

REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2019



Horne Lake Regional Park Water System



June 2020

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1. Introduction

The following annual report describes the Horne Lake Regional Park Water System and summarizes the water quality, the completed and proposed maintenance activities, Operator Certification, the Emergency Response Plan, and the Cross Connection Control Program for the year 2019. This report is to be submitted to Island Health by the spring of 2020.

2. Horne Lake Regional Park Water System

The Horne Lake Regional Park and campground was acquired by the RDN in 2002 and comprises an area of 109 hectares (269 acres) on the west side of Horne Lake, near Central Vancouver Island. The park is located at 3890 Horne Lake Caves Road and is split into 'North Park' and 'South Park'. The water sources come from shallow wells located within the park. An on-site generator is present as BC Hydro electrical service is not available at the site. The water system operates all year round as a caretaker lives at the staff residence. Maps of the Horne Lake Regional Park Water System are provided in Appendix A for reference.

2.1 Groundwater Wells

The well for the staff residence and yard hydrant in North Park is located approximately 10 metres east of the staff residence. The well is 12 metres deep and is treated using multi-stage pre-filtration, reverse osmosis, iron filtration, and chlorination. Water is distributed via a small pressure tank.

There is one hand-pump for the campground, located in the South Park. The water supply to the hand pump comes from a shallow well directly under the hand pump. The water available from this hand-pump is not potable, and there are posted signs indicating the hand-pump water is not to be used for drinking or cooking. Potable water is only available in the North Park at the staff residence and yard hydrant.



Horne Lake Regional Park

← Staff Residence

← Sea Can for water filtration and chlorination units

← Summer water storage tank

2.2 Reservoirs

Two small water storage reservoirs are present at Horne Lake Regional Park. Drinking water from the well near the staff residence is filtered, chlorinated, and pumped to a small 50 gallon holding tank inside the Sea Can container during the winter. Then the drinking water is pumped via a pressure tank to the staff residence and yard hydrant on demand.

An alternate, larger, 500 gallon outdoor water storage tank is present on the ground outside and adjacent to the Sea Can container. This reservoir is used in the summer when the demand for water is greater. Both the summer and winter storage reservoirs are composed of white PVC plastic. These reservoirs are drained and cleaned alternately before use each season.

**Summer water storage tank at
Horne Lake Regional Park**



2.3 Distribution System

The water distribution system is comprised of 50 metres of 1-inch polyethylene (black, flexible) pipe. The distribution system consists of the well supply to the Sea Can, and then from the Sea Can to the staff residence and yard hydrant. There are no fire hydrants in this water system.

3. **Water Sampling and Testing Program**

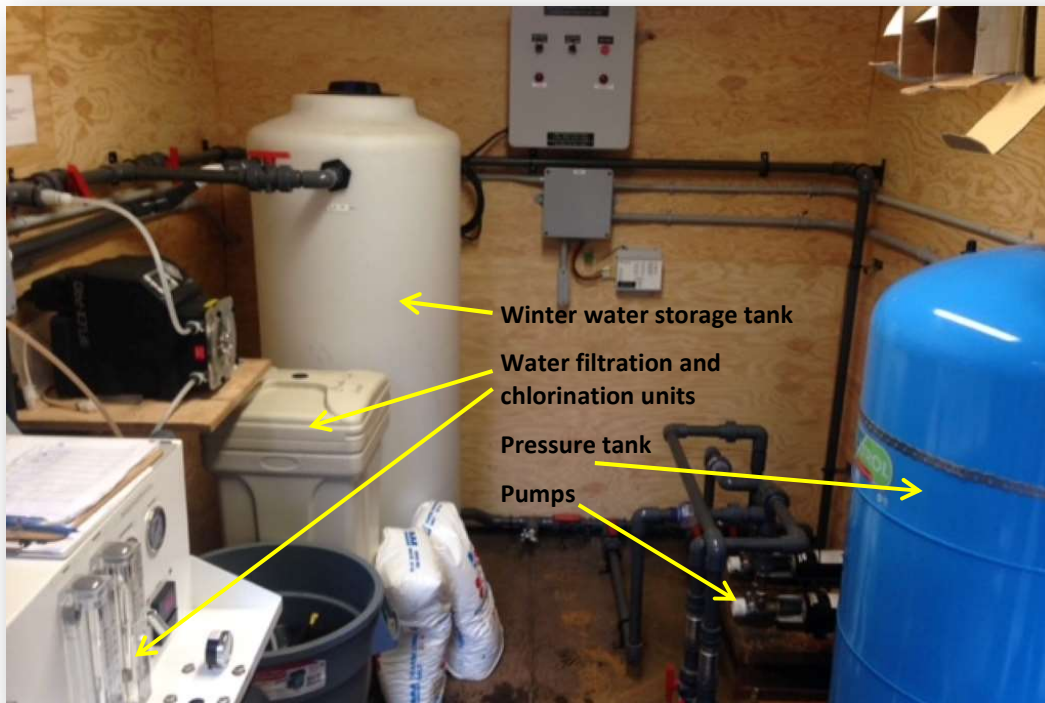
Water sampling and testing is carried out monthly from a standpipe in the water system. The following table includes a summary of all testing:

Timing	Location	Tests
North Park Standpipe: 1/month April -Sept 2/month Oct-March	BC Centre for Disease Control	Total coliforms, E.Coli
South Park Hand Pump: 2/month April-Sept (Closed Oct-March)	BC Centre for Disease Control	Total coliforms, E.Coli
Bi-Annually (twice/yr) (May and October)	Bureau Veritas (formerly Maxxam Labs)	Complete potability testing of raw well water at wellhead
Bi-Annually (twice/yr) (May and October)	Bureau Veritas (formerly Maxxam Labs)	Complete potability testing of treated water

4. Water Quality - Source Water and Distribution System

Water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B. Bacteriological results are posted on the RDN website at: <https://www.rdn.bc.ca/horne-lake-regional-park-water-system>

Photo depicting the inside of the Sea Can container at Horne Lake Regional Park



5. Water Quality Inquiries and Complaints

No complaints or inquiries were received from the Horne Lake Regional Park Water System in 2019. A summary of the water system incidents in 2019 is given in the table below.

Activity in 2019	Date(s)	History/Notes
Boil Water Advisories	Ongoing	Only at the hand-pump in the South Park
High Turbidity Events	None	None.
Equipment Malfunction	None	None.
Water Main Breaks	None	None.
Pump Failures	None	None.

6. Groundwater Production and Consumption

The groundwater pumped from the well near the staff residence and the yard hydrant wasn't metered until the end of 2019. The volume of groundwater used in 2019 (total) is estimated to be 200 m³. The volume of water used at the South Park hand pump is not monitored.

7. Maintenance Program

In the summer season, a pump station inspection is carried out three times per week to reduce or eliminate the risk of contamination and system failure. In the winter (off-season), a pump station inspection takes place once per week, or sooner if required. The water storage cisterns are drained and cleaned alternately in the summer/winter seasons. Twenty-four hour on-call coverage is in place to respond to water system emergencies.

8. Operator Certification

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

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

9. Water System Projects

9.1 2019 Completed Studies & Projects

- Installed a water meter in the sea can;
- Completed the 10-year Drinking Water Action Plan;
- Adopted a Cross Connection Control Bylaw;
- Created a Cross Connection Control webpage and educational brochure;
- Completed regular watermain flushing, reservoir cleaning, and standpipe maintenance;
- Maintained a high level of water quality; and
- Continued quality control through regular testing and monitoring of water system.

9.2 2020 Proposed Projects & Upgrades

- Create a database of water system assets;
- Continue standpipe maintenance;
- Review well protection plans; and
- Begin the next 10-year DWWP Water Conservation Plan.



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 2019, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERP is also attached to this report in Appendix C.

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. Two RDN Operators achieved their Backflow Assembly Tester re-certification in 2019. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

In 2019, a stand-alone Cross Connection Control Bylaw was adopted that contains definitions, authorizations, applications, liability, rules, regulations, testing requirements, and reporting requirements. The bylaw addresses retrofits, prohibitions, special circumstances, reclaimed water use, alternate water sources, failure to comply, inspections, testing, offences, penalties and more. A webpage has been established on the Water Services website that educates RDN customers about cross connections and lists 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 2020 will be prepared and submitted to Island Health in the spring of 2021. The Horne Lake Regional Park Water System Annual Reports are also available on our website at: <https://www.rdn.bc.ca/horne-lake-regional-park-water-system>.

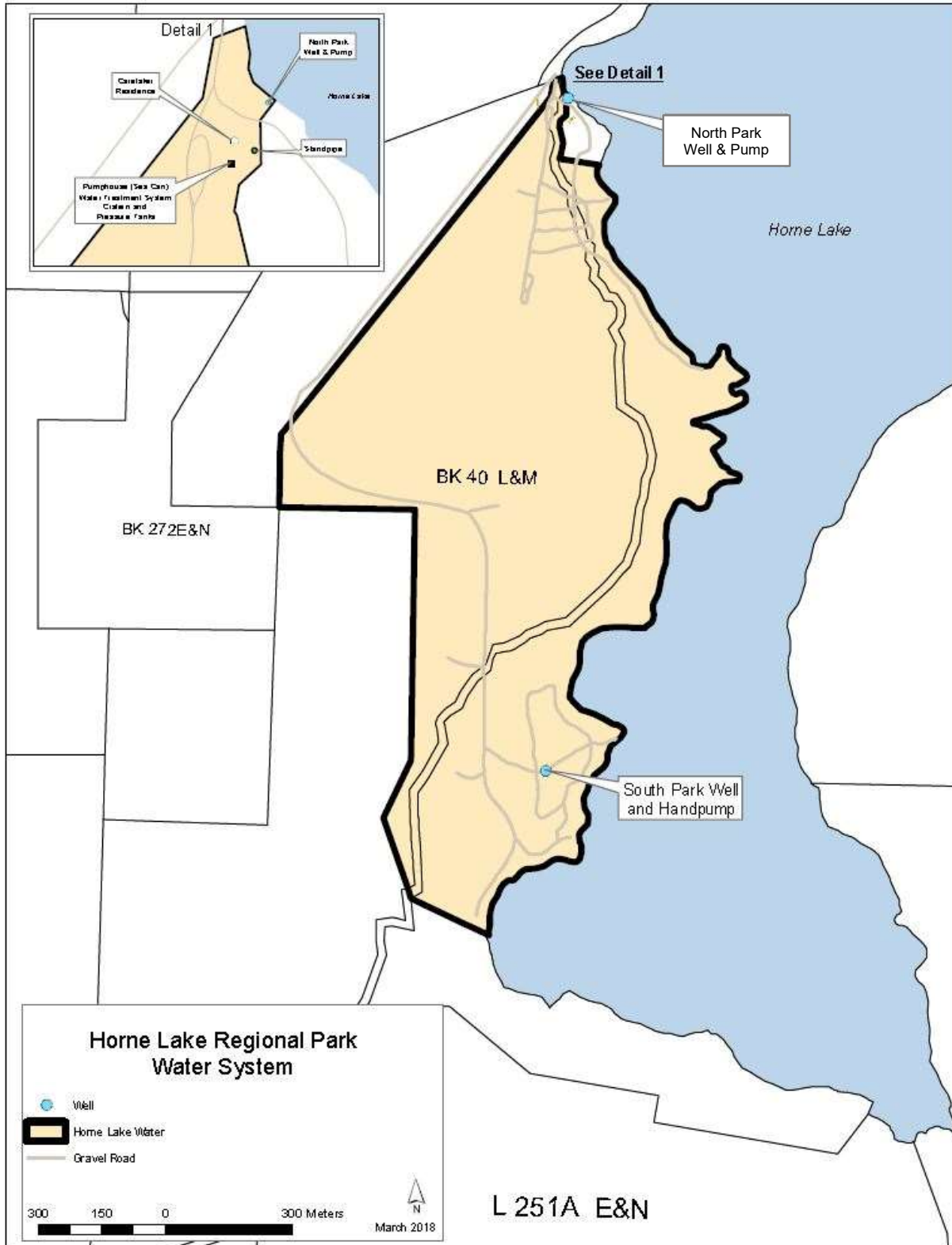


Sign above the hand-pump in the South Park campground

APPENDIX A

**MAP OF HORNE LAKE REGIONAL PARK
WATER SYSTEM**

HORNE LAKE REGIONAL PARK WATER SYSTEM



APPENDIX B

WATER QUALITY TESTING RESULTS



HORNE LAKE REGIONAL PARK WWS

Facility Location:

830 Island Highway West, Bowser

Facility Information: Facility Type: 2-14 (DWS)

Facility Sampling History:

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
CARETAKER'S TAP, Caretaker's House, North Park	16-Dec-2019	L1	L1
CARETAKER'S TAP, Caretaker's House, North Park	18-Nov-2019	L1	L1
Northpark Standpipe, Horne Lake	7-Oct-2019	L1	L1
Horne Lake Regional Park-Seasonal North Park Sand Pipe	30-Sep-2019	L1	L1
Northpark Standpipe, Horne Lake	4-Sep-2019	L1	L1
Horne Lake Regional Park, South Park Hand Pump	4-Sep-2019	L1	L1
Northpark Standpipe, Horne Lake	12-Aug-2019	L1	L1
South Park, Horne Lake Regional Park Hand Pump	12-Aug-2019	L1	L1
Horne Lake Regional Park-Seasonal North Park Sand Pipe	29-Jul-2019	L1	L1
Horne Lake Regional Park, South Park Hand Pump	29-Jul-2019	L1	L1
Horne Lake Regional Park-Seasonal North Park Sand Pipe	9-Jul-2019	L1	L1
South Park, Horne Lake Regional Park Hand Pump	9-Jul-2019	L1	L1
Northpark Standpipe, Horne Lake	26-Jun-2019	L1	L1
South Park, Horne Lake Regional Park Hand Pump	26-Jun-2019	L1	L1
Northpark Standpipe, Horne Lake	17-Jun-2019	A	
South Park, Horne Lake Regional Park Hand Pump	17-Jun-2019	A	
Horne Lake Regional Park-Seasonal North Park Sand Pipe	3-Jun-2019	L1	L1
South Park, Horne Lake Regional Park Hand Pump	3-Jun-2019	L1	L1
South Park, Horne Lake Regional Park Hand Pump	21-May-2019	L1	L1
Northpark Standpipe, Horne Lake	15-May-2019	L1	L1
Horne Lake Regional Park-Seasonal North Park Sand Pipe	1-May-2019	L1	L1
Northpark Standpipe, Horne Lake	15-Apr-2019	L1	L1
Northpark Standpipe, Horne Lake	1-Apr-2019	L1	L1
Northpark Standpipe, Horne Lake	5-Mar-2019	L1	L1

CARETAKER'S TAP, Caretaker's House, North Park	5-Feb-2019	L1	L1
Northpark Standpipe, Horne Lake	8-Jan-2019	A	

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