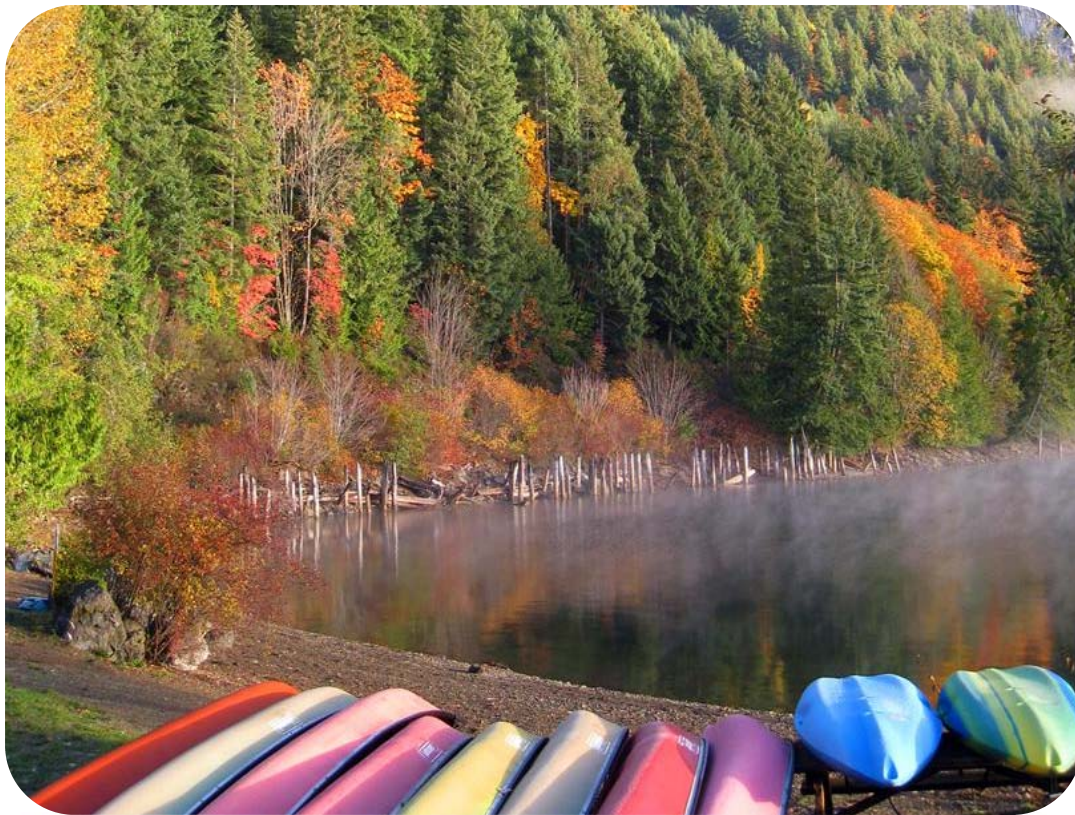


REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2017



Horne Lake Regional Park



Water System

June 2018

REGIONAL DISTRICT OF NANAIMO

Water & Utility Services Department

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Appendix A - Map of Horne Lake Regional Park Water System

Appendix B - Water Quality Testing Results

Appendix C - Emergency Response Plan

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 2017. This report is to be submitted to Island Health by the Spring of 2018.

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. The water supply to the staff residence and yard hydrant is filtered, chlorinated and distributed via a small pressure tank. An on-site generator is present as BC Hydro electrical service is not available at the site. The water system operates all year round because 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.

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. The North Park hand-pump well was closed in July 2015 by a qualified well driller. Please see the well closure log attached in Appendix B.



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:

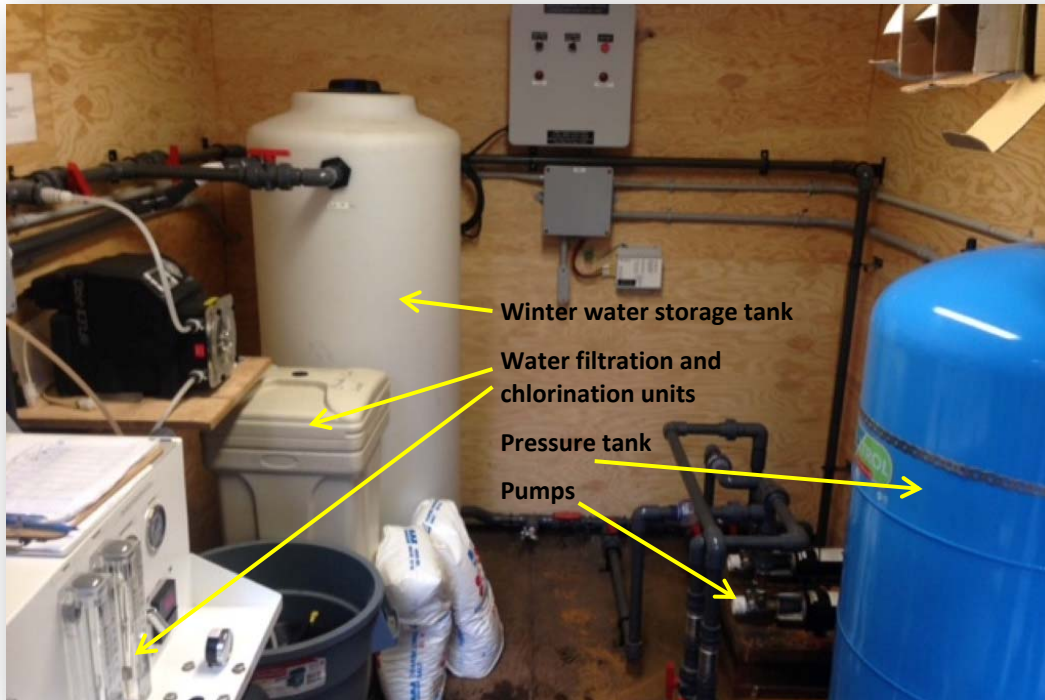
| Timing | Location | Tests |
|---|----------------------------------|--|
| North Park Standpipe: 1/month April -Sept 2/month Oct-March | BC Centre for Disease Control | Total coliforms, E.Coli |
| South Park Hand Pump: 2/month April-Sept (Closed Oct-March) | BC Centre for Disease Control | Total coliforms, E.Coli |
| Bi-Annually (twice/yr) (May and October) | Maxxam Labs | Complete potability testing of raw well water at wellhead |
| Bi-Annually (twice/yr) (May and October) | 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 (for the period July 2010 to Jan 2018) are provided at the end of this report under Appendix B. Bacteriological results are posted on the Vancouver Island Health Authority (VIHA) website at:

http://www.healthspace.ca/Clients/VIHA/VIHA_Website.nsf/Water-Samples-Frameset?OpenPage, then click on [Browser](#), then click [Horne Lake Regional Park](#).

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 2017. A summary of the water system incidents in 2017 is given in the table below.

| Activity in 2017 | 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 is not metered. The volume of groundwater used in 2017 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 are comprised of one Manager, one Project Engineer, one Engineering Technologist, one Chief Operator, and seven certified Level 2 Water Distribution System 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 | | |

9. Water System Projects

9.1 2017 Completed Studies & Projects

- Cleaned the water storage cistern;
- Completed a Cross Connection Control Bylaw in draft format;
- Added 15 new volunteer observation wells to the RDN monitoring network;
- Completed the online GIS Water Map update for aquifer and watershed info;
- Issued a Public newsletter on State of Our Aquifers;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system; and
- Completed additional educational programs.

9.2 2018 Proposed Projects & Upgrades

- Review and update the Emergency Response Plan;
- Complete the Cross Connection Control Bylaw; and
- Review and update the Drinking Water and Watershed Protection Action 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 2017, 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 2017. The RDN Chief Operator is the designated Cross Connection Control Manager.

In 2018, 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. Sections of the existing RDN Water Supply Bylaw No. 1654 will be repealed so they do not conflict with the new Cross Connection Control Bylaw. A webpage will be established on the Water & Utility Services website that will educate RDN customers about cross connections and list the relevant links to current standards and resources.

12. Closing

An annual report for the year 2018 will be prepared and submitted to Island Health in the spring of 2019. The Horne Lake Regional Park Water System Annual Reports are also available on our website at www.rdn.bc.ca in the SERVICES section, under “Parks” then “Regional Parks and Trails”.

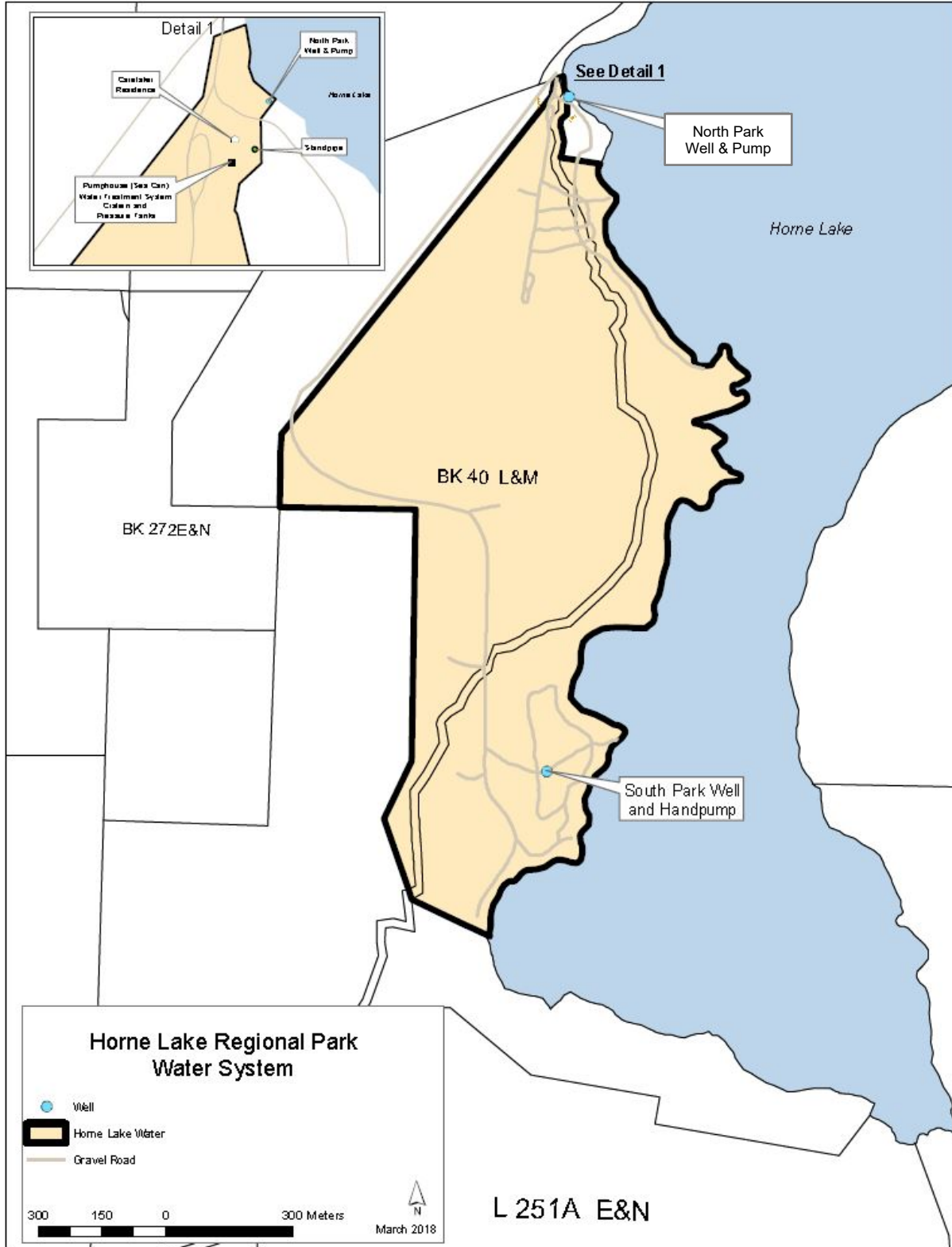


Sign above the hand-pump
in the South Park
campground

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> |
|--|-------------|-----------------------|----------------|
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 18-Sep-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 18-Sep-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 6-Sep-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 23-Aug-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 16-Aug-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 16-Aug-2017 | 4 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 14-Aug-2017 | A | |
| Horne Lake Regional Park, South Park Hand Pump | 14-Aug-2017 | A | |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 18-Jul-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 18-Jul-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 6-Jul-2017 | L1 | L1 |
| Horne Lake Regional Park North Park Sand Pipe Seasonal | 4-Jul-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 21-Jun-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 21-Jun-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 6-Jun-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 6-Jun-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 16-May-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 15-May-2017 | L1 | L1 |
| Horne Lake Regional Park, South Park Hand Pump | 2-May-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 1-May-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark | 19-Apr-2017 | L1 | L1 |

| <u>Location</u> | <u>Date</u> | <u>Total Coliform</u> | <u>E. Coli</u> |
|---|-------------|-----------------------|----------------|
| Standpipe | | | |
| Horne Lake Regional Park, South Park Hand Pump | 19-Apr-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 11-Apr-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 1-Mar-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 1-Feb-2017 | L1 | L1 |
| Northpark Standpipe, Horne Lake , Northpark Standpipe | 4-Jan-2017 | 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