005	<0.005	<0.005	
Total Zirconium	mg/L				<0.0005	<0.0005	<0.0001	<0.0001	
Total Calcium	mg/L			22.8	18.9	19.4	29.7	20	
Total Magnesium	mg/L			2.31	2.96	2.81	2.69	2.69	
Total Potassium	mg/L			<0.5	0.355	0.404	0.569	0.386	
Total Sodium	mg/L	200	AO	8.2	6.63	7.03	8.58	6.48	
Total Sulphur	mg/L				<3.0	<3.0	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Surfside Well # 1 Water Analysis
3547 Island Highway

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
AO= Asthetic Objective.

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 29 2014	October 26 2015	October 12 2016	September 18 2017	October 25 2018	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<0.05	0.023	0.02	0.026	0.023	
Alkalinity (total as $CaCO_3$)	mg/L			48	52.4	53.2	55.3	53.4	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.1	6.13	7.7	6.2	4.8	
Dissolved Chloride	mg/L	250	AO	44.8	20	17	14	11	
Nitrite	mg/L	1	MAC	<0.05	<0.0050	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			<5	5	<5	5	5	
Nutrients									
Total Ammonia	mg/L			<0.02	0.025	0.046	<0.020	<0.020	
Physical Properties									
Conductivity	µS/cm			256	187	177	170	149	
pH	pH	7.0:10.5	OG	6.6	7.81	7.68	7.56	7.75	
TDS	mg/L	500	AO	186	98	112	120	94	
Turbidity	NTU			<0.5	0.12	0.11	0.23	<0.10	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	1	5.3	5.3	17	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			100	71.6	67.8	64.6	60.6	
Nitrate	mg/L	10	MAC	0.64	0.471	0.52	0.519	0.525	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	0.0000053	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.012	<0.003	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	
Total Barium	mg/L	1	MAC	0.00076	<0.001	<0.001	<0.001	<0.001	
Total Beryllium	mg/L			<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0001	<0.001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.015	<0.050	<0.050	<0.050	<0.050	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0005	<0.001	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	
Total Copper	mg/L	1	AO	0.0032	0.00399	0.00325	0.00235	0.00339	
Total Iron	mg/L	0.3	AO	0.031	0.011	0.0064	0.0072	0.0067	
Total Lead	mg/L	0.01	MAC	0.0002	0.00026	0.00022	<0.0002	0.00044	
Total Manganese	mg/L	0.05	AO	<0.0010	<0.001	<0.001	<0.001	<0.001	
Total Molybdenum	mg/L			<0.00005	<0.001	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.0002	<0.001	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			7.2	8.26	6.76	7.54	7.37	
Total Silver	mg/L			<0.00005	<0.00002	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.0712	0.0467	0.0499	0.0463	0.0429	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00001	<0.00001	
Total Tin	mg/L			<0.0001	<0.005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	0.00003	<0.0001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0005	<0.005	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.0126	0.0064	<0.005	<0.005	<0.005	
Total Zirconium	mg/L				<0.0005	<0.0005	<0.0001	<0.0001	
Total Calcium	mg/L			30.6	21.9	19.9	19.4	18.4	
Total Magnesium	mg/L			5.79	4.13	4.42	3.92	3.56	
Total Potassium	mg/L			0.4	0.421	0.403	0.403	0.349	
Total Sodium	mg/L	200	AO	8.2	7.55	6.7	6.25	5.21	
Total Sulphur	mg/L				<3.0	<3.0	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Surfside Well # 2 Water Analysis
3547 Island Highway
*resampled Metals only

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
AO= Asthetic Objective.

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 29 2014	October 26 2015	October 12 2016	Nov. 29 2016*	September 18 2017	October 25 2018
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.06	0.023	0.02		0.023	0.02
Alkalinity (total as $CaCO_3$)	mg/L			44	51.2	50.9		56.6	49.6
Anions									
Dissolved Sulphate	mg/L	500	AO	8.2	6.65	10		9.8	5.8
Dissolved Chloride	mg/L	250	AO	77.9	26	25		32	11
Nitrite	mg/L	1	MAC	<0.05	<0.0050	<0.0050		<0.0050	<0.0050
Miscellaneous									
Apparent Colour	Colour Unit			<5	5	5		5	<5.0
Nutrients									
Total Ammonia	mg/L			<0.02	0.0087	0.087		<0.020	<0.020
Physical Properties									
Conductivity	µS/cm			382	205	204		243	142
pH	pH	7.0:10.5	OG	6.5	7.85	7.61		7.51	7.51
TDS	mg/L	500	AO	274	106	124		170	74
Turbidity	NTU			<0.5	<0.10	<0.10		<0.10	0.1
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0		<1.0	<1.0
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0		<1.0	<1.0
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			130	71.1	66.2		85.2	55.4
Nitrate	mg/L	10	MAC	0.57	0.484	0.467		0.463	0.498
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001		<0.00001	0.0000044
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.003	0.0081	<0.003	<0.003	<0.003
Total Antimony	mg/L	0.006	MAC	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Barium	mg/L	1	MAC	0.00129	<0.001	<0.001	<0.001	<0.001	<0.001
Total Beryllium	mg/L			<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	0.019	<0.050	<0.050	<0.050	<0.050	<0.050
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0001	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.0077	0.00451	0.154	0.00159	0.00368	0.00277
Total Iron	mg/L	0.3	AO	0.024	0.0127	0.0544	0.0101	0.0087	0.0154
Total Lead	mg/L	0.01	MAC	0.0007	0.00112	0.0168	0.00061	0.00104	0.00073
Total Manganese	mg/L	0.05	AO	0.0014	<0.001	0.0014	<0.001	<0.001	<0.001
Total Molybdenum	mg/L			<0.00005	<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			0.0003	<0.001	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			7.11	7.89	6.42	7.46	7.81	7.03
Total Silver	mg/L			<0.00005	<0.00002	0.00004	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.109	0.0518	0.0554	0.0404	0.0651	0.0409
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	<0.00001
Total Tin	mg/L			<0.0001	<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	0.00004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			0.0004	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	0.0213	0.0255	0.0548	0.006	0.0303	0.0107
Total Zirconium	mg/L				<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Total Calcium	mg/L			40	21.8	19.7	17.5	26	16.8
Total Magnesium	mg/L			7.35	4.06	4.13	3.51	4.95	3.24
Total Potassium	mg/L			0.6	0.408	0.395	0.321	0.459	0.314
Total Sodium	mg/L	200	AO	22.4	11.4	11.1	7.2	12.1	6.41
Total Sulphur	mg/L				<3.0	<3.0	<3.0	<3.0	<3.0

Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
3-Dec-18	923 McFeely	0	0	0	0	10	6.69		75.7	0.08	159.6	0.03	0.007
10-Dec-18	1105 Surfside	0	0	0	0	8	6.83	0.31	85.9	0.09	180.7		
18-Dec-18	962 Surfside	0	0	0	0	8	6.79	0.42	94.2	0.09	198.2		
	Average	0	0	0	0	8.7	6.8	0.37	85.3	0.09	179.5	0.03	0.007
	Maximum	0	0	0	0	10	6.83	0.42	94.2	0.09	198.2	0.03	0.007
	Minimum	0	0	0	0	8	6.69	0.31	75.7	0.08	159.6	0.03	0.007

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Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

*Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
7-Nov-18	1105 Surfside	0	0	0	0	12	6.86	0.21	95.3	0.09	200.6	0.00	0.014
14-Nov-18	923 McFeely	0	0	0	0	11	6.61	0.10	79.7	0.08	167.9		
19-Nov-18	962 Surfside	0	0	0	0	10	6.61	0.38	76.9	0.08	162.1		
27-Nov-18	1105 Surfside			0	0	10	6.79	0.24	89.2	0.09	187.4		
	Average	0	0	0	0	10.8	6.7	0.23	85.3	0.09	179.5	0.00	0.014
	Maximum	0	0	0	0	12	6.86	0.38	95.3	0.09	200.6	0.00	0.014
	Minimum	0	0	0	0	10	6.61	0.10	76.9	0.08	162.1	0.00	0.014

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Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
1-Oct-18	923 McFeely	0	0	0	0	16	6.68	0.20	91.1	0.09	191.1	0.02	0.000
9-Oct-18	962 Surfside	0	0	0	0	15	6.80	0.20	81.3	0.08	171.5		
15-Oct-18	1105 Surfside	0	0	0	0	14	6.81	0.18	90.4	0.09	190.4		
22-Oct-18	923 McFeely			0	0	13	6.66	0.06	80.8	0.08	169.3		
30-Oct-18	962 Surfside			0	0	12	6.71	0.04	79.8	0.08	168.0		
	Average	0	0	0	0	14.0	6.7	0.14	84.7	0.08	178.1	0.02	0.000
	Maximum	0	0	0	0	16.0	6.81	0.20	91.1	0.09	191.1	0.02	0.000
	Minimum	0	0	0	0	12	6.66	0.04	79.8	0.08	168	0.02	0.000

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Sep-18	1105 Surfside	0	0	0	0	19	6.70	0.37	101.7	0.10	214.1	0.05	0.031
10-Sep-18	923 McFeely	0	0	0	0	19	6.70	0.22	95.4	0.09	200.0		
18-Sep-17	962 Surfside	0	0	0	0	18	6.73	0.31	103.1	0.10	216.1		
24-Sep-18	1105 Surfside			0	0	16	6.99	0.05	115.1	0.11	241.0		
	Average	0	0	0	0	18.0	6.8	0.24	103.8	0.10	217.8	0.05	0.031
	Maximum	0	0	0	0	19	6.99	0.37	115.1	0.11	241.0	0.05	0.031
	Minimum	0	0	0	0	16	6.7	0.05	95.4	0.09	200	0.05	0.031

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Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
7-Aug-18	962 Surfside	0	0	0	0	16	6.43	0.29	79.0	0.08	166.1	0.03	0.002
13-Aug-18	1105 Surfside	0	0	0	0	17	6.99	0.40	83.6	0.08	176.6		
22-Aug-18	923 McFeely	0	0	0	0	20	6.72	0.31	93.6	0.09	196.3		
29-Aug-18	962 Surfside			0	0	17	6.63	0.27	100.3	0.10	210.2		
	Average	0	0	0	0	17.5	6.7	0.32	89.1	0.09	187.3	0.03	0.002
	Maximum	0	0	0	0	20	6.99	0.4	100.3	0.1	210.2	0.03	0.002
	Minimum	0	0	0	0	16	6.43	0.27	79.0	0.08	166.1	0.03	0.002

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Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

***Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
3-Jul-18	1105 Surfside	0	0	0	0	15	6.42	0.07	78.5	0.08	165.3	0.00	0.005
9-Jul-18	923 McFeely	0	0	0	0	17	6.53	0.90	79.6	0.08	167.8		
16-Jul-18	962 Surfside	0	0	0	0	16	6.46	0.35	82.8	0.08	174.5		
24-Jul-18	1105 Surfside			0	0	18	6.30	0.48	87.5	0.09	184.0		
30-Jul-18	923 McFeely			0	0	19	6.48	0.25	84.6	0.08	178.1		
	Average	0	0	0	0	17.0	6.4	0.41	82.6	0.08	173.9	0.00	0.005
	Maximum	0	0	0	0	19	6.53	0.9	87.5	0.09	184.0	0.00	0.005
	Minimum	0	0	0	0	15	6.3	0.07	78.5	0.08	165.3	0.00	0.005

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Jun-18	962 Surfside	0	0	0	0	15	6.35	0.57	75.4	0.07	158.3		
11-Jun-18	1105 Surfside	0	0	0	0	15	6.57	4.20	91.9	0.09	193.6	0.02	0.003
18-Jun-18	923 McFeely	0	0	0	0	17	6.62	0.56	75.0	0.07	158.2		
25-Jun-18	962 Surfside			0	0	14	6.54	0.58	75.7	0.08	159.7		
	Average	0	0	0	0	15.3	6.5	1.48	79.5	0.1	167.5	0.02	0.003
	Maximum	0	0	0	0	17	6.62	4.2	91.9	0.09	193.6	0.02	0.003
	Minimum	0	0	0	0	14	6.35	0.56	75	0.07	158.2	0.02	0.003

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
1-May-18	923 McFeely	0	0	0	0	11	6.55	0.13	74.3	0.07	155.9		
7-May-18	1105 Surfside	0	0	0	0	13	6.76	0.33	79.6	0.08	167.8	0.03	0.003
14-May-18	962 Surfside	0	0	0	0	15	6.40	0.37	75.3	0.07	158.6		
22-May-18	1105 Surfside			0	0	15	6.42	0.48	77.8	0.08	163.7		
29-May-18	923 McFeely			0	0	16	6.36	0.55	72.8	0.07	153.3		
	Average	0	0	0	0	14.0	6.5	0.37	76.0	0.07	159.9	0.03	0.003
	Maximum	0	0	0	0	16	6.76	0.55	79.6	0.08	167.8	0.03	0.003
	Minimum	0	0	0	0	11	6.36	0.13	72.8	0.07	153.3	0.03	0.003

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Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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Regional District of Nanaimo - Water Services Department

Surfside Water Analysis - 2018 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
4-Apr-18	962 Surfside	0	0	0	0	7	6.23	0.38	76.0	0.08	160.2	0.05	0.019
9-Apr-18	923 McFeely	0	0	0	0	9	6.23	0.23	75.2	0.07	159.0		
16-Apr-18	1105 Surfside	0	0	0	0	9	6.31	0.23	99.1	0.10	211.0		
24-Apr-18	962 Surfside			0	0	11	6.53	0.41	78.3	0.08	165.5		
	Average	0	0	0	0	9.0	6.3	0.31	82.2	0.08	173.9	0.05	0.019
	Maximum	0	0	0	0	11	6.53	0.41	99.1	0.1	211	0.05	0.019
	Minimum	0	0	0	0	7	6.23	0.23	75.2	0.07	159	0.05	0.019

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Regional District of Nanaimo - Water Services Department

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		Health Department		In-House									
Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Mar-18	1105 Surfside	0	0	0	0	6	6.45	0.39	81.4	0.08	171.7	0.00	0.010
12-Mar-18	962 Surfside	0	0	0	0	7	6.38	0.39	76.5	0.08	161.8		
20-Mar-18	923 McFeely	0	0	0	0	7	6.36	0.32	74.2	0.07	156.7		
27-Mar-18	1105 Surfside			0	0	7	6.82	0.20	81.6	0.08	171.9		
	Average	0	0	0	0	6.8	6.5	0.33	78.4	0.08	165.5	0.00	0.010
	Maximum	0	0	0	0	7	6.82	0.39	81.6	0.08	171.9	0.00	0.010
	Minimum	0	0	0	0	6	6.36	0.2	74.2	0.07	156.7	0.00	0.010

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Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Feb-18	923 McFeely	0	0	0	0	7	6.28	0.41	74.0	0.07	155.6	0.00	0.002
14-Feb-18	1105 Surfside	0	0	0	0		6.47	0.56	80.1	0.08	168.5		
20-Feb-18	962 Surfside	0	0	0	0	6	6.50	0.26	84.0	0.08	177.3		
26-Feb-18	923 McFeely			0	0	7	6.38	0.35	75.0	0.07	158.2		
	Average	0	0	0	0	6.7	6.4	0.40	78.3	0.08	164.9	0.00	0.002
	Maximum	0	0	0	0	7	6.5	0.56	84	0.08	177.3	0.00	0.002
	Minimum	0	0	0	0	6	6.28	0.26	74.0	0.07	155.6	0.00	0.002

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Date	Sample Location (Address)	E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
2-Jan-18	1105 Surfside	0	0	0	0		6.48	0.41	81.0	0.08	170.4	0.05	0.017
8-Jan-18	962 Surfside	0	0	0	0	9	6.41	0.38	72.9	0.07	153.1		
15-Jan-18	923 McFeely	0	0	0	0	7	6.43	0.39	78.9	0.08	166.6		
22-Jan-18	1105 Surfside			0	0	8	6.70	0.32	83.9	0.08	176.6		
29-Jan-18	962 Surfside			0	0	7	6.37	0.30	74.0	0.07	156.5		
	Average	0	0	0	0	7.8	6.5	0.36	78.1	0.08	164.6	0.05	0.017
	Maximum	0	0	0	0	9	6.7	0.41	83.9	0.08	176.6	0.05	0.017
	Minimum	0	0	0	0	7	6.37	0.30	72.9	0.07	153.1	0.05	0.017

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Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Date	Chloride	Sodium
	(mg/L)	(mg/L)
Jun-05	7.60	6.00
Sep-05	11.90	4.50
Dec-05	8.50	4.90
Mar-06	6.60	4.90
Jun-06	5.90	5.10
Sep-06	36.00	7.00
Dec-06	55.00	6.90
Mar-07	13.60	6.30
Jun-07	9.30	5.40
Sep-07	8.10	6.30
Dec-07	6.40	5.70
Mar-08	6.50	6.54
Jun-08	7.50	5.80
Sep-08	33.10	11.40
Dec-08	15.1	6.34
Mar-09	11.40	5.77
Jun-09	11.90	5.63
Sep-09	37.30	7.87
Dec-09	20.2	6.12
Mar-10	10.7	5.41
Jun-10	8.1	6.3
Oct-10	17.8	16.4
Dec-10	11.2	4.26
Mar-11	7.4	5.64
Jun-11	7.5	5.64
Oct-11	7.5	5.87
Dec-11	5.8	5.11
Mar-12	5.8	5.15
Jun-12	6.9	5.1
Sep-12	14.3	6.4
Dec-12	10.8	5.9
Mar-13	6.8	6.1
Jun-13	6.3	6.43
Sep-13	18.5	5.15
Dec-13	9.6	5.9
Mar-14	5.5	5.1
Jun-14	8.52	5.6
Sep-14	40.8	10.8
Dec-14	21.8	6.2
Mar-15	10	5.76
Jun-15	9.8	5.86
Sep-15	21	7.52
Dec-15	12	6.87
Mar-16	7.6	5.77
Jun-16	9.8	5.85
Sep-16	23	6.97
Dec-16	8.7	5.91
Mar-17	7.5	5.5
Jun-17	11	5.94
Sep-17	14	6.25
Dec-17	9.1	5.69
Mar-18	9.5	5.22
Jun-18	10	5.61
Sep-18		5.59
Dec-18	8.4	5.78
Mar-19	7.5	4.91

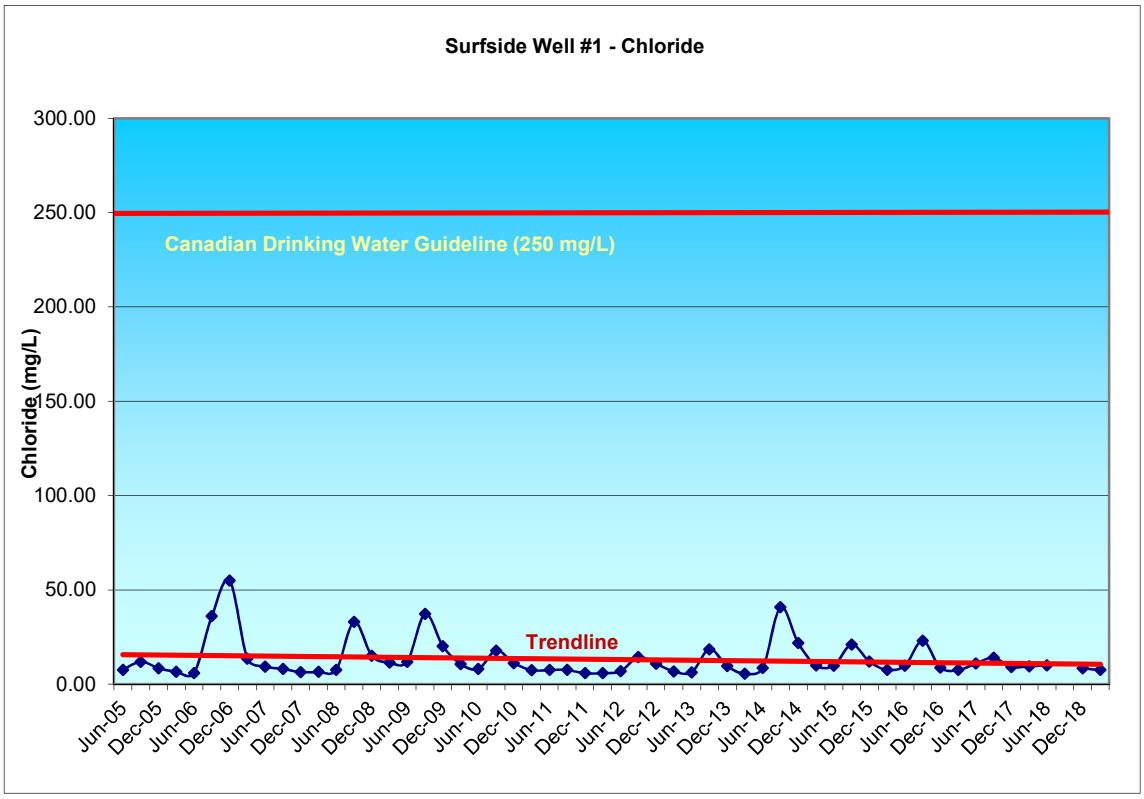
REGIONAL DISTRICT OF NANAIMO

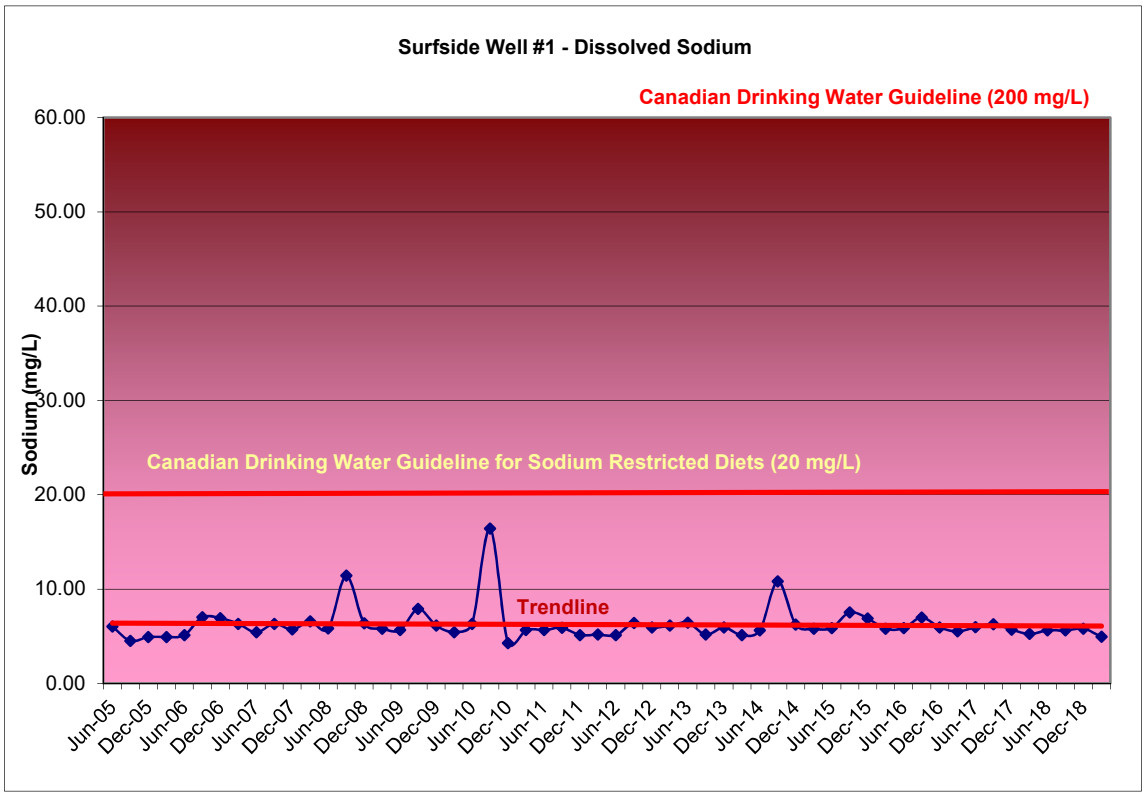
Lab Analysis - Surfside Well #1

Quarterly **Chloride - Sodium Comparison**

Chloride - CDWG = 250 mg/L

Diss. Sodium - CDWG = 200 mg/L





Date	Cond.	TDS
	(µS)	(mg/L)
Jun-05	147.00	98.00
Sep-05	160.80	123.00
Dec-05	151.00	140.00
Mar-06	144.00	100.00
Jun-06	134.10	54.00
Sep-06	245.00	190.00
Dec-06	305.00	240.00
Mar-07	169.60	120.00
Jun-07	155.00	92.00
Sep-07	148.30	78.00
Dec-07	146.00	98.00
Mar-08	143.40	180.00
Jun-08	143.40	92.00
Sep-08	227.00	160.00
Dec-08	162.00	100.00
Mar-09	146.00	118.00
Jun-09	148.40	90.00
Sep-09	239.00	182.00
Dec-09	186.1	168
Mar-10	162.2	88
Jun-10	146.9	96
Oct-10	195.7	86
Dec-10	172	114
Mar-11	145.3	97
Jun-11	140.4	94
Oct-11	150.1	86
Dec-11	137.4	76
Mar-12	135	91
Jun-12	132	114
Sep-12	161	102
Dec-12	151	90
Mar-13	142	82
Jun-13	141	95
Sep-13	175	120
Dec-13	149	100
Mar-14	136	100
Jun-14	141	118
Sep-14	267	178
Dec-14	193	106
Mar-15	156	100
Jun-15	151	98
Sep-15	196	136
Dec-15	164	84
Mar-16	145	80
Jun-16	148	104
Sep-16	199	128
Dec-16	155	110
Mar-17	146	94
Jun-17	153	82
Sep-17	170	120
Dec-17	154	88
Mar-18	153	74
Jun-18	144	76
Sep-18		
Dec-18	145	86
Mar-19	145	68

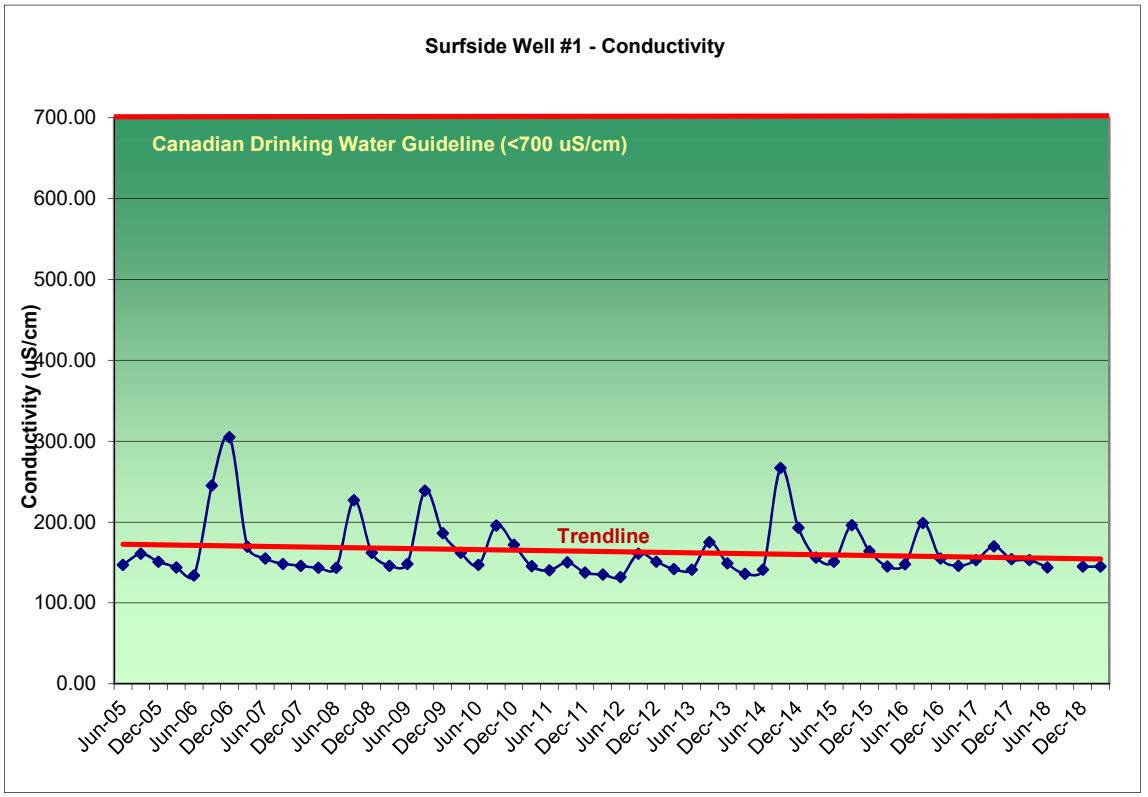
REGIONAL DISTRICT OF NANAIMO

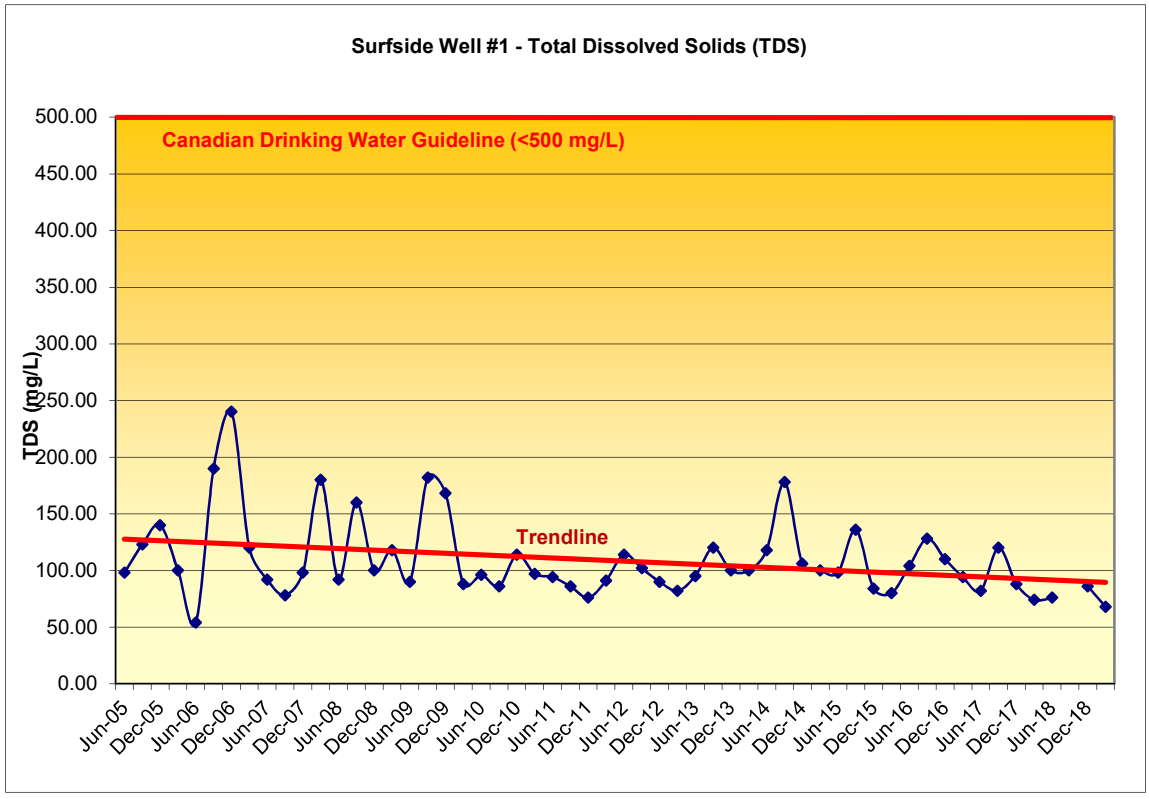
Lab Analysis - Surfside Well #1

Quarterly **Conductivity - TDS Comparison**

Cond. - CDWG = <700 uS/cm

TDS - CDWG = <500 mg/L





Date	Chloride	Sodium
	(mg/L)	(mg/L)
Jun-05	6.60	7.00
Sep-05	28.50	8.80
Dec-05	7.2	4.8
Mar-06	6.30	4.80
Jun-06	7.10	5.00
Sep-06	150.00	30.00
Dec-06	55.00	13.00
Mar-07	10.70	5.90
Jun-07	10.70	7.70
Sep-07	12.70	10.20
Dec-07	6.3	6.6
Mar-08	7.70	6.91
Jun-08	16.50	8.30
Sep-08	73.20	24.40
Dec-08	16	8.16
Mar-09	12.10	6.30
Jun-09	13.10	7.85
Sep-09	101.00	24.20
Dec-09	20.8	7.34
Mar-10	10.2	5.85
Jun-10	12.1	8.41
Oct-10	24.7	22.1
Dec-10	11.6	7.4
Mar-11	6.9	5.96
Jun-11	9.6	7.64
Oct-11	14.3	10.1
Dec-11	5.3	5.74
Mar-12	6	5.59
Jun-12	9.8	6.5
Sep-12	40.9	13.3
Dec-12	9.4	7.2
Mar-13	6.7	6.3
Jun-13	10.2	8.31
Sep-13	38.3	9.06
Dec-13	11.1	7.4
Mar-14	5.6	5.5
Jun-14	11.7	8.5
Sep-14	79	22.3
Dec-14	18.1	7.5
Mar-15	10	6.08
Jun-15	16	9.03
Sep-15	66	17
Dec-15	14	9.25
Mar-16	7.7	6.45
Jun-16	27	8.9
Sep-16	76	18.5
Dec-16	8.7	6.41
Mar-17	7.7	5.61
Jun-17	12	7.13
Sep-17	32	12.1
Dec-17	8.6	6.17
Mar-18	9.2	5.8
Jun-18	12	7.06
Sep-18		8.73
Dec-18	7.7	6.77
Mar-19	7.7	5.05

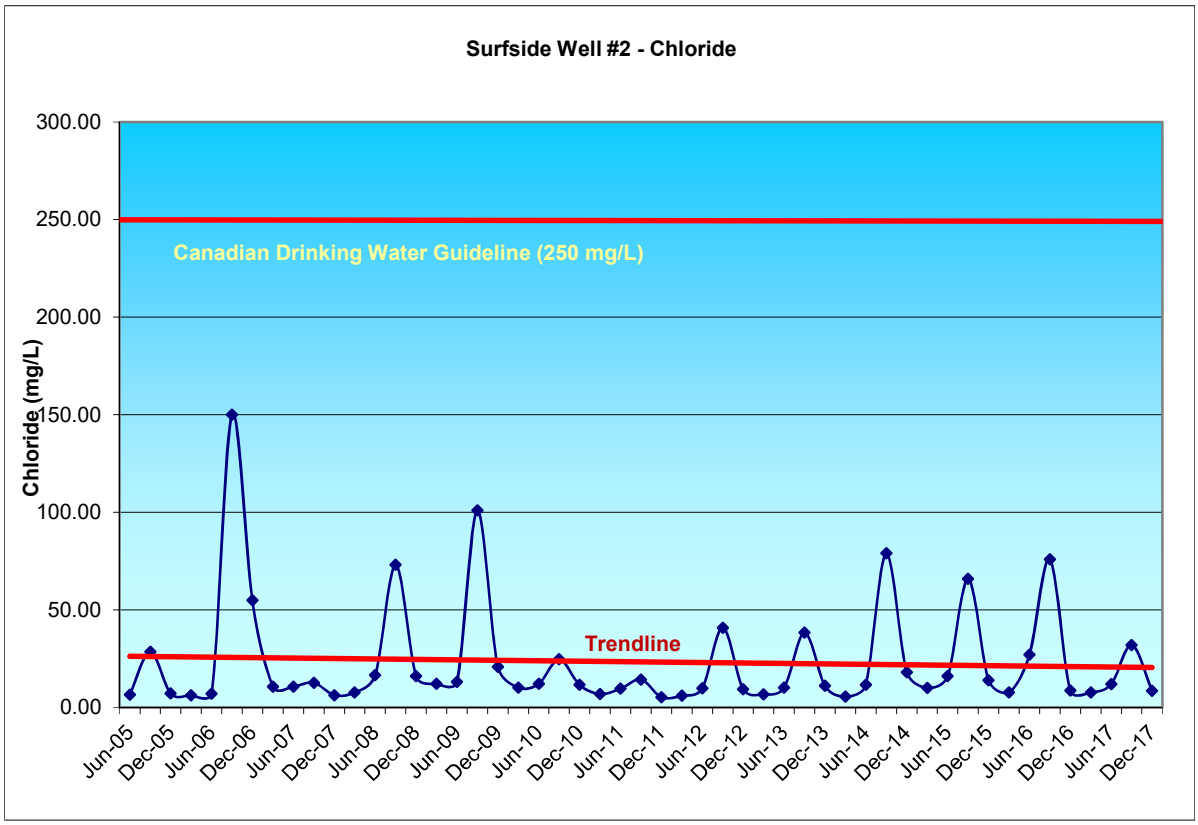
REGIONAL DISTRICT OF NANAIMO

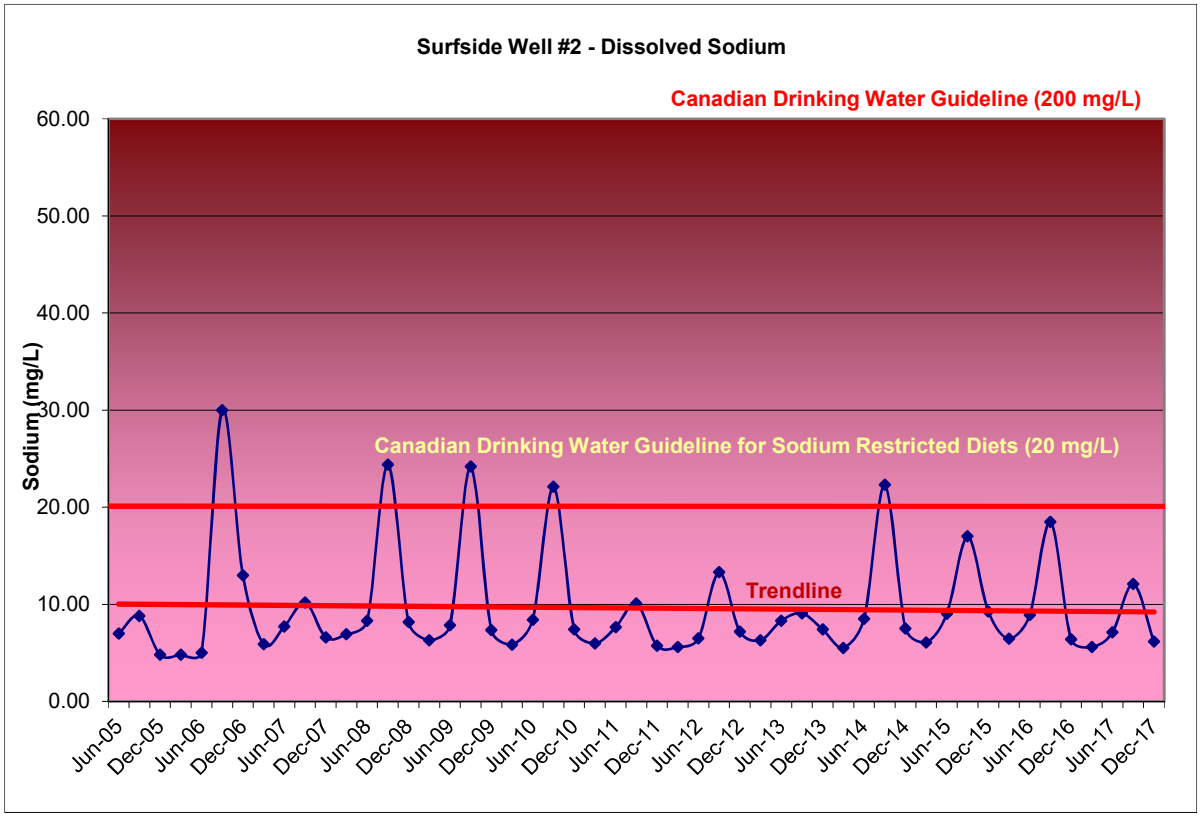
Lab Analysis - Surfside Well #2

Quarterly **Chloride - Sodium Comparison**

Chloride - CDWG = 250 mg/L

Diss. Sodium - CDWG = 200 mg/L





Date	Cond.	TDS
	(µS)	(mg/L)
Jun-05	137.40	95.00
Sep-05	223.00	179.00
Dec-05	139.20	80.00
Mar-06	139.80	93.00
Jun-06	135.20	84.00
Sep-06	650.00	446.00
Dec-06	315.00	220.00
Mar-07	160.80	90.00
Jun-07	158.60	110.00
Sep-07	177.00	82.00
Dec-07	139.00	92.00
Mar-08	134.10	246.00
Jun-08	180.60	118.00
Sep-08	372.00	294.00
Dec-08	164.00	288.0
Mar-09	141.00	110.00
Jun-09	154.50	90.00
Sep-09	467.00	388.00
Dec-09	185.6	134
Mar-10	156.9	80
Jun-10	162.9	106
Oct-10	222	124
Dec-10	171	94
Mar-11	140.3	94
Jun-11	146.1	98
Oct-11	185.5	96
Dec-11	130.8	68
Mar-12	127	74
Jun-12	142	170
Oct-12	259	162
Dec-12	146	90
Mar-13	137	78
Jun-13	130	87
Sep-13	244	164
Dec-13	153	104
Mar-14	127	98
Jun-14	153	98
Sep-14	407	292
Dec-14	180	98
Mar-15	151	90
Jun-15	176	106
Sep-15	348	276
Dec-15	172	84
Mar-16	140	94
Jun-16	200	136
Sep-16	377	274
Dec-16	152	116
Mar-17	143	92
Jun-17	156	78
Sep-17	243	170
Dec-17	146	80
Mar-18	144	86
Jun-18	155	90
Sep-18		
Dec-18	139	90
Mar-19	139	74

REGIONAL DISTRICT OF NANAIMO

Lab Analysis - Surfside Well #2

Quarterly **Conductivity - TDS Comparison**

Cond. - CDWG = <700 uS/cm

TDS - CDWG = <500 mg/L