

REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2019



Melrose Terrace Water Service Area

June 2019

REGIONAL DISTRICT OF NANAIMO

Water & Utility Services Department

6300 Hammond Bay Rd, Nanaimo, BC Canada V9T 6N2 | Ph 250-390-6560



Table of Contents

1.0	Introduction	1
2.0	Melrose Terrace Water Service Area	1
2.1	Groundwater Wells.....	1
2.2	Reservoirs.....	1
2.3	Distribution System.....	1
3.0	Water Sampling and Testing Program	1
4.0	Water Quality - Source Water and Distribution System	2
5.0	Water Quality Inquiries and Complaints.....	3
6.0	Groundwater Production and Consumption	3
7.0	Maintenance Program	4
8.0	Operator Certification.....	4
9.0	Water Service Area Projects	4
9.1	2019 Completed Studies & Projects	4
9.2	2020 Proposed Projects & Upgrades.....	4
10.0	Emergency Response Plan	5
11.0	Cross Connection Control	5
12.0	Cyber Security	5
13.0	Closing.....	6

Appendix A - Map of Melrose Terrace Water Service Area

Appendix B - Water Quality Testing Results

Appendix C - Emergency Response Plan

1.0 Introduction

The following annual report describes the Melrose Water Service Area and summarizes the water quality and production data from 2019. 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 2020.

2.0 Melrose Terrace Water Service Area

The Melrose Water Service Area was established in April 2005 when the RDN acquired the existing Melrose Terrace Strata Plan VIS3747 water system. The water service area is comprised of 28 residential properties on Melrose Road located near the Alberni Highway, west of Coombs. The water source for the Melrose Water Service Area comes from one groundwater well located nearby. The water is pre-chlorinated and stored in a single reservoir. The water is then filtered through sand and charcoal filters before entering the distribution system via booster pumps. A portable generator is available in the event of a power outage. A map of the Melrose Water Service Area is provided in Appendix A for reference.

2.1 Groundwater Wells

One groundwater production well is present at the reservoir site on Melrose Road, west of Coombs, B.C.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
#1	26.2 m	Yes	Treated

2.2 Reservoirs

One service reservoir (steel structure) is present at 3853 Melrose Road, and has a capacity of 136 m³ (30,000 imperial gallons).

2.3 Distribution System

The water distribution system in Melrose is comprised of 0.3 km of 150mm PVC watermains. There are no fire hydrants located within the system.

Note: 'PVC' is poly-vinylchloride (plastic)



Melrose Pumphouse and Reservoir

3.0 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 water mains. The following table includes a summary of all testing.

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total coliforms, E.Coli, Temperature, pH, Conductivity, Chlorine residual, Salinity, TDS, Monthly- Iron and Manganese
Monthly	BC Centre for Disease Control	Total coliforms, E.Coli
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

4.0 Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website at <https://www.rdn.bc.ca/melrose-terrace>. 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.



Melrose Road Bridge

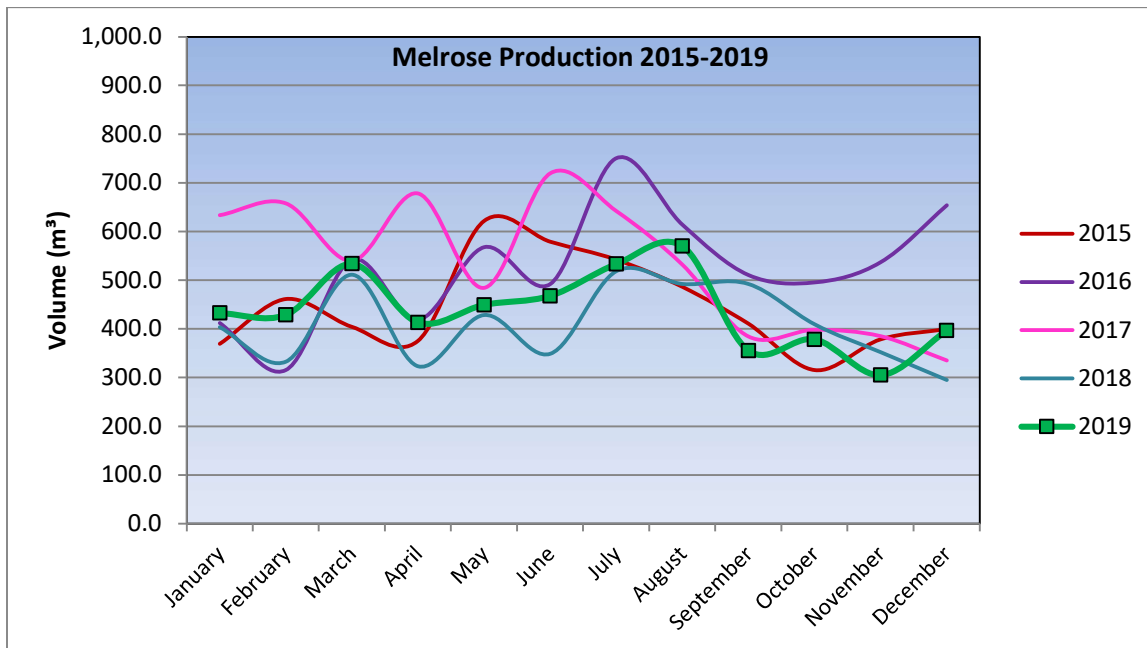
5.0 Water Quality Inquiries and Complaints

No complaints or inquiries were received from the Melrose water service area 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	None	None, ever.
High Turbidity Events	None	None, ever.
Equipment Malfunction	None	None.
Water Main Breaks	None	None.
Pump Failures	None	Temp power outages.

6.0 Groundwater Production and Consumption

The monthly groundwater production in the Melrose system for the past 5 years is shown in the chart below. Average groundwater production in 2019 was lower than in previous years, but average levels in the summer months were higher than the previous year. High spring and summer production levels in 2019 compared to 2018 could be the result of high temperatures and increased irrigation activities.



In the Fall/Winter of 2019, the average usage per home in the Melrose Terrace water service area was approximately 0.36 cubic metres per day (79.2 imperial gallons). In the summer, the average water usage was 0.48 cubic metres per day (105.6 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 166 L/day (based on 2.4 people per household). This consumption is **44% less** than the RDN system average of 295 L/day/capita in 2019.

7.0 Maintenance Program

Weekly pump station inspections are 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 a year in the Spring.

The water storage reservoir is drained and cleaned once a year. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8.0 Operator Certification

The Regional District Water & Utility Services staff are comprised of one Manager, one Project Engineer, one Engineering Technologist, one Engineering Technician, one Chief Operator, and seven certified operators. 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 |

9.0 Water Service Area Projects

9.1 2019 Completed Studies & Projects

- Replaced the drop pipe in the Melrose well;
- Corresponded with residents regarding water conservation;
- Enforced outdoor sprinkling regulations;
- Completed irrigation checks for high-water users;
- Advised residents regarding water leak repairs;
- 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 hydrant maintenance;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Began a Water Systems SCADA Master Plan; and
- Began an overall Water System Condition Assessment.

9.2 2020 Proposed Projects & Upgrades

- Complete a GARP assessment of Melrose well;
- Complete well conditioning project;
- Replace carbon filter vessels;
- Develop plans to replace the Melrose reservoir;
- Update asset database with new assets;
- Continue watermain flushing program and hydrant maintenance;
- Calibrate and service all Hach spectrophotometer lab equipment;
- Implement a Water Systems SCADA Master Plan;
- Review well protection plans;
- Complete a Water System Condition Assessment report;
- Begin the next 10-year DWWP Water Conservation Plan; and
- Continue to offer numerous water-saving incentives via rebates.

10.0 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.

11.0 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.

12.0 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.

13.0 Closing

An annual report for the year 2020 will be prepared and submitted to Island Health in the spring of 2021. Annual reports are also available on our website at <https://www.rdn.bc.ca/melrose-terrace>.

Melrose Well Site,
Pumphouse, and
Reservoir



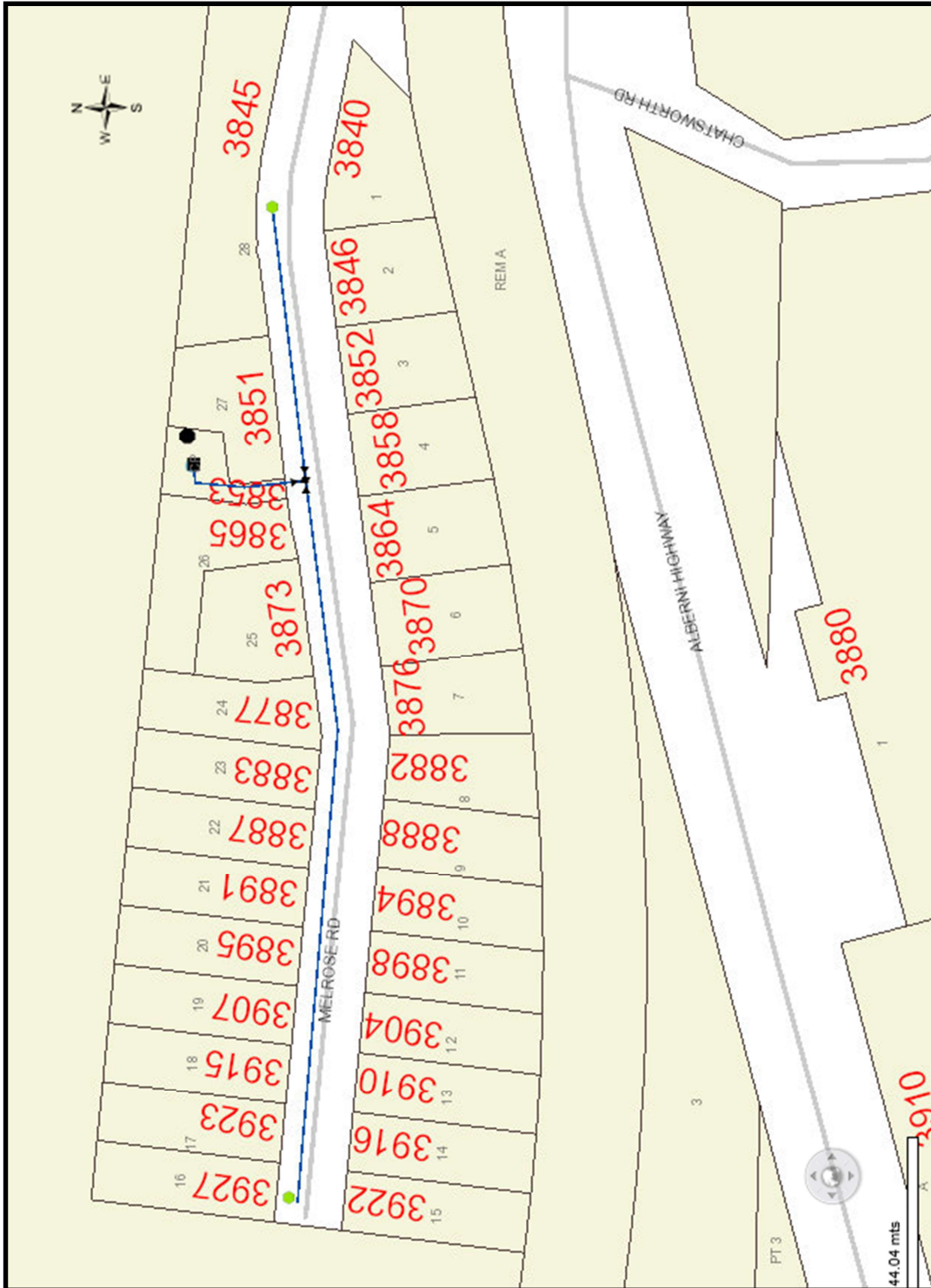
APPENDIX A

MAP OF MELROSE TERRACE

WATER SERVICE AREA

MELROSE TERRACE

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

MELROSE TERRACE COMMUNITY WATER SYSTEM



Facility Location:

3887 Melrose Place
Qualicum Beach

Facility Information:

Facility Type: 15-300 (DWC)

Facility Sampling History:

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
3927 Melrose Place	2-Dec-2019	L1	L1
3927 Melrose Place	4-Nov-2019	L1	L1
3927 Melrose Place	2-Oct-2019	L1	L1
3927 Melrose Place	3-Sep-2019	L1	L1
3927 Melrose Place	6-Aug-2019	L1	L1
3927 Melrose Place	2-Jul-2019	L1	L1
3927 Melrose Place	10-Jun-2019	L1	L1
3927 Melrose Place	6-May-2019	L1	L1
3927 Melrose Place	1-Apr-2019	L1	L1
3927 Melrose Place	5-Mar-2019	L1	L1
3927 Melrose Place	4-Feb-2019	L1	L1
3927 Melrose Place	7-Jan-2019	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