

Regional District of Nanaimo

**NANOOSE
BAY**

**Water Local Service Area
Annual Report**

2006

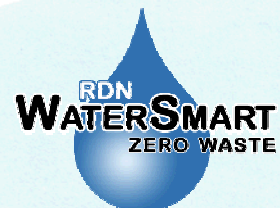


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Appendix A - Map of Nanoose Bay Water Local Service Area

Appendix B - Water Quality Testing Results

Appendix C - Emergency Response Plan

1. Introduction

The following annual report describes the Nanoose Bay Water Local Service Area and summarizes the water quality and production data from 2006. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, the Emergency Response Plan, and the Cross Connection Control Program.

This report is to be submitted to the Vancouver Island Health Authority by the Spring of 2007.

2. Nanoose Bay Water System

The Nanoose Bay Water Service Area was established in 1980 when the Eagle Heights water service area was merged with the Beachcomber/Seacrest/Dorcas Point water service area. Today, the Nanoose Bay Water Service Area comprises the majority of the properties within 300 metres of the ocean on the north shore of the Nanoose Peninsula. The water source for the Nanoose Bay Water Service Area comes from a series of groundwater wells located nearby. The water source is chlorinated and stored in three reservoirs. A map of the Nanoose Bay Water System is provided in Appendix A for reference.

2.1 Groundwater Wells

Six groundwater production wells are present near Northwest Bay Road, Claudet Road, Delanice Way, and Nuttal Drive in Nanoose Bay, B.C. Nanoose Well #5 has not been used since 2002 when saltwater intrusion was encountered. The well has not yet been closed permanently.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
Nanoose #1	68.9 m	Yes	Treated
Nanoose #2	53.3 m	Yes	Treated
Nanoose #3	52.7 m	Yes	Treated
Nanoose #4	59.1 m	Yes	Treated
Nanoose #5	130.0 m	Yes	n/a
Nanoose #6	107.0 m	Yes	Treated

2.2 Reservoirs

Three service reservoirs are present in the Nanoose Bay Water System as follows;

- Beachcomber (steel construction) - 591 m³ (130,000 imperial gallons) capacity
- Eagle Heights (concrete construction) - 341 m³ (75,000 imperial gallons) capacity
- Dolphin (steel construction) - 455 m³ (100,000 imperial gallons) capacity

2.3 Distribution System

The water distribution system in Nanoose Bay is comprised of 100mm and 150mm asbestos-concrete watermains, 150mm, 200mm, and 250mm PVC watermains, and 250mm ductile iron watermains. Fire hydrants are located throughout the system.

3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. The following table includes a summary of all testing:

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total, Fecal coliforms Temperature, pH, Conductivity Chlorine residual, Salinity Total Dissolved Solids Iron, Manganese
Weekly (Health Dept. Requirement)	North Island Labs	Total, Fecal coliforms
Annual Source Water Testing	North Island Labs	Complete potability testing of each well
Annual System Water Testing	North Island Labs	Complete potability testing of distribution system

4. Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website (www.rdn.bc.ca/WaterSmart). 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 Nanoose Bay water service area, and were typically related to iron and manganese in the tap water.

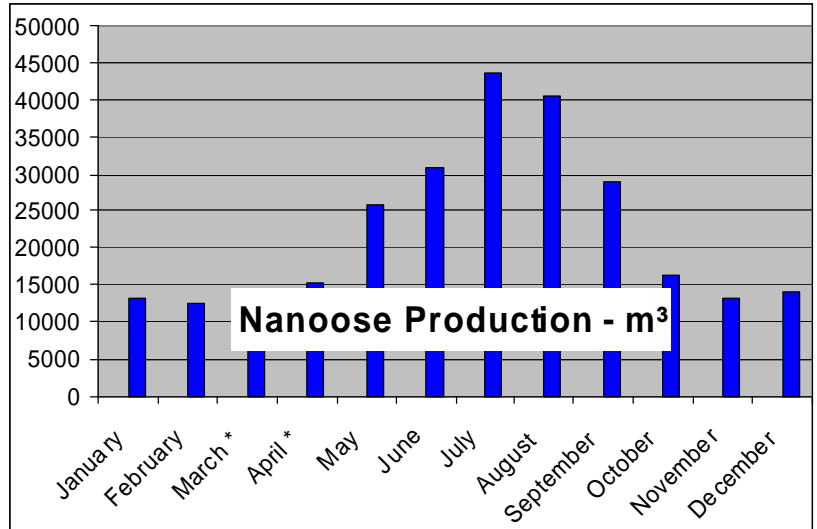
6. Groundwater Production and Average Consumption

Average monthly groundwater production (total from all wells) is shown in the table and chart below.

Monthly Production

January	13315.5	m ³
February	12684.1	m ³
*March	14316.3	m ³
*April	15257.7	m ³
May	25789.0	m ³
June	30859.3	m ³
July	43628.2	m ³
August	40550.9	m ³
September	28823.4	m ³
October	16334.0	m ³
November	13259.3	m ³
December	13986.6	m ³

* indicates watermain flushing these months

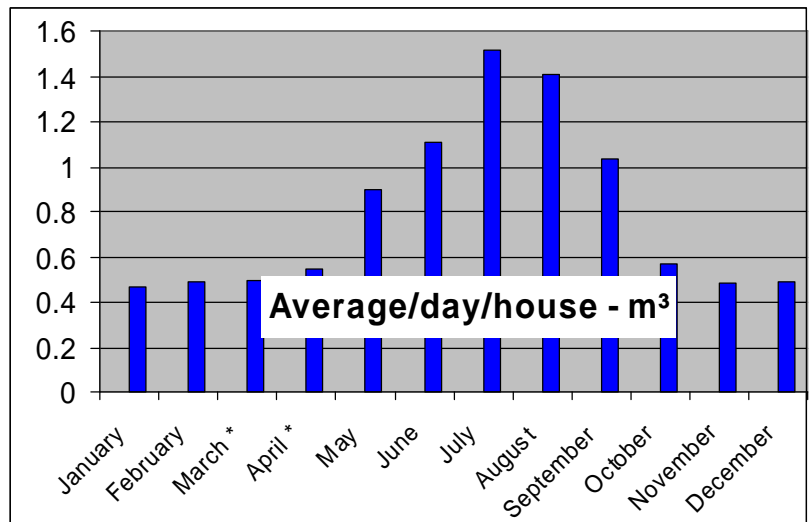


The average household water consumption per month is shown in the table and chart below.

Average / Day / House

January	0.464	m ³
February	0.490	m ³
*March	0.499	m ³
*April	0.550	m ³
May	0.899	m ³
June	1.112	m ³
July	1.521	m ³
August	1.414	m ³
September	1.039	m ³
October	0.570	m ³
November	0.478	m ³
December	0.488	m ³

* indicates watermain flushing these months



Groundwater production and household water consumption both increased dramatically from May to September despite the implementation of outdoor watering restrictions.

7. Maintenance Program

Regular maintenance and inspections are completed around the wellhead areas to reduce or eliminate the risk of contamination and system failure. Watermains are flushed once annually; in the Spring.

8. Water System Projects

8.1 2006 Completed Projects

- Carried out a water meter bench-testing accuracy program.
- Water audit for the whole Nanoose Bay Peninsula was completed.
- Re-developed Nanoose #2 and #4 wells.
- Installed Nanoose #6 well pump and controls.
- Rebuilt power line to Nanoose #3 well.
- A comprehensive water conservation program was carried out from May to October.
- A Standard Operating Procedures Manual was created for all routine Utilities duties.
- The Emergency Response Plan was reviewed and updated.
- A security review was completed by an independent agency and a report with recommendations was provided.
- A web-based Capital Asset Management Program was completed to inventory all water system pipes, valves, wells, reservoirs, hydrants, and manholes, etc. to assist with infrastructure replacement priorities.

8.2 2007 Proposed Projects & Upgrades

- Bulk Water Pump Station Design.
- De-activate two old wells (to be determined).
- Re-develop two more wells (to be determined).
- Iron and manganese removal pilot test (Worleyparsons Komex).
- Well sourcing and development (finding new wells).
- Re-keying all locked facilities.
- Improving wellhead protection.
- Other security improvements.
- Developing objectives for a SCADA system.

8.3 2007 Proposed Studies

- DWWP Stewardship Committee to generate action-items to protect the watershed.
- Innovative water supply and re-use.
- Well redevelopment planning.
- Water Use Bylaw/Best Practices Review.

9. Emergency Response Plan

The Emergency Response Plan (ERP) was reviewed and updated in 2006. A copy of the ERP is attached in Appendix C.

10. Cross Connection Control

A formalized Cross Connection Control Program will be initiated in 2007. Cross connection controls already in-place include check valves at each residential and commercial water meter.

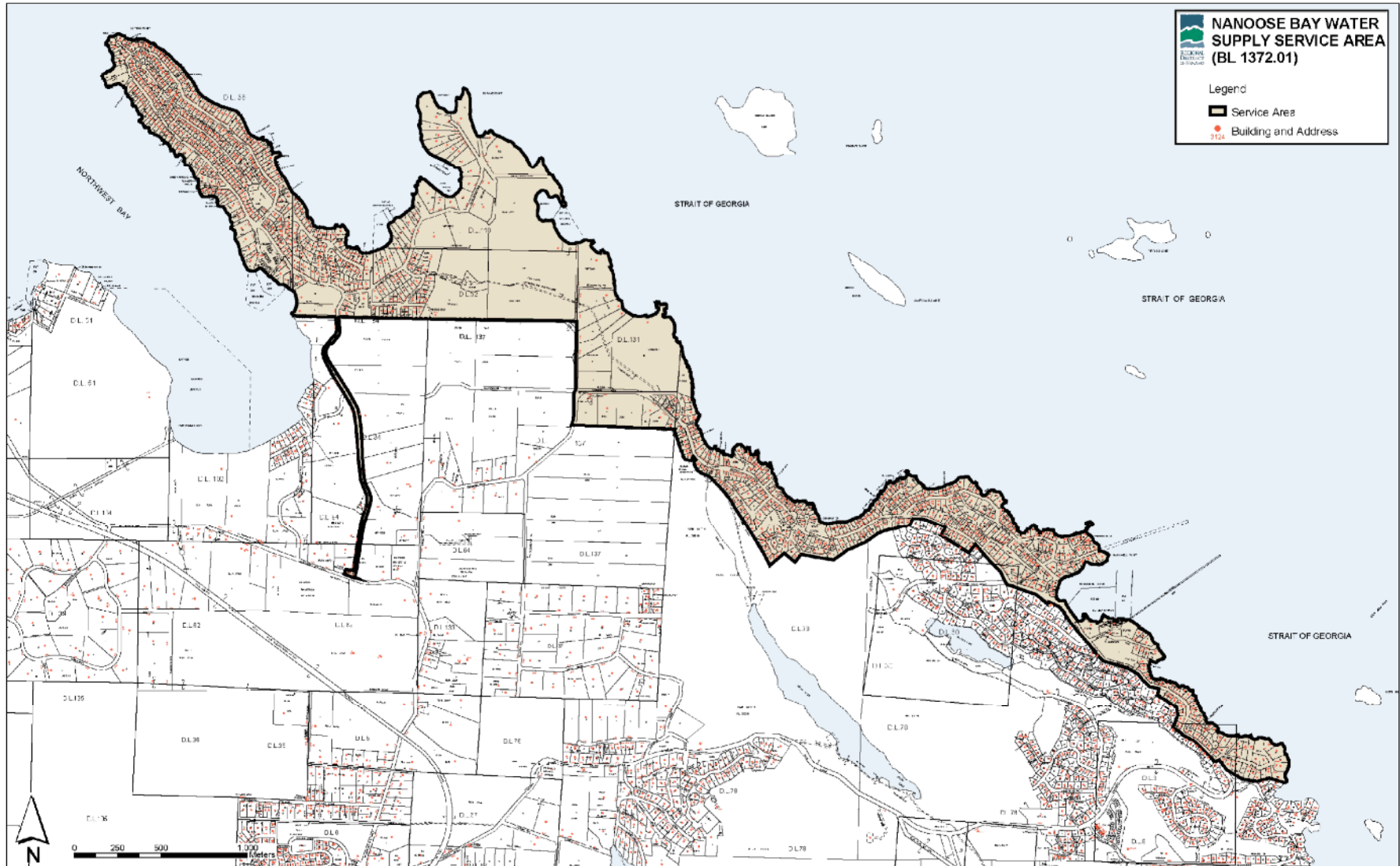
11. Closing

An annual report for the year 2007 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2008. Annual reports are also available on our website at www.rdn.bc.ca/WaterSmart.

APPENIDX A

**MAP OF NANOOSE BAY
WATER LOCAL SERVICE AREA**

NANOOSE BAY WATER LOCAL SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

APPENDIX C

EMERGENCY RESPONSE PLAN