San Pareil Water Service Area

Introduction

The San Pareil Water Se[Text Box]a was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located northeast of the bridge just prior to entering the City of Parksville. There are currently 275 residential connections and 1 commercial connection to the water system. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located nearby. The water source is chlorinated and stored in

Detailed Description

Wells
Both wells are located at 1090 Shorewood Drive. A third well has been drilled close by and is undergoing testing at this time to determine potential yields.

Well #/ Name	Well Depth	Wellhead protection?	Treated or Untreated by Chlorine
#1	6.2 m	Yes	Treated
#2	6.2 m	Yes	Treated

Reservoirs
There is one reservoir that holds approximately 75,000 gallons, It is also located at 1090 Shorewood Drive.

Distribution System
The distribution system consists of 150 mm and 100 mm PVC and AC supply lines. Fire Hydrants are connected to the system.

Maintenance Programs

Sources
Regular maintenance of the well head areas to ensure the risk of contamination or systems failure is reduced or eliminated.

Reservoirs
The reservoir is not cleaned as there is no second reservoir for backup purposes..

Distribution System
Water mains are flushing annually.

Current Year Planned Maintenance / Improvements

Fire Hydrant maintenance.
Watermain replacement on Maple Lane between Shorewood Drive and Balleras

San Pareil Water Service Area

Continued...

Road. Increased sizing from 150mm to 200mm and added one additional hydrant.

Water Sampling and Testing Program

See attached for all water testing reports.

The distribution system is tested using the following schedule.

Timing	Location	Tests
Weekly	In house laboratory (RDN)	Fecal Coliforms Total Coliforms Temperature PH Chlorine Total Dissolved Solids Salinity Conductivity Iron Manganese
Weekly (Health Dept. Required)	Independent Laboratory*	Fecal Coliforms Total Coliforms
Monthly	Independent Laboratory*	Chloride
Quarterly	Independent Laboratory*	Chloride Conductivity Sodium Total Dissolved Solids
Annual	Independent Laboratory*	Complete potability testing in both wells in October. Complete potability testing in system water (residence).

* *North Island Laboratory.*

Source Transmission and Distribution System Water Quality

See attached lab analysis sheets.

Emergency Response Plan

The San Pareil Water Local Service Area Emergency response plan is attached for information. This document is updated annually to ensure contact and other relevant information is in place. The emergency Response Plan for part of the overall RDN's Emergency Response Plan Document.

San Pareil Water Service Area

Cross Connection Control Program

Cross connection control is largely achieved through the installation of dual check valves at every metering point in the system. A Cross Connection Control is being developed in 2007.

Water Quality Inquires and Complaints

Inquires were of a general nature related to the delivery of potable water to serviced properties.

Regional District of Nanaimo

SAN PAREIL

Water Local Service Area Annual Report

2006

REGIONAL DISTRICT OF NANAIMO

RDN WATERSMART ZERO WASTE

Table of Contents

1. Introduction

The following annual report describes the San Pareil 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. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River bridge on the south side of the City of Parksville. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water is chlorinated and stored in one reservoir. A map of the San Pareil Water System is provided in Appendix A for reference.

2.1 Groundwater Wells

Three groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. A fourth well was drilled in 2004 and will be put into production once source approval has been received from the Vancouver Island Health Authority.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Treated
#3	7.0 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m^3 (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is largely comprised of 100mm and 150mm PVC and asbestos-concrete 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 San Pareil water service area, and were typically related to watering restriction times.

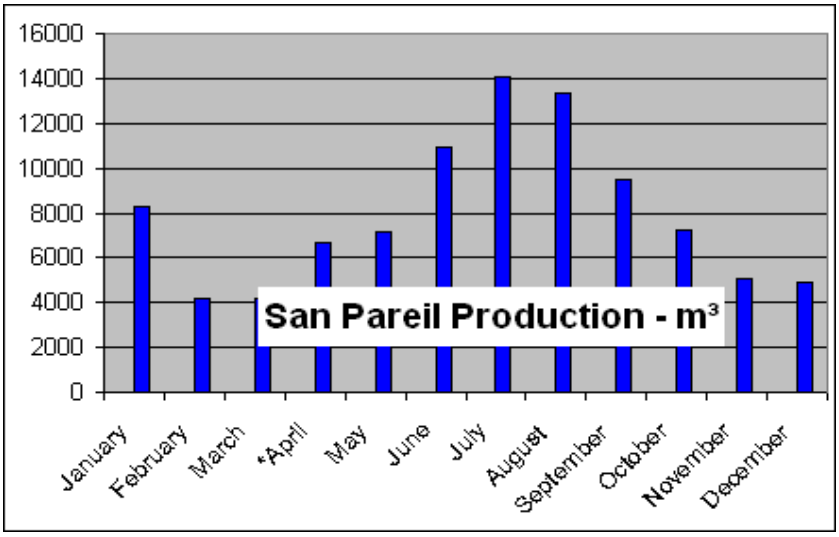
6. Groundwater Production and Average Consumption

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

Monthly Production

January	**8291**	**m³**
February	**4171.1**	**m³**
March	**4176.7**	**m³**
***April**	**6687.6**	**m³**
May	**7154.63**	**m³**
June	**10917.6**	**m³**
July	**14082.4**	**m³**
August	**13334.3**	**m³**
September	**9527.5**	**m³**
October	**7274.5**	**m³**
November	**5097.6**	**m³**
December	**4944.5**	**m³**

* indicates watermain flushing in April

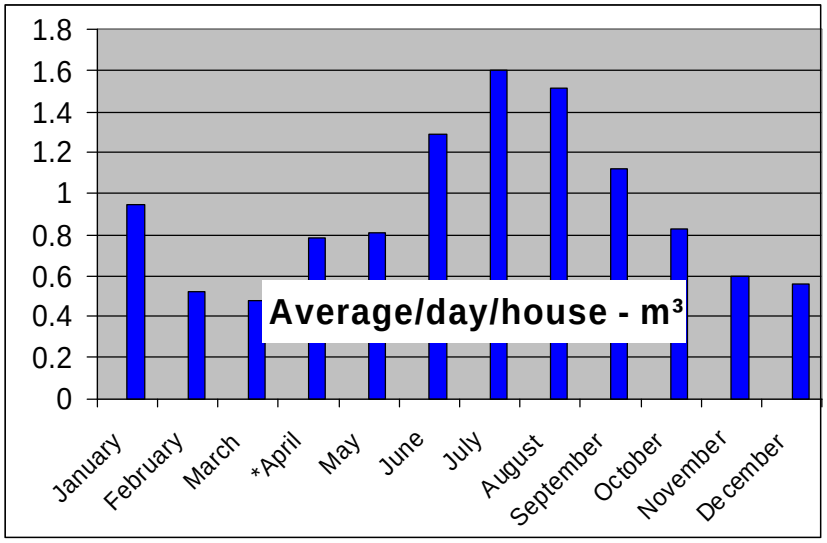


The average household water consumption per month is shown in the table and chart below.

Average / Day / House

January	**0.9**	**m³**
February	**0.5**	**m³**
March	**0.5**	**m³**
***April**	**0.8**	**m³**
May	**0.8**	**m³**
June	**1.3**	**m³**
July	**1.6**	**m³**
August	**1.5**	**m³**
September	**1.1**	**m³**
October	**0.8**	**m³**
November	**0.6**	**m³**
December	**0.6**	**m³**

* indicates watermain flushing in April



Groundwater production and household water consumption both increased dramatically from June 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. Annual fire hydrant maintenance is completed in the Fall.

8. Water System Projects

8.1 2006 Completed Projects

- A 270 m section of asbestos-concrete watermain was upgraded to 200mm (8-inch) PVC watermain on Maple Lane Drive.
- 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

- Re-keying all locked facilities.
- Other security improvements (i.e. fences, bars, lighting, intrusion alarms).
- Permanently closing two un-used monitoring wells at the east side of the SP well site.
- Improving wellhead protection around San Pareil Well #3.
- Completing the design of a new pump station.
- Developing objectives for a SCADA system.

8.3 2007 Proposed Studies

- 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, and well piping disconnected from a house when the owner receives a municipal water connection.

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.

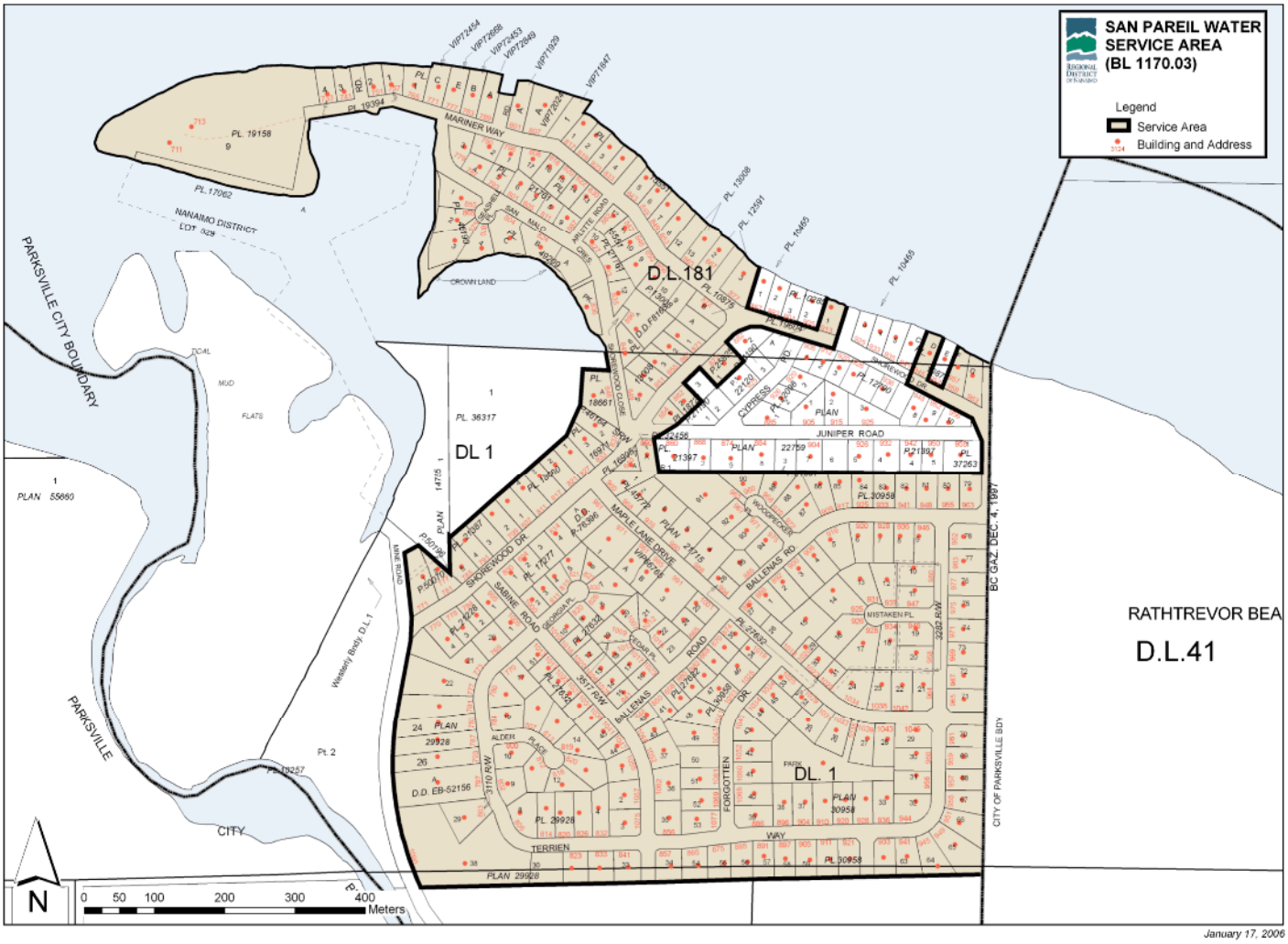
APPENIDX A

MAP OF SAN PAREIL

WATER LOCAL SERVICE AREA

SAN PAREIL

WATER LOCAL SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

APPENDIX C

EMERGENCY RESPONSE PLAN

Regional District of Nanaimo

SAN PAREIL

Water Local Service Area Annual Report

2007

REGIONAL DISTRICT OF NANAIMO

RDN WATERSMART ZERO WASTE

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1. Introduction

The following annual report describes the San Pareil Water Local Service Area and summarizes the water quality and production data from 2007. 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 2008.

2. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River bridge on the south side of the City of Parksville. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water is chlorinated and stored in one reservoir. A map of the San Pareil Water System is provided in Appendix A for reference.

2.1 Groundwater Wells

Three groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. A fourth well was drilled in 2004 and will be put into production once source approval has been received from the Vancouver Island Health Authority.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Treated
#3	7.0 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m^3 (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is largely comprised of 100mm and 150mm PVC and asbestos-concrete 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 coliforms, E.Coli 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

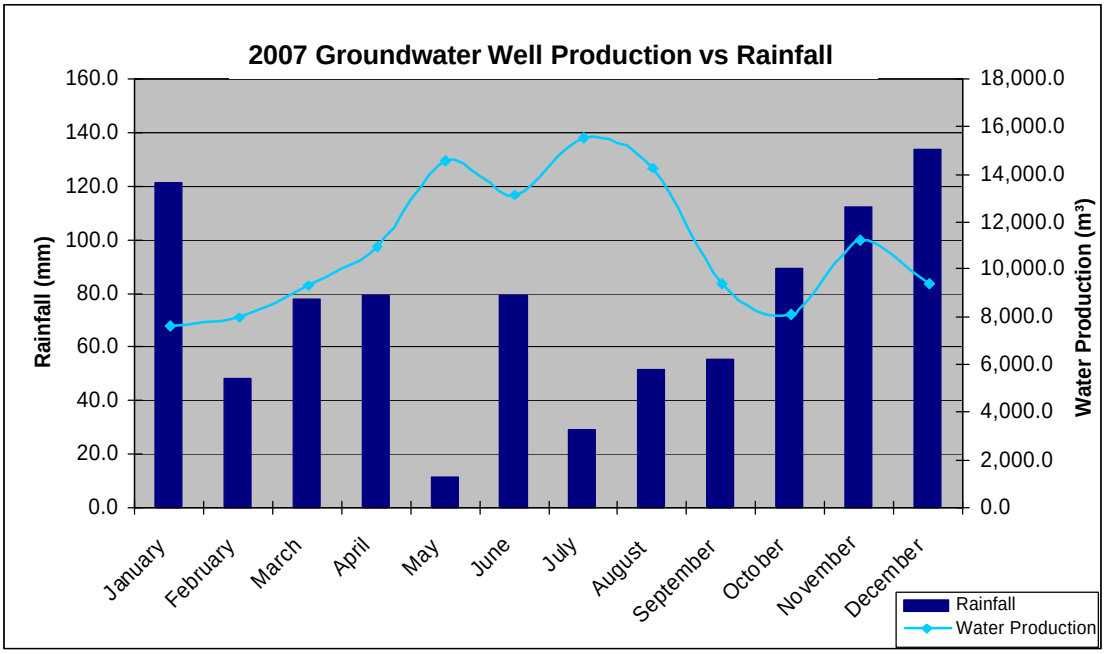
Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca in the WaterSmart section, under "Communities". Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

5. Water Quality Inquiries and Complaints

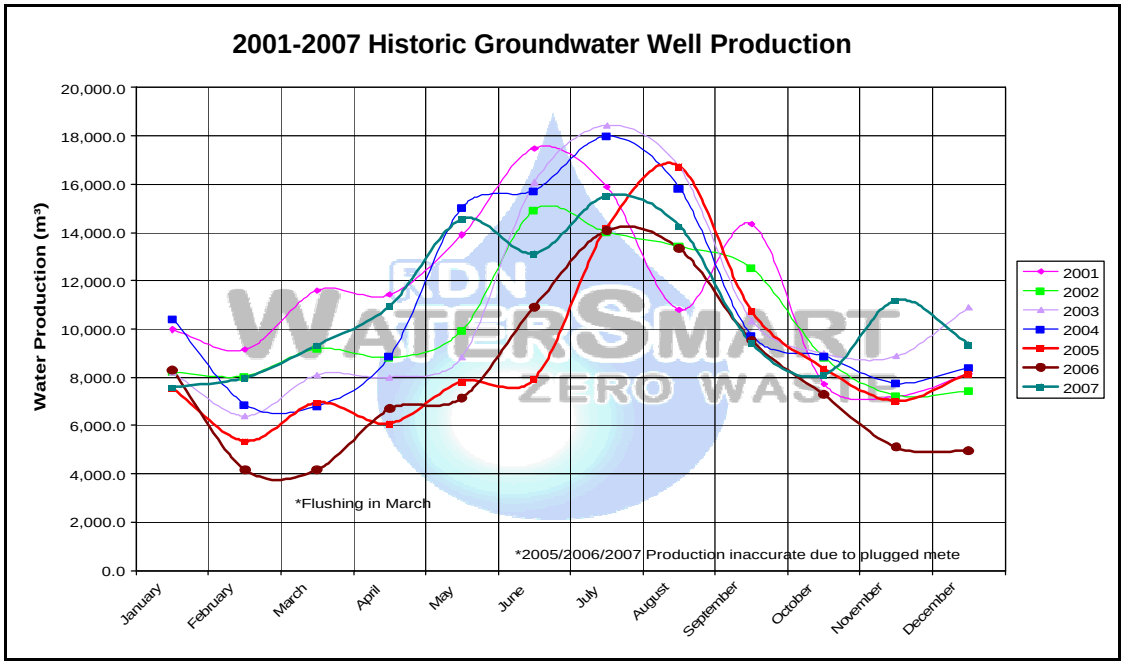
Very few complaints and inquiries were received from the San Pareil water service area, and were typically related to watering restriction times.

6. Groundwater Production and Consumption

The 2007 monthly groundwater production for San Pareil is shown in the chart below. There are 276 water service connections in San Pareil. Groundwater production has been charted against rainfall data from the City of Parksville website to show how rainfall affects the amount of groundwater pumped.



The monthly groundwater production for San Pareil for the past 7 years is shown in the chart below. Groundwater production in 2007 was typically lower than previous years.



Consumption
In the Fall/Winter of 2007, the average usage per home in San Pareil was 0.53 cubic metres per day (116 imperial gallons). In the summer, the average water usage was 1.06 cubic metres per day (233 imperial gallons).

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. Annual fire hydrant maintenance is completed in the Fall.

8. Water System Projects

8.1 2007 Completed Studies & Projects

- A Drinking Water - Watershed Protection Action Plan was completed.
- An Innovative Water Use and Re-Use Study was completed.
- A Water Use Bylaw - Best Practices Review was completed.
- A formalized Cross Connection Control Program was initiated.
- A comprehensive water conservation program (WaterSmart) was carried out from May to October.
- The RDN WaterSmart website was updated and improved.
- The Emergency Response Plan was reviewed and updated.
- A SCADA (Supervisory Control and Data Acquisition) Study was initiated.
- The annual watermain flushing was completed.

8.2 2008 Proposed Projects & Upgrades

- Upgrades to flush-outs
- New signage for all Utilities facilities
- Re-keying all locked facilities
- Implement innovative use and re-use technology
- Stand-alone water testing stations to be installed
- Promote Cross Connection Control awareness and facility audits

8.3 2008 Proposed Studies

- Complete SCADA study and integrate into 2009 budget
- San Pareil Pump Station Design, reservoir sizing, and site piping
- San Pareil pre-design for water system improvements and expansion
- Rainwater management strategy
- Sodium hypochlorite vs. on-site chlorine generation
- Comprehensive capital plan development

9. Emergency Response Plan

The Emergency Response Plan (ERP) was reviewed and updated in 2007. A copy of the ERP is attached in Appendix C.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

A consultant who specializes in municipal Cross Connection Control was hired to enhance the RDN Cross Connection Control Program in 2007/2008. The program in 2008 will include:

- A review and comparison of successful cross-connection control programs implemented by other small water systems nearby,
- A survey of existing or potential cross-connection risks for each category of RDN customer (i.e., residential, commercial, industrial, institutional, etc.),
- An audit of RDN-owned facilities in each water service area,
- The preparation of a draft bylaw to allow enforcement of the Cross Connection Control Program,
- The set up of a customer database with a maintenance history of testable backflow prevention assemblies at each facility, and
- Staff training and certification in Backflow Assembly Testing (BCWWA certified).

11. Closing

An annual report for the year 2008 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2009. Annual reports are also available on our website at www.rdn.bc.ca in the WaterSmart section, under “Communities”.

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WATER LOCAL SERVICE AREA

SAN PAREIL

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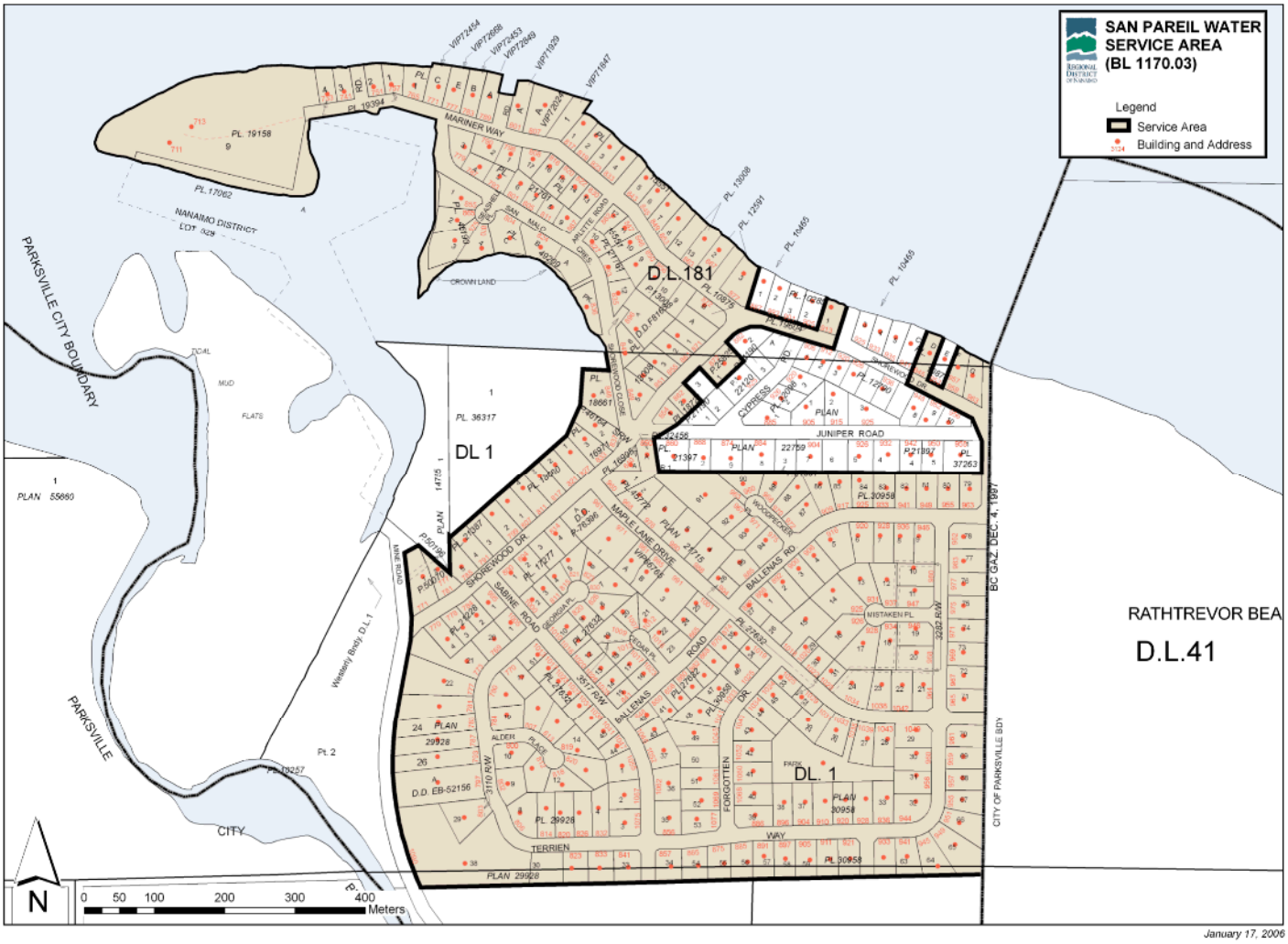

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REGIONAL DISTRICT OF NANAIMO

SAN PAREIL

Water Local Service Area

Annual Report

2008

water SMART zero waste

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2. San Pareil Water System

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2.1 Groundwater Wells

Four groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. Two of the wells are not currently in use: Well #2 is an older, shallow well that is kept on stand-by. Well #3 was converted to a monitoring well when Well #4 was drilled.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Not in use
#3	7.0 m	Yes	Not in use
#4	5.7 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m^3 (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is largely comprised of 100mm and 150mm PVC and asbestos-concrete watermains. Fire hydrants are located throughout the system.

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

Timing	Location	Tests
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4. Water Quality - Source Water and Distribution System

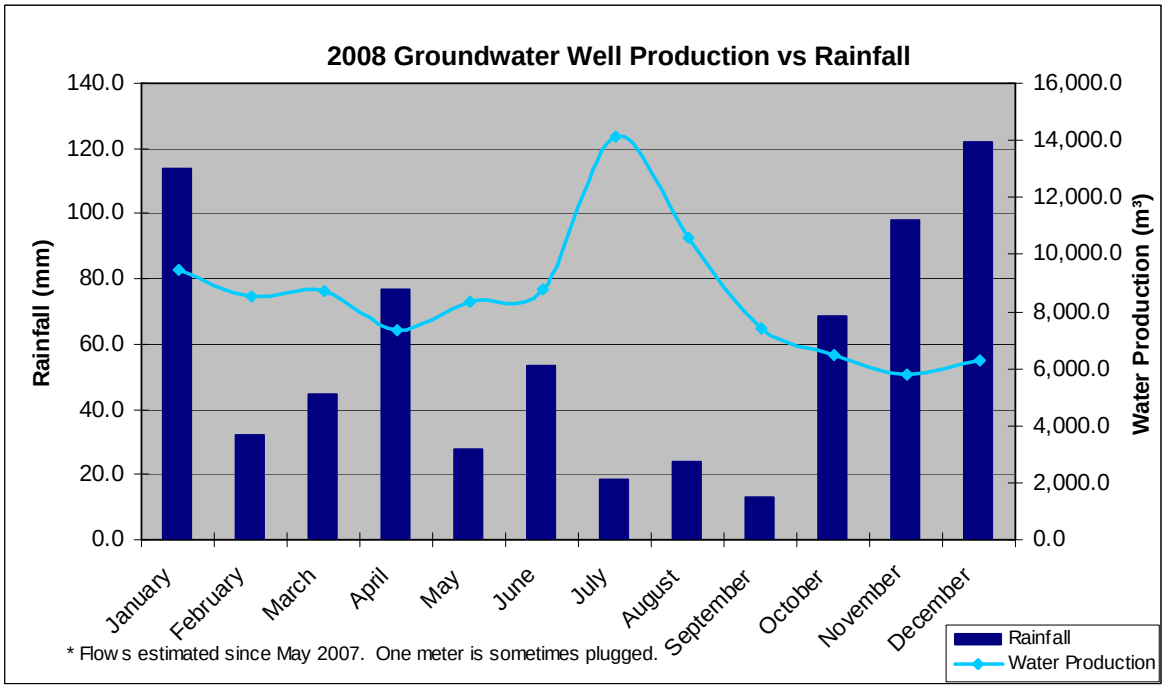
Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca in the WaterSmart section, under "Communities". Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

5. Water Quality Inquiries and Complaints

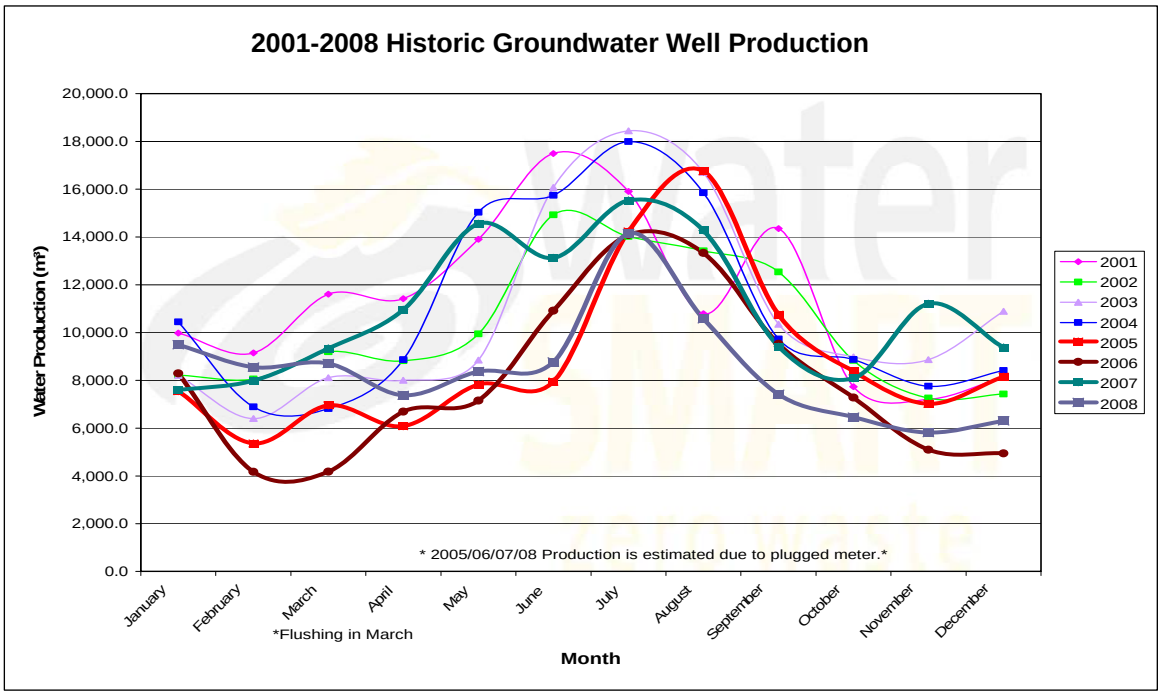
No complaints were received from the San Pareil water service area. A few inquiries were made regarding the location of underground services.

6. Groundwater Production and Consumption

The 2008 monthly groundwater production for San Pareil is shown in the chart below. There are 276 water service connections in San Pareil. Groundwater production has been charted against rainfall data from the City of Parksville website to show the correlation between rainfall and water consumption.



The monthly groundwater production for San Pareil for the past 8 years is shown in the chart below. Groundwater production in 2008 was typically lower than previous years.



Consumption

In the Fall/Winter of 2008, the average usage per home in San Pareil was 0.51 cubic metres per day (112 imperial gallons). In the summer, the average water usage was 0.97 cubic metres per day (213 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 282 L/day. This consumption is 5.4% less than the RDN system average of 298.4 L/day/capita for 2008.

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. Annual fire hydrant maintenance is completed in the Fall.

8. Water System Projects

8.1 2008 Completed Studies & Projects

- Replaced all facility signs.
- Re-keyed all gates and points of entry.
- Established electrical connections for the mobile generator at key sites.
- Completed 'B' fire hydrant maintenance.
- Completed annual watermain flushing.
- Completed a comprehensive water conservation program (**Team WaterSmart**) from May to October.
- Initiated the WaterSmart school program in partnership with Nanaimo Recycling Exchange.
- Updated and improved the RDN **WaterSmart** website.
- Updated the Emergency Response Plan.
- Expanded the Operating Procedures binder.
- Completed the SCADA (Supervisory Control and Data Acquisition) Study.
- Completed the Innovative Water Supply and Re-Use study.
- Completed the *Action for Water* referendum process.
- Achieved Backflow Prevention Tester's Certification for 3 Operations staff.
- Created the Auto E-Message notification sign-up on the RDN website.

8.2 2009 Proposed Projects & Upgrades

- Establish the Drinking Water Protection Advisory Committee.
- Review the SCADA report and options for implementation.
- Commence the 2009 **Team WaterSmart** education program.
- Develop a rebate / incentive program.
- Develop the *Well Aware* well safety program.
- Install 2 stand-alone water sampling stations.

8.3 2009 Proposed Studies

- Complete the well re-development study.

9. Emergency Response Plan

The Emergency Response Plan (ERP) was reviewed and updated in 2008. A copy of the ERP is attached in Appendix C.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

In 2008, a review and comparison of successful cross-connection control programs in other small water systems nearby was undertaken. A database of commercial customers was set-up in order to keep track of the maintenance history of testable backflow prevention assemblies at each site. Three RDN Operations staff achieved Backflow Prevention Tester's certification.

The program in 2009 will include:

- A survey of existing and potential cross-connections,
- An audit of RDN-owned facilities in each water service area,
- The preparation of a draft bylaw to allow enforcement of the Cross Connection Control Program.

11. Closing

An annual report for the year 2009 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2010. Annual reports are also available on our website at www.rdn.bc.ca in the WaterSmart section, under "Communities".

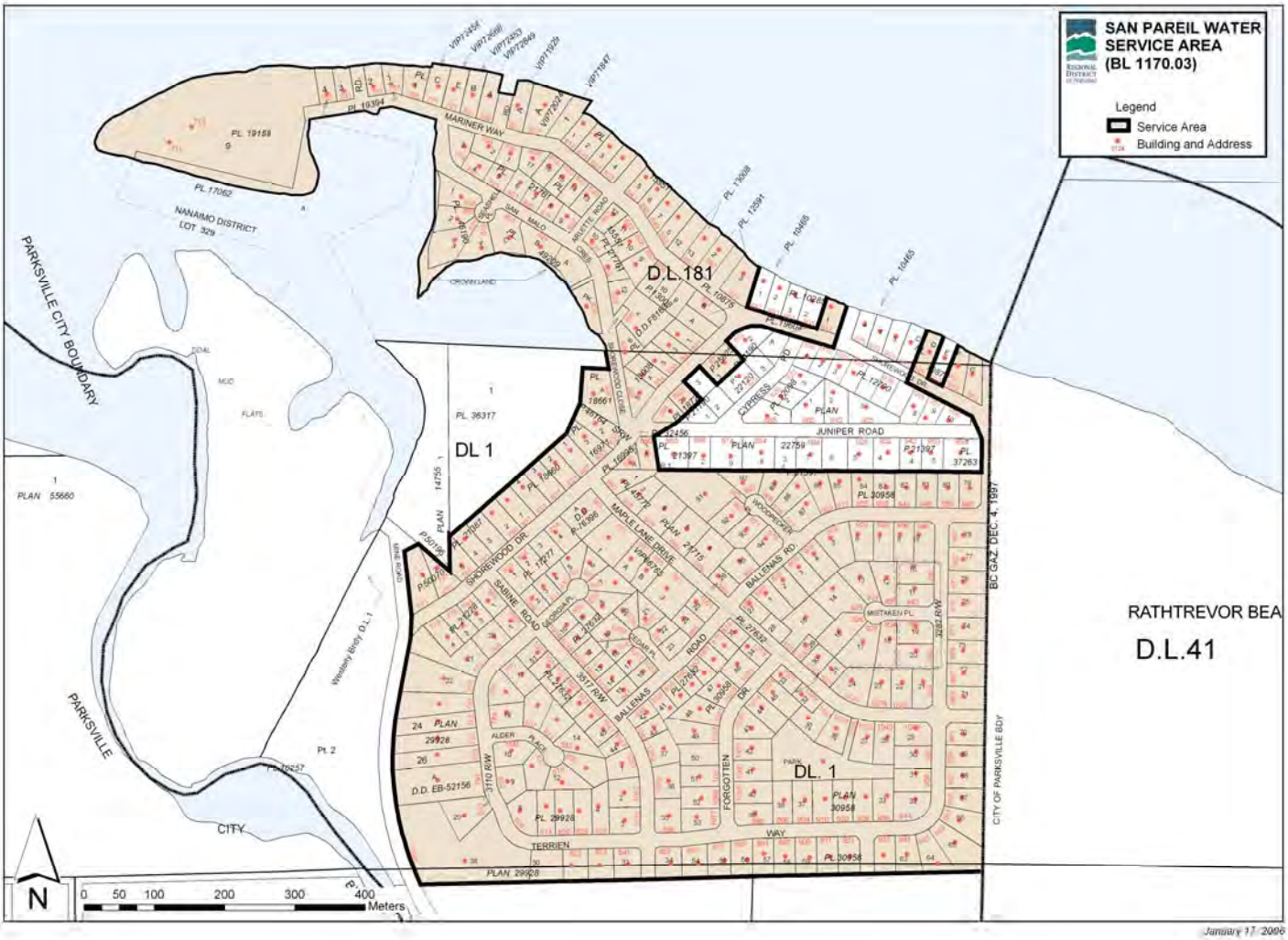
APPENIDX A

MAP OF SAN PAREIL

WATER LOCAL SERVICE AREA

SAN PAREIL

WATER LOCAL SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

Distribution Potability Test Results - San Pareil

(Treated Drinking Water)

Test	Water Quality Guidelines				Date									
	Units	CDWG	BCAWQG		1999	2000	2001	2002	2003	2004	2005	May 17 2006	May 22 2007	May 27 2008
Color	CU	15	</=15	AO	5		3	2	2	6	<5	<5	26	<5
Conductivity	uS		700	MAC	66		82.8	68	85	71.1	69	65.5	62.1	56.6
TDS	mg/L	500	</=500	AO	74		40	7	20	53	40	47	26	58
Hardness (CaCO3)	mg/L	80-100	</=500	AO	22		27.6	24	21.6	22	24	21	21	15
pH	pH units	6.5-8.5	6.5-8.5	AO	6.75		6.08	6.15	6.47	6.5	6.5	6.5	6.7	6.63
Turbidity	NTU's	5	1	MAC	0.12		<.05	<.05	0.23	0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity	mg/L				27.2		23	20	36	17	24	22	21	20
Chloride	mg/L	250	</=250	AO	3.8		7.3	5.94	5.48	6.5	5.7	4.9	4.8	4.9
Fluoride	mg/L	1.5	1.5	MAC	<.05		<.04	0.07	<0.01	<1.0	<1.0	<0.1	<1.0	<0.1
Sulfate	mg/L	500	</=500	AO	1.6		1.69	1.55	1.8	10	<2	1.6	<2.0	<2.0
Nitrate	mg/L	10	10	MAC	0.09		0.045	0.09	0.07	0.2	<0.1	0.06	<0.1	<0.1
Nitrite	mg/L	1			<.002		0.017	<.006	<0.01	<0.1	<0.1	<0.01	<0.1	<0.1
T-Aluminum	mg/L		0.2	MAC	0.15		0.013	0.016	0.021	0.016	0.01	<0.005	0.011	<0.05
T-Antimony	mg/L		0.006	MAC			<.006	<.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
T-Arsenic	mg/L	0.025	0.025	IMAC	<.001		<.01	<.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
T-Barium	mg/L	1.0	1	MAC	0		0.0043	0.0038	0.003	0.003	0.003	0.002	0.002	<0.005
T-Boron	mg/L	5.0	5	MAC	<.05		0.011	0.01	0.012	0.009	0.01	0.007	0.01	<0.02
T-Cadmium	mg/L	0.005			<.0002		<.0006	<.0006	<0.00001	<.00001	<0.00001	<0.00001	<0.00001	<0.0003
T-Calcium	mg/L				7.71		9.2	7.8	7.2	7.4	7.6	6.9	6.9	5
T-Chromium	mg/L	0.05	0.05	MAC	<.001		<.0009	<.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003
T-Copper	mg/L	1.0	</=1	MAC	0.024		0.012	0.01	0.011	0.008	0.01	0.005	0.007	0.005
T-Iron	mg/L	0.3	</=0.3	AO	<.05		0.094	0.025	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05
T-Lead	mg/L	0.01	0.01	MAC	0.001		0.002	<.002	0.0009	0.0006	0.0009	0.0003	0.0003	<0.0005
T-Magnesium	mg/L		</=700	AO	0.73		1.13	1.1	0.9	0.9	1.1	1	1	0.7
T-Manganese	mg/L	0.05	</=0.05	AO	0.005		0.0012	0.0026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005
T-Mercury	mg/L	0.001	0.001	MAC	<.05		<.0001	<.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.01
T-Potassium	mg/L				0.13		<.4	<.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2
T-Selium	mg/L	0.01	0.01	MAC	<.002		0.007	<.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.003
T-Sodium	mg/L	200	</=200	AO	3.14		3.9	4.1	4.7	4.3	<0.4	4	4	4.4
T-Uranium	mg/L	0.1	0.1	MAC	<.0005		<.06	<.02	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
T-Zinc	mg/L	5	<5	AO	<.005		0.0084	0.007	0.004	0.005	0.005	0.002	0.012	<0.005
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1	<1.0
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1	
E.coli	cfu/100ml	<1	<1	cfu/100ml								<1	<1	<1.0
Tannins & Lignins					n/a		n/a	0.12	n/a	n/a	n/a	n/a	n/a	n/a
Trihalomethanes	mg/l	0.1		MAC	n/a		n/a	n/a	n/a	n/a	n/a	0.005	n/a	n/a

BCAWQG - BC approved water quality guidelines
MAC - maximum acceptable concentrations
IMAC - interim maximum acceptable concentrations
AO - aesthetic objective
Red font indicates non-compliance.

San Pareil Well #1 Water Analysis Results
Canadian Drinking Water Guidelines Package

Red font indicates non-compliance with Canadian Drinking Water Guidelines
MAC=Maximum Acceptable Concentration.
IMAC= Interim Maximum Acceptable Concentration.
AO= Asthetic Objective.

Parameter	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008
Color	CU	15	</=15	AO	2	11	<5	6	<5	<5	<5
Conductivity	µS		700	MAC	138	92.3	82.2	83.8	130.3	68.5	80
Total Dissolved Solids	mg/L	500	</=500	AO	27	53	73	12	40	100	32
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**33.9**	**31**	**29**	**27**	**40**	23	26
pH	pH units	6.5-8.5	6.5-8.5	AO	**6.32**	**6.39**	6.6	7	6.8	7.28	6.53
Turbidity	NTU's	5	1	MAC	0.02	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity	mg/L				22	27	26	23	26	26	26
Chloride	mg/L	250	</=250	AO	15.71	7.8	8.3	8.7	20.7	5.9	8.1
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfate	mg/L	500	</=500	AO	1.47	3.9	2.5	<2	2	<2.0	<2.0
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Aluminum	mg/L		0.2	MAC	0.007	0.032	0.012	0.008	0.007	0.012	<0.005
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
T- Barium	mg/L	1.0	1	MAC	0.006	0.006	0.005	0.004	0.007	0.004	0.004
T-Boron	mg/L	5.0	5	MAC	0.013	0.013	0.013	0.013	0.014	0.01	0.008
T-Cadmium	mg/L	0.005			0.00009	0.00023	0.00014	<0.00001	<0.00001	0.00006	<0.00001
T-Calcium	mg/L				11.1	10.2	9.7	9	13.3	7.6	8.54
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.002	0.001	0.006	0.003	0.008	0.006
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02
T-Lead	mg/L	0.01	0.01	MAC	<0.0001	0.0003	<0.0001	0.0014	0.0006	0.0011	0.0009
T-Magnesium	mg/L		</=700	AO	1.5	1.4	1.1	1.1	1.7	1	1.13
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.01
T-Potassium	mg/L				<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.2
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0003	<0.0006
T-Sodium	mg/L	200	</=200	AO	5	4.6	4.5	5.2	6.3	4.2	3.95
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004
T-Zinc	mg/L	5	<5	AO	0.001	0.009	0.001	0.012	0.005	0.013	0.008
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***>200**	***39**	***38**	***3**	***6.4**
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	<1
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	<1

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well #2 Water Analysis Results

Canadian Drinking Water Guidelines Package

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

(shallow well)

MAC=Maximum Acceptable Concentration.
IMAC= Interim Maximum Acceptable Concentration.
AO= Asthetic Objective.

Well off

Parameter	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008
Color	CU	15	</=15	AO	3	<5	<5	10	<5	6	
Conductivity	µS		700	MAC	106	80.7	89.5	92.2	117.4	75	
Total Dissolved Solids	mg/L	500	</=500	AO	13	47	73	70	12	40	
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**31.7**	**26**	**32**	**30**	**37**	**25**	
pH	pH units	6.5-8.5	6.5-8.5	AO	6.52	**6.29**	**6.4**	6.8	6.6	7.19	
Turbidity	NTU's	5	1	MAC	0.02	0.6	<0.5	1.6	0.8	<0.5	
Alkalinity	mg/L				20	23	26	23	23	20	
Chloride	mg/L	250	</=250	AO	14.19	8.3	10.2	11.7	18.7	6.8	
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	
Sulfate	mg/L	500	</=500	AO	1.35	3.6	2.2	<2	<2.0	<2.0	
Nitrate (N)	mg/L	10	10	MAC	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	
T-Aluminum	mg/L		0.2	MAC	0.009	0.038	0.011	0.013	0.013	0.011	
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
T- Barium	mg/L	1.0	1	MAC	0.005	0.003	0.005	0.005	0.006	0.004	
T-Boron	mg/L	5.0	5	MAC	0.012	0.012	0.014	0.013	0.013	0.011	
T-Cadmium	mg/L	0.005			0.0005	0.00095	0.00008	<0.00001	<0.00001	<0.00001	
T-Calcium	mg/L				10.1	8.5	10.7	10	12.2	8.2	
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.003	<0.001	0.007	0.004	0.005	
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	**0.5**	0.2	0.1	
T-Lead	mg/L	0.01	0.01	MAC	0.0001	0.0004	<0.0001	0.0014	0.0008	0.0005	
T-Magnesium	mg/L		</=700	AO	1.5	1.2	1.3	1.3	1.6	1.1	
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	0.016	0.026	0.019	
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	
T-Potassium	mg/L				<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	
T-Sodium	mg/L	200	</=200	AO	3.7	4.3	4.8	5.4	5.5	4.2	
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
T-Zinc	mg/L	5	<5	AO	0.002	0.003	0.001	0.009	0.004	0.006	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***310**	***7**	***131**	***23**	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well #3 Water Analysis Results

Canadian Drinking Water Guidelines Package

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines
MAC=Maximum Acceptable Concentration.
IMAC= Interim Maximum Acceptable Concentration.
AO= Asthetic Objective.

Well Off

Parameter	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008
Color	CU	15	</=15	AO	2	<5	<5	5	<5	<5	
Conductivity	µS		700	MAC	108	101.1	85.8	97.4	119.4	76.8	
Total Dissolved Solids	mg/L	500	</=500	AO	27	60	67	78	38	107	
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**32.5**	**34**	**30**	**33**	**37**	**25**	
pH	pH units	6.5-8.5	6.5-8.5	AO	6.53	**6.45**	6.6	6.9	6.7	7.2	
Turbidity	NTU's	5	1	MAC	0.05	0.41	<0.5	<0.5	<0.5	<0.5	
Alkalinity	mg/L				21	26	24	24	22	21	
Chloride	mg/L	250	</=250	AO	17.94	11.4	10	12.6	19.7	7.2	
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	
Sulfate	mg/L	500	</=500	AO	1.4	3.5	2.1	<2	2.2	<2.0	
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	0.1	<0.1	<0.1	
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	
T-Aluminum	mg/L		0.2	MAC	0.006	0.006	<0.005	0.006	0.007	0.008	
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
T- Barium	mg/L	1.0	1	MAC	0.003	0.003	0.003	0.003	0.003	0.002	
T-Boron	mg/L	5.0	5	MAC	1.012	0.015	0.014	0.014	0.014	0.011	
T-Cadmium	mg/L	0.005			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
T-Calcium	mg/L				10.4	10.9	10	10.9	12.3	8	
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.001	0.002	0.006	0.004	0.004	
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
T-Lead	mg/L	0.01	0.01	MAC	0.0021	0.0012	0.0014	0.0012	0.0006	0.0004	
T-Magnesium	mg/L		</=700	AO	1.6	1.6	1.3	1.5	1.6	1.1	
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	
T-Potassium	mg/L				<0.4	0.4	<0.4	0.5	<0.4	<0.4	
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
T-Sodium	mg/L	200	</=200	AO	4.2	4.9	4.7	5.6	5.4	4.3	
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
T-Zinc	mg/L	5	<5	AO	0.004	0.002	0.003	0.009	0.006	0.005	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	***2**	***59**	***2**	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well #4 Water Analysis Results

Canadian Drinking Water Guidelines Package

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines
MAC=Maximum Acceptable Concentration.
IMAC= Interim Maximum Acceptable Concentration.
AO= Asthetic Objective.

Parameter	Units	CDWG	BCAWQG		2008	2009	2010	2011	2012	2013	2014
Color	CU	15	</=15	AO	**23**						
Conductivity	µS		700	MAC	80						
Total Dissolved Solids	mg/L	500	</=500	AO	200						
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**120**						
pH	pH units	6.5-8.5	6.5-8.5	AO	7.73						
Turbidity	NTU's	5	1	MAC	<0.5						
Alkalinity	mg/L				25						
Chloride	mg/L	250	</=250	AO	3.7						
Fluoride	mg/L	1.5	1.5	MAC	<1.0						
Sulfate	mg/L	500	</=500	AO	<2.0						
Nitrate (N)	mg/L	10	10	MAC	<0.1						
Nitrite (N)	mg/L	1			<0.1						
T-Aluminum	mg/L		0.2	MAC	<0.005						
T-Antimony	mg/L		0.006	MAC	<0.0002						
T-Arsenic	mg/L	0.025	0.025	IMAC	0.0022						
T- Barium	mg/L	1.0	1	MAC	0.009						
T-Boron	mg/L	5.0	5	MAC	0.079						
T-Cadmium	mg/L	0.005			0.00001						
T-Calcium	mg/L				29.2						
T-Chromium	mg/L	0.05	0.05	MAC	0.0004						
T-Copper	mg/L	1.0	</=1	MAC	0.015						
T-Iron	mg/L	0.3	</=0.3	AO	**0.46**						
T-Lead	mg/L	0.01	0.01	MAC	0.0007						
T-Magnesium	mg/L		</=700	AO	11						
T-Manganese	mg/L	0.05	</=0.05	AO	**0.247**						
T-Mercury	mg/L	0.001	0.001	MAC	<0.01						
T-Potassium	mg/L				2.1						
T-Selenium	mg/L	0.01	0.01	MAC	<0.0006						
T-Sodium	mg/L	200	</=200	AO	21						
T-Uranium	mg/L	0.1	0.1	MAC	<0.0004						
T-Zinc	mg/L	5	<5	AO	0.2						
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	***1**						
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1						
E.coli	cfu/100ml	<1	<1	cfu/100ml	<1						

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

Regional District of Nanaimo - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jan-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ° C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
08-Jan	813 Alder	0	0	0	0	9	6.8	0.75	34	0	72.4	0.02	0.001
10-Jan	962 Ballenas			0	0			0.52					
15-Jan	995 Sabine	0	0	0	0	8	6.9	0.57	37	0	76		
17-Jan	962 Ballenas			0	0			0.41					
22-Jan	Lot 4 San Malo	0	0			7	6.8	0.64	38	0	83		
24-Jan	962 Ballenas												
29-Jan	875 Seashell	0	0	0	0	6		0.68					
	Average	0	0	0	0	7.5	6.8	0.60	36.3	0.0	77.1	0.02	0.001
	Maximum	0	0	0	0	9	6.9	0.75	38	0	83	0.02	0.001
	Minimum	0	0	0	0	6	6.8	0.41	34	0	72.4	0.02	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Feb-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-Feb	813 Alder Pl	0	0	0	0	8	6.6	0.84	36	0	77	0.04	0.002
07-Feb	962 Ballenas			0	0			0.67					
12-Feb	875 Seashell	0	0	0	0	7	6.8	0.64	22	0	76		
20-Feb	995 Sabine			0	0	8	6.6	0.58	35	0	74		
21-Feb	962 Ballenas	0	0	0	0			0.6					
26-Feb	Lot 4 San Malo	0	0	0	0	8	6.9	0.58	36	0	77		
28-Feb	962 Ballenas							0.59					
	Average	0	0	0	0	7.8	6.7	0.64	32.3	0.0	76.0	0.04	0.002
	Maximum	0	0	0	0	8	6.9	0.84	36	0	77	0.04	0.002
	Minimum	0	0	0	0	7	6.6	0.58	22	0	74	0.04	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Mar-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
04-Mar	813 Alder Pl	0	0	0	0	8	6.9	0.67	36	0	76	0.03	0.003
06-Mar	962 Ballenas Rd			0	0			0.47					
12-Mar	995 Sabine Rd	0	0	0	0	8	6.6	0.18	31	0	66		
13-Mar	962 Ballenas Rd			0	0			0.43					
18-Mar	875 Seashell	0	0	0	0	8	6.4	0.34	32	0	68		
26-Mar	Lot 4 San Malo	0	0			8	6.9	0.44	31	0	68		
	Average	0	0	0	0	8.0	6.7	0.42	32.5	0.0	69.5	0.03	0.003
	Maximum	0	0	0	0	8	6.9	0.67	36	0	76	0.03	0.003
	Minimum	0	0	0	0	8	6.4	0.18	31	0	66	0.03	0.003

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Apr-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o}C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Apr	995 Sabine Rd	0	0	0	0	8	6.7	0.65	33	0	71	0.04	
08-Apr	813 Alder Pl	0	0	0	0	8	6.7	0.42	32	0	68		
10-Apr	962 Ballenas							0.16					0
15-Apr	Lot 4 San Malo	0	0	0	0	10	6.7	0.34	37	0	78		0
17-Apr	962 Ballenas							0.25					
22-Apr	875 Seashell Pl	0	0	0	0	10	6.8	0.31	35	0	74		
24-Apr	962 Ballenas							0.33					
	Average	0	0	0	0	9.0	6.7	0.35	34.3	0.0	72.8	0.04	0
	Maximum	0	0	0	0	10	6.8	0.65	37	0	78	0.04	0
	Minimum	0	0	0	0	8	6.7	0.16	32	0	68	0.04	0

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date May-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
06-May	995 Sabine Rd	0	0	0	0	10	6.9	0.75	33	0	70	0.02	0.001
14-May	875 Seashell Pl	0	0										
15-May	962 Ballenas Rd			0	0			0.42					
21-May	Lot 4 San Malo	0	0	0	0	12	6.8	0.52	29	0	61		
27-May	813 Alder Pl	0	0	0	0	10	6.8	0.76	28	0	59		
29-May	962 Ballenas Rd							0.57					
	Average	0	0	0	0	10.7	6.8	0.60	30.0	0.0	63.3	0.02	0.001
	Maximum	0	0	0	0	12	6.9	0.76	33	0	70	0.02	0.001
	Minimum	0	0	0	0	10	6.8	0.42	28	0	59	0.02	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jun-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
04-Jun	995 Sabine Rd	0	0	0	0	11	6.7	0.75	30	0	63	0.03	0.001
05-Jun	962 Ballenas			0	0			0.48					
11-Jun	Lot 4 San Malo	0	0	0	0	14	6.6	0.46	32	0	67		
17-Jun	875 Seashell	0	0	0	0	13	6.7	0.02	32	0	68		
19-Jun	962 Ballenas			0	0			0.53					
24-Jun	813 Alder Pl	0	0	0	0	11	6.5	0.74	31	0	66		
	Average	0	0	0	0	12.3	6.6	0.50	31.3	0.0	66.0	0.03	0.001
	Maximum	0	0	0	0	14	6.7	0.75	32	0	68	0.03	0.001
	Minimum	0	0	0	0	11	6.5	0.02	30	0	63	0.03	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jul-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Jul	995 Sabine Rd	0	0										
09-Jul	813 Alder Place	0	0	0	0	12	6.8	0.46	32	0	68	0.02	0
15-Jul	Lot 4 San Malo	0	0	0	0	16	6.8	0.67	39	0	81		
22-Jul	875 Seashell	0	0	0	0	16	6.8	0.35	40	0	85		
29-Jul	995 Sabine Rd			0	0	15	6.7	0.03	41	0	87		
	Average	0	0	0	0	14.8	6.8	0.38	38.0	0.0	80.3	0.02	0
	Maximum	0	0	0	0	16	6.8	0.67	41	0	87	0.02	0
	Minimum	0	0	0	0	12	6.7	0.03	32	0	68	0.02	0

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Aug-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
06-Aug	995 Sabine Rd	0	0	0	0	16	6.8	0.43	44	0	93	0.03	0.001
12-Aug	813 Alder Pl	0	0	0	0	13	6.6	0.32	46	0	97		
19-Aug	Lot 4 San Malo	0	0	0	0	16	6.6	0.04	45	0	96.7		
26-Aug	875 Seashell	0	0	0	0	18	6.6	0.24	50	0.1	101.4		
	Average	0	0	0	0	15.8	6.7	0.26	46.3	0.0	97.0	0.03	0.001
	Maximum	0	0	0	0	18	6.8	0.43	50	0.1	101.4	0.03	0.001
	Minimum	0	0	0	0	13	6.6	0.04	44	0	93	0.03	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Sep-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
03-Sep	995 Sabine	0	0										
09-Sep	Lot 4 San Malo	0	0										
16-Sep	875 Seashell	0	0	0	0	14	6.7	0.18	45	0	95	0.03	0.001
24-Sep	813 Alder Pl	0	0										
	Average	0	0	0	0	14.0	6.7	0.18	45.0	0.0	95.0	0.03	0.001
	Maximum	0	0	0	0	14	6.7	0.18	45	0	95	0.03	0.001
	Minimum	0	0	0	0	14	6.7	0.18	45	0	95	0.03	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Oct-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
07-Oct	995 Sabine Rd	0	0	0	0	14	6.7	0.39	48	0	102	0.04	0.002
15-Oct	875 Seashell	0	0	0	0	13	6.7	0.41	44	0	93		
21-Oct	813 Alder Pl	0	0	0	0	12	6.6	0.03	41	0	87		
29-Oct	Lot 4 San Malo	0	0	0	0	11	6.8	0.45	45	0	94		
	Average	0	0	0	0	12.5	6.7	0.32	44.5	0.0	94.0	0.04	0.002
	Maximum	0	0	0	0	14	6.8	0.45	48	0	102	0.04	0.002
	Minimum	0	0	0	0	11	6.6	0.03	41	0	87	0.04	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Nov-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
04-Nov	813 Alder Pl	0	0	0	0	10	6.5	0.34	43	0	92	0.01	0.001
12-Nov	875 Seashell	0	0	0	0	11	6.5	0.41	39	0	82		
18-Nov	995 Sabine Rd	0	0	0	0	12	6.7	0.45	40	0	85		
25-Nov	Lot 4 San Malo	0	0	0	0	10	6.7	0.36	39	0	87		
	Average	0	0	0	0	10.8	6.6	0.39	40.3	0.0	86.5	0.01	0.001
	Maximum	0	0	0	0	12	6.7	0.45	43	0	92	0.01	0.001
	Minimum	0	0	0	0	10	6.5	0.34	39	0	82	0.01	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Dec-08	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Dec	995 Sabine Rd	0	0	0	0	10	6.7	0.75	40	0	85	0.03	0.001
09-Dec	Lot 4 San Malo	0	0	0	0	9	6.7	0.12	39	0	84		
16-Dec	813 Alder Pl	0	0										
	Average	0	0	0	0	9.5	6.7	0.44	39.5	0.0	84.5	0.03	0.001
	Maximum	0	0	0	0	10	6.7	0.75	40	0	85	0.03	0.001
	Minimum	0	0	0	0	9	6.7	0.12	39	0	84	0.03	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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.

APPENDIX C

EMERGENCY RESPONSE PLAN

* Emergency Response Plan not included in Public Copy.

SAN PAREIL
Water Service Area
Annual Report
2009

Prepared by:

REGIONAL DISTRICT OF NANAIMO
Water Services Department

6300 Hammond Bay Rd, Nanaimo, BC Canada V9T 6N2 | Ph 250-390-6560 | Fax 250-390-1542 | Email: dchurko@rdn.bc.ca

Table of Contents

1. Introduction

The following annual report describes the San Pareil Water Service Area and summarizes the water quality and production data from 2009. 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 2010.

2. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River bridge on the east side of the City of Parksville. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water is chlorinated and stored in one reservoir. A map of the San Pareil Water System is provided in Appendix A for reference.

2.1 Groundwater Wells

Four groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. Two of the wells are not currently in use: Well #2 is an older, shallow well that is kept on stand-by. Well #3 was converted to a monitoring well when Well #4 was drilled.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Not in use
#3	7.0 m	Yes	Not in use
#4	5.7 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m^3 (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is summarized in the table below. Fire hydrants (16) are located throughout the water service area, but the hydrants do not meet current requirements for spacing and /or fire flows.

Watermain Material	Length of mains in San Pareil Water Service Area	Prevalence in Water Service Area
Asbestos-concrete: 150mm or smaller 200mm or larger	 6.0 km none	 91% n/a
PVC: 150mm or smaller 200mm or larger	 0.2 km 0.4 km	 3% 6%

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

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 coliforms, E.Coli Temperature, pH, Conductivity Chlorine residual, Salinity Total Dissolved Solids
Weekly (Health Dept. Requirement)	BC Centre for Disease Control	Total, Fecal coliforms
Monthly	RDN (in-house) Laboratory	Iron, Manganese
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

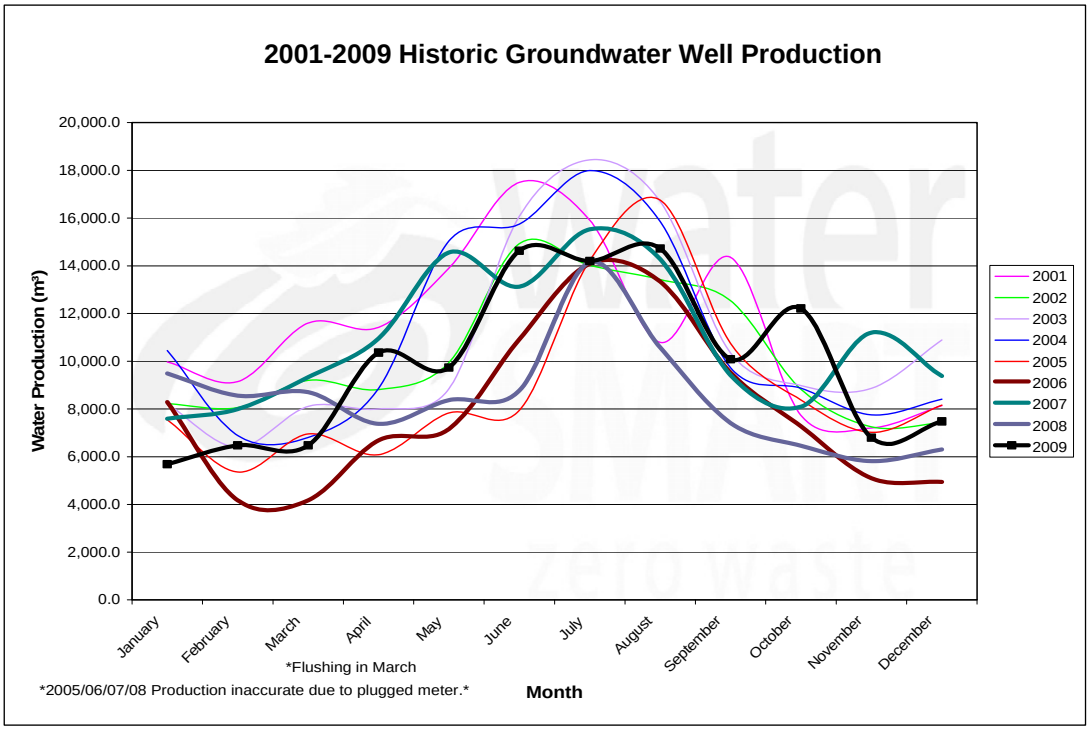
Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca in the WaterSmart section, under "Communities". Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

5. Water Quality Inquiries and Complaints

No complaints or inquiries were received from the San Pareil water service area in 2009.

6. Groundwater Production and Consumption

The monthly groundwater production for San Pareil for the past 9 years is shown in the chart below. There are 276 water service connections in San Pareil. Groundwater production in 2009 was typically lower than previous years.



Consumption

In the Fall/Winter of 2009, the average usage per home in San Pareil was 0.5 cubic metres per day (119 imperial gallons). In the summer, the average water usage was 1.2 cubic metres per day (273 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 325 L/day (based on 2.4 people per household). This consumption is 5% less than the RDN system average of 345 L/day/capita for 2009.

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. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance) in the Fall.

Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Water System Projects

8.1 2009 Completed Studies & Projects

- Completed annual B-service fire hydrant maintenance;

- Completed the design of reservoir and pumphouse improvements at the San Pareil well site;
- Carried out a comprehensive water conservation campaign (Team WaterSmart);
- Updated and improved the RDN website at www.rdn.bc.ca;
- Updated the Emergency Response Plan;
- Considered Scada options for implementation;
- Utilized the Auto E-message service to notify member residents of water service disruptions and upcoming maintenance activities;
- Developed a low-flush toilet incentive;
- Maintained a high level of water quality;
- Maintained excellent customer complaint and service request response times;
- Continued quality control through regular testing and monitoring of our water systems; and
- Completed additional educational programs.

8.2 2010 Proposed Projects & Upgrades

- Public approval of San Pareil reservoir and pumphouse improvements;
- Complete the Cross-Connection Control bylaws, and establish a procedure for reviewing commercial and industrial properties for water system risks;

9. Emergency Response Plan

The Emergency Response Plan (ERP) was reviewed and updated in 2009. A copy of the ERP is attached in Appendix C.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

In 2009, a review and comparison of successful cross-connection control programs in other small water systems nearby was undertaken. A database of commercial customers was set-up in order to keep track of the maintenance history of testable backflow prevention assemblies at each site. Three RDN Operations staff achieved Backflow Prevention Tester's certification.

The program in 2010 will include:

- A survey of existing and potential cross-connections,
- An audit of RDN-owned facilities in each water service area,
- The preparation of a draft bylaw to allow enforcement of the Cross Connection Control Program.

11. Closing

An annual report for the year 2010 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2011. Annual reports are also available on our website at www.rdn.bc.ca in the WaterSmart section, under "Communities".

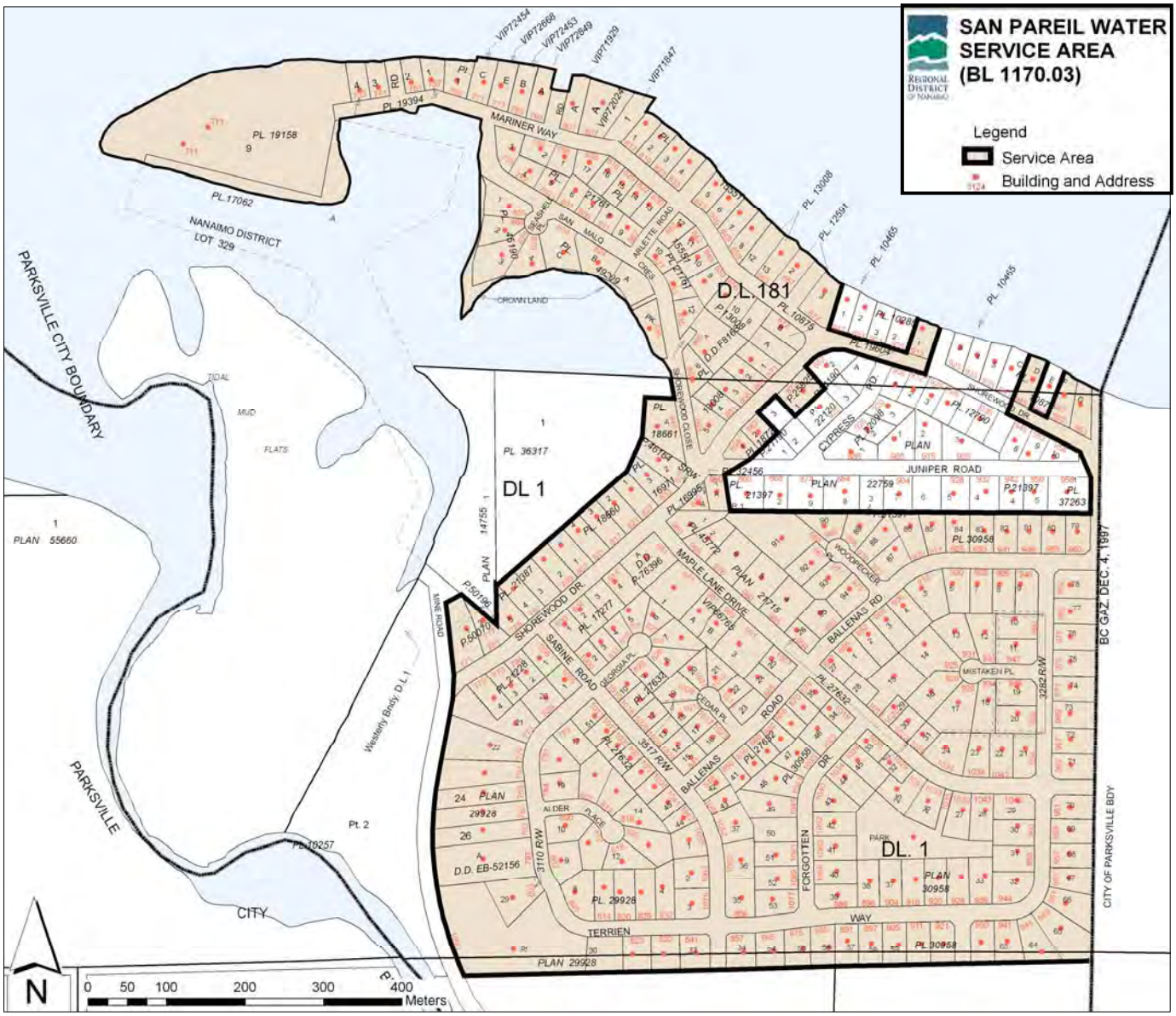
APPENIDX A

MAP OF SAN PAREIL

WATER SERVICE AREA

SAN PAREIL

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

Regional District of Nanaimo - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jan-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
06-Jan	Lot 4 San Malo	0	0	0	0	5	6.9	0.39	46	0	99	0.04	0.002
13-Jan	875 Seashell	0	0	0	0	6	6.8	0.34	48	0	103		
19-Jan	995 Sabine Rd	0	0	0	0	7	6.8	0.43	46	0	98		
27-Jan	813 Alder Place	0	0	0	0	8	6.9	0.61	47	0	100		
	Average	0	0	0	0	6.5	6.9	0.44	46.8	0.0	100.0	0.04	0.002
	Maximum	0	0	0	0	8	6.9	0.61	48	0	103	0.04	0.002
	Minimum	0	0	0	0	5	6.8	0.34	46	0	98	0.04	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Feb-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
03-Feb	995 Sabine Rd	0	0	0	0	7	6.8	0.28	44	0	94	0.01	0.001
10-Feb	813 Alder Pl	0	0	0	0	7	6.8	0.55	44	0	93		
17-Feb	Lot 4 San Malo	0	0	0	0	6	6.7	0.51	46	0	98		
24-Feb	825 Seashell	0	0	0	0	6	6.8	0.57	41	0	87		
	Average	0	0	0	0	6.5	6.8	0.48	43.8	0.0	93.0	0.01	0.001
	Maximum	0	0	0	0	7	6.8	0.57	46	0	98	0.01	0.001
	Minimum	0	0	0	0	6	6.7	0.28	41	0	87	0.01	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Mar-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
03-Mar	813 Alder Pl	0	0	0	0	7	6.7	0.64	37	0	80	0.02	0.002
10-Mar	995 Sabine Rd	0	0	0	0	6	6.7	0.48	37	0	80		
18-Mar	875 Seashell	0	0	0	0	6	6.9	0.43	38	0	82		
25-Mar	Lot 4 San Malo	0	0	0	0	7	6.9	0.44	38	0	80		
	Average	0	0	0	0	6.5	6.8	0.50	37.5	0.0	80.5	0.02	0.002
	Maximum	0	0	0	0	7	6.9	0.64	38	0	82	0.02	0.002
	Minimum	0	0	0	0	6	6.7	0.43	37	0	80	0.02	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Apr-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
15-Apr	995 Sabine	0	0										
22-Apr	Lot 4 San Malo	0	0	0	0	9	6.7	0.47	35	0	74		
29-Apr	813 Alder Pl					8	6.7	0.69	32	0	68		
	Average	0	0	0	0	8.5	6.7	0.58	33.5	0.0	71.0	#DIV/0!	#DIV/0!
	Maximum	0	0	0	0	9	6.7	0.69	35	0	74	0	0
	Minimum	0	0	0	0	8	6.7	0.47	32	0	68	0	0

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date May-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-May	995 Sabine Rd	0	0	0	0	10	6.8	0.03	32	0	69	0.03	0.002
12-May	Lot 4 San Malo	0	0	0	0	10	6.5	0.03	70	0	33		
20-May	875 Seashell	0	0										
27-May	813 Alder Pl	0	0	0	0	9	6.8	0.6	33	0	70		
	Average	0	0	0	0	9.7	6.7	0.22	45.0	0.0	57.3	0.03	0.002
	Maximum	0	0	0	0	10	6.8	0.6	70	0	70	0.03	0.002
	Minimum	0	0	0	0	9	6.5	0.03	32	0	33	0.03	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jun-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Jun	995 Sabine Rd	0	0	0	0	11	6.8	0.57	34	0	71	0.02	0.002
09-Jun	Lot 4 San Malo	0	0	0	0	12	6.4	0.47	54	0.1	112		
23-Jun	813 Alder Pl	0	0					0.61					
29-Jun	875 Seashell	0	0				6.4	0.42	41	0	87		
	Average	0	0	0	0	11.5	6.5	0.52	43.0	0.0	90.0	0.02	0.002
	Maximum	0	0	0	0	12	6.8	0.61	54	0.1	112	0.02	0.002
	Minimum	0	0	0	0	11	6.4	0.42	34	0	71	0.02	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Jul-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
07-Jul	995 Sabine Rd	0	0	0	0	16	6.7	0.54	44	0	93	0.03	0.043
15-Jul	Lot 4 San Malo	0	0	0	0	15	6.5	0.49	46	0	98		
22-Jul	813 Alder Pl.	0	0										
29-Jul	875 Seashell	0	0	0	0	18	6.4	0.36	49	0	103.9		
	Average	0	0	0	0	16.3	6.5	0.46	46.3	0.0	98.3	0.03	0.043
	Maximum	0	0	0	0	18	6.7	0.54	49	0	103.9	0.03	0.043
	Minimum	0	0	0	0	15	6.4	0.36	44	0	93	0.03	0.043

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Aug-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-Aug	995 Sabine Rd	0	0	0	0	15	6.8	0.52	51	0.1	107	0.02	0.001
12-Aug	Lot 4 San Malo	0	0	0	0	17	6.7	0.45	53	0.1	112.2		
19-Aug	813 Alder	0	0			18	6.4	0.39	53	0.1	113.1		
25-Aug	875 Seashell	0	0	0	0	17	6.4	0.14	51	0.1	107.7		
	Average	0	0	0	0	16.8	6.6	0.38	52.0	0.1	110.0	0.02	0.001
	Maximum	0	0	0	0	18	6.8	0.52	53	0.1	113.1	0.02	0.001
	Minimum	0	0	0	0	15	6.4	0.14	51	0.1	107	0.02	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Sep-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
01-Sep	995 Sabine							0.56					
09-Sep	Lot 4 San Malo					15	6.2	0.23	54	0.1	114	0.02	0.003
16-Sep	813 Alder Place			0	0	15	6.7	0.68	51	0.1	109		
22-Sep	875 Seashell Pl			0	0	17	6.2	0.37	51	0.1	108.1		
29-Sep	995 Sabine			0	0	15	6.6	0.19	52	0.1	109.9		
	Average	#DIV/0!	#DIV/0!	0	0	15.5	6.4	0.41	52.0	0.1	110.3	0.02	0.003
	Maximum	0	0	0	0	17	6.7	0.68	54	0.1	114	0.02	0.003
	Minimum	0	0	0	0	15	6.2	0.19	51	0.1	108.1	0.02	0.003

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Oct-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
05-Oct	995 Sabine Rd	0	0	0	0	14	6.6	0.61	53	0.1	113	0.01	
14-Oct	813 Alder Pl	0	0	0	0	13	6.6	0.53	56	0.1	119		0.018
20-Oct	875 Seashell Pl	0	0	0	0	14	6.9	0.46	74	0.1	156		
28-Oct	Lot 4 San Malo	0	0	0	0	12	6.9	0.39	56	0.1	118		
	Average	0	0	0	0	13.3	6.8	0.50	59.8	0.1	126.5	0.01	0.018
	Maximum	0	0	0	0	14	6.9	0.61	74	0.1	156	0.01	0.018
	Minimum	0	0	0	0	12	6.6	0.39	53	0.1	113	0.01	0.018

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Nov-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp ^{o} C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
04-Nov	995 Sabine Rd	0	0	0	0	11	6.8	0.72	52	0.1	109	0.02	0.021
10-Nov	Lot 4 San Malo	0	0	0	0	10	6.1	0.04	44	0	93		
17-Nov	813 Alder Place	0	0	0	0	11	6.8	0.42	41	0	87		
24-Nov	875 Seashell Pl	0	0	0	0	9	6.7	0.62	48	0	101		
	Average	0	0	0	0	10.3	6.6	0.45	46.3	0.0	97.5	0.02	0.021
	Maximum	0	0	0	0	11	6.8	0.72	52	0.1	109	0.02	0.021
	Minimum	0	0	0	0	9	6.1	0.04	41	0	87	0.02	0.021

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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 - Utilities Department

San Pareil Water Analysis - Monthly Report

Date Nov-09	Sample Location (Address)	Fecal Coli * Health Dep	Total Coli * Health Dep	Total Coli RDN	E Coli RDN	Temp °C	pH	Cl_2 ppm	TDS ppm	Sal %	Cond uS/cm	Fe ppm	Mn ppm
02-Dec	995 Sabine Rd	0	0	0	0	9	6.8	0.71	45	0	97	0.04	0.018
08-Dec	Lot 4 San Malo	0	0	0	0	8	6.5	0.44	49	0.1	106		
15-Dec	813 Alder	0	0										
22-Dec	962 Ballenas			0	0	7	6.8	0.67	42	0	88.9		
30-Dec	Lot 4 San Malo			0	0	8	6.2	0.76	44	0	92		
	Average	0	0	0	0	8.0	6.6	0.65	45.0	0.0	96.0	0.04	0.018
	Maximum	0	0	0	0	9	6.8	0.76	49	0.1	106	0.04	0.018
	Minimum	0	0	0	0	7	6.2	0.44	42	0	88.9	0.04	0.018

Red font indicates non-compliance with Canadian Drinking Water Guidelines / BC Approved Water Quality Guidelines
Coliforms are measured in colony forming units (CFU) per 100 millilitres of water
* Yellow Column Coliform tests are done by Health Department
Green 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.

San Pareil Distribution Water Analysis Results

Location: Terrien Way

Canadian Drinking Water Guidelines Package

*2001 Sample collected at 787 San Malo Cres.

MAC=Maximum Acceptable Concentration IMAC=Interim Maximum Acceptable Concentration AO=Aesthetic Objective

CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Parameters	Water Quality Guidelines				14-Dec		28-Jun	06-Mar	23-Apr		20-Apr	17-May	22-May	27-May	13-May	
	Units	CDWG	BCAWQG		1999	2000	2001*	2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	5		3	2	2	6	<5	<5	26	<5	<5	
Conductivity	uS		700	MAC	66		82.8	68	85	71.1	69	65.5	62.1	56.6	66.8	
TDS	mg/L	500	</=500	AO	74		40	7	20	53	40	47	26	58	62	
Hardness (CaCO3)	mg/L	80-100	</=500	AO	22		27.6	24	21.6	22	24	21	21	15	24	
pH	pH units	6.5-8.5	6.5-8.5	AO	6.75		6.08	6.15	6.47	6.5	6.5	6.5	6.7	6.63	6.8	
Turbidity	NTU's	5	1	MAC	0.12		<0.05	<0.05	0.23	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Alkalinity	mg/L				27.2		23	20	36	17	24	22	21	20	21	
Chloride	mg/L	250	</=250	AO	3.8		7.3	5.94	5.48	6.5	5.7	4.9	4.8	4.9	7.3	
Fluoride	mg/L	1.5	1.5	MAC	<.05		<0.04	0.07	<0.01	<1.0	<1.0	<0.1	<1.0	<0.1	<1.0	
Sulfate	mg/L	500	</=500	AO	1.6		1.69	1.55	1.8	10	<2	1.6	<2.0	<2.0	2	
Nitrate	mg/L	10	10	MAC	0.09		0.045	0.09	0.07	0.2	<0.1	0.06	<0.1	<0.1	0.1	
Nitrite	mg/L	1			<.002		0.017	<0.006	<0.01	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	
T-Aluminum	mg/L		0.2	MAC	0.15		0.013	0.016	0.021	0.016	0.01	<0.005	0.011	<0.05	0.013	
T-Antimony	mg/L		0.006	MAC			<0.006	<0.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC	<.001		<0.01	<0.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	
T-Barium	mg/L	1.0	1	MAC	0		0.0043	0.0038	0.003	0.003	0.003	0.002	0.002	<0.005	0.002	
T-Boron	mg/L	5.0	5	MAC	<.05		0.011	0.01	0.012	0.009	0.01	0.007	0.01	<0.02	0.008	
T-Cadmium	mg/L	0.005			<.0002		<0.0006	<0.0006	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0003	<0.00001	
T-Calcium	mg/L				7.71		9.2	7.8	7.2	7.4	7.6	6.9	6.9	5	7.71	
T-Chromium	mg/L	0.05	0.05	MAC	<.001		<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0004	
T-Copper	mg/L	1.0	</=1	MAC	0.024		0.012	0.01	0.011	0.008	0.01	0.005	0.007	0.005	0.007	
T-Iron	mg/L	0.3	</=0.3	AO	<.05		0.094	0.025	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.02	
T-Lead	mg/L	0.01	0.01	MAC	0.001		0.002	<0.002	0.0009	0.0006	0.0009	0.0003	0.0003	<0.0005	0.0005	
T-Lithium	mg/L														<0.001	
T-Magnesium	mg/L		</=700	AO	0.73		1.13	1.1	0.9	0.9	1.1	1	1	0.7	1.05	
T-Manganese	mg/L	0.05	</=0.05	AO	0.005		0.0012	0.0026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	0.0024	
T-Mercury	mg/L	0.001	0.001	MAC	<.05		<.0001	<.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.01	<0.01	
T-Nickel	mg/L														<0.001	
T-Phosphorus	mg/L														<0.01	
T-Potassium	mg/L				0.13		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	0.2	
T-Selium	mg/L	0.01	0.01	MAC	<.002		0.007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.003	<0.0006	
T-Silver	mg/L														<0.00001	
T-Sodium	mg/L	200	</=200	AO	3.14		3.9	4.1	4.7	4.3	<0.4	4	4	4.4	4.61	
T-Uranium	mg/L	0.1	0.1	MAC	<.0005		<0.06	<0.02	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0004	
T-Zinc	mg/L	5	<5	AO	<.005		0.0084	0.007	0.004	0.005	0.005	0.002	0.012	<0.005	0.008	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1	<1.0	<1.0	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1			
E.coli	cfu/100ml	<1	<1	cfu/100ml								<1	<1	<1.0	<1.0	
Tannins & Lignins					n/a		n/a	0.12	n/a	n/a	n/a	n/a				
Trihalomethanes	mg/l	0.1		MAC	n/a		n/a	n/a	n/a	n/a	n/a	0.005				

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 1: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	2	11	<5	6	<5	<5	<5	<5	
Conductivity	µS		700	MAC	138	92.3	82.2	83.8	130.3	68.5	80	114.2	
Total Dissolved Solids	mg/L	500	</=500	AO	27	53	73	12	40	100	32	68	
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**33.9**	**31**	**29**	**27**	**40**	**23**	**26**	**35**	
pH	pH units	6.5-8.5	6.5-8.5	AO	**6.32**	**6.39**	6.6	7	6.8	7.28	6.53	6.9	
Turbidity	NTU's	5	1	MAC	0.02	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Alkalinity	mg/L				22	27	26	23	26	26	26	25	
Chloride	mg/L	250	</=250	AO	15.71	7.8	8.3	8.7	20.7	5.9	8.1	14.4	
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Sulfate	mg/L	500	</=500	AO	1.47	3.9	2.5	<2	2	<2.0	<2.0	<2.0	
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
T-Aluminum	mg/L		0.2	MAC	0.007	0.032	0.012	0.008	0.007	0.012	<0.005	<0.005	
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
T- Barium	mg/L	1.0	1	MAC	0.006	0.006	0.005	0.004	0.007	0.004	0.004	0.005	
T-Boron	mg/L	5.0	5	MAC	0.013	0.013	0.013	0.013	0.014	0.01	0.008	0.021	
T-Cadmium	mg/L	0.005			0.00009	0.00023	0.00014	<0.00001	<0.00001	0.00006	<0.00001	<0.00001	
T-Calcium	mg/L				11.1	10.2	9.7	9	13.3	7.6	8.54	11.6	
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.00001	
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.002	0.001	0.006	0.003	0.008	0.006	0.004	
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.010	
T-Lead	mg/L	0.01	0.01	MAC	<0.0001	0.0003	<0.0001	0.0014	0.0006	0.0011	0.0009	0.0006	
T-Lithium	mg/L											<0.001	
T-Magnesium	mg/L		</=700	AO	1.5	1.4	1.1	1.1	1.7	1	1.13	1.57	
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	0.0016	
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.01	<0.01	
T-Nickle	mg/L											<0.001	
T-Phosphorus	mg/L											<0.01	
T-Potassium	mg/L				<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.2	0.2	
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0003	<0.0006	<0.0006	
T-Silver	mg/L											<0.00001	
T-Sodium	mg/L	200	</=200	AO	5	4.6	4.5	5.2	6.3	4.2	3.95	5.82	
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	
T-Zinc	mg/L	5	<5	AO	0.001	0.009	0.001	0.012	0.005	0.013	0.008	0.004	
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***>200**	***39**	***38**	***3**	***6.4**	19.2	
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	<1	<1	
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	<1	<1	

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 2: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective.
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	3	<5	<5	10	<5	6	off		
Conductivity	µS		700	MAC	106	80.7	89.5	92.2	117.4	75	off		
Total Dissolved Solids	mg/L	500	</=500	AO	13	47	73	70	12	40	off		
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**31.7**	**26**	**32**	**30**	**37**	**25**	off		
pH	pH units	6.5-8.5	6.5-8.5	AO	6.52	**6.29**	**6.4**	6.8	6.6	7.19	off		
Turbidity	NTU's	5	1	MAC	0.02	0.6	<0.5	1.6	0.8	<0.5	off		
Alkalinity	mg/L				20	23	26	23	23	20	off		
Chloride	mg/L	250	</=250	AO	14.19	8.3	10.2	11.7	18.7	6.8	off		
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	off		
Sulfate	mg/L	500	</=500	AO	1.35	3.6	2.2	<2	<2.0	<2.0	off		
Nitrate (N)	mg/L	10	10	MAC	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	off		
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Aluminum	mg/L		0.2	MAC	0.009	0.038	0.011	0.013	0.013	0.011	off		
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	off		
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T- Barium	mg/L	1.0	1	MAC	0.005	0.003	0.005	0.005	0.006	0.004	off		
T-Boron	mg/L	5.0	5	MAC	0.012	0.012	0.014	0.013	0.013	0.011	off		
T-Cadmium	mg/L	0.005			0.0005	0.00095	0.00008	<0.00001	<0.00001	<0.00001	off		
T-Calcium	mg/L				10.1	8.5	10.7	10	12.2	8.2	off		
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.003	<0.001	0.007	0.004	0.005	off		
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	**0.5**	0.2	0.1	off		
T-Lead	mg/L	0.01	0.01	MAC	0.0001	0.0004	<0.0001	0.0014	0.0008	0.0005	off		
T-Magnesium	mg/L		</=700	AO	1.5	1.2	1.3	1.3	1.6	1.1	off		
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	0.016	0.026	0.019	off		
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	off		
T-Potassium	mg/L				<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	off		
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	off		
T-Sodium	mg/L	200	</=200	AO	3.7	4.3	4.8	5.4	5.5	4.2	off		
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Zinc	mg/L	5	<5	AO	0.002	0.003	0.001	0.009	0.004	0.006	off		
											off		
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***310**	***7**	***131**	***23**	off		
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	off		
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	off		

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 3: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	2	<5	<5	5	<5	<5	off		
Conductivity	µS		700	MAC	108	101.1	85.8	97.4	119.4	76.8	off		
Total Dissolved Solids	mg/L	500	</=500	AO	27	60	67	78	38	107	off		
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**32.5**	**34**	**30**	**33**	**37**	**25**	off		
pH	pH units	6.5-8.5	6.5-8.5	AO	6.53	**6.45**	6.6	6.9	6.7	7.2	off		
Turbidity	NTU's	5	1	MAC	0.05	0.41	<0.5	<0.5	<0.5	<0.5	off		
Alkalinity	mg/L				21	26	24	24	22	21	off		
Chloride	mg/L	250	</=250	AO	17.94	11.4	10	12.6	19.7	7.2	off		
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	off		
Sulfate	mg/L	500	</=500	AO	1.4	3.5	2.1	<2	2.2	<2.0	off		
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	0.1	<0.1	<0.1	off		
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Aluminum	mg/L		0.2	MAC	0.006	0.006	<0.005	0.006	0.007	0.008	off		
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	off		
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T- Barium	mg/L	1.0	1	MAC	0.003	0.003	0.003	0.003	0.003	0.002	off		
T-Boron	mg/L	5.0	5	MAC	1.012	0.015	0.014	0.014	0.014	0.011	off		
T-Cadmium	mg/L	0.005			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	off		
T-Calcium	mg/L				10.4	10.9	10	10.9	12.3	8	off		
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.001	0.002	0.006	0.004	0.004	off		
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Lead	mg/L	0.01	0.01	MAC	0.0021	0.0012	0.0014	0.0012	0.0006	0.0004	off		
T-Magnesium	mg/L		</=700	AO	1.6	1.6	1.3	1.5	1.6	1.1	off		
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	off		
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	off		
T-Potassium	mg/L				<0.4	0.4	<0.4	0.5	<0.4	<0.4	off		
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T-Sodium	mg/L	200	</=200	AO	4.2	4.9	4.7	5.6	5.4	4.3	off		
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Zinc	mg/L	5	<5	AO	0.004	0.002	0.003	0.009	0.006	0.005	off		
											off		
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	***2**	***59**	***2**	off		
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	off		
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	off		

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 4: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective.
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				30-Oct	26-Oct							
	Units	CDWG	BCAWQG		2008	2009	2010	2011	2012	2013	2014	2015	2016
Color	CU	15	</=15	AO	**23**	<5							
Conductivity	µS		700	MAC	80	111.3							
Total Dissolved Solids	mg/L	500	</=500	AO	200	76							
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**120**	**36**							
pH	pH units	6.5-8.5	6.5-8.5	AO	7.73	7							
Turbidity	NTU's	5	1	MAC	<0.5	<0.5							
Alkalinity	mg/L				25	24							
Chloride	mg/L	250	</=250	AO	3.7	15.3							
Fluoride	mg/L	1.5	1.5	MAC	<1.0	<1.0							
Sulfate	mg/L	500	</=500	AO	<2.0	2.2							
Nitrate (N)	mg/L	10	10	MAC	<0.1	0.2							
Nitrite (N)	mg/L	1			<0.1	<0.1							
T-Aluminum	mg/L		0.2	MAC	<0.005	<0.005							
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002							
T-Arsenic	mg/L	0.025	0.025	IMAC	0.0022	0.0004							
T- Barium	mg/L	1.0	1	MAC	0.009	0.003							
T-Boron	mg/L	5.0	5	MAC	0.079	0.022							
T-Cadmium	mg/L	0.005			0.00001	<0.00001							
T-Calcium	mg/L				29.2	11.6							
T-Chromium	mg/L	0.05	0.05	MAC	0.0004	<0.0004							
T-Copper	mg/L	1.0	</=1	MAC	0.015	0.003							
T-Iron	mg/L	0.3	</=0.3	AO	**0.46**	<0.01							
T-Lead	mg/L	0.01	0.01	MAC	0.0007	0.0004							
T-Lithium	mg/L					<0.001							
T-Magnesium	mg/L		</=700	AO	11	1.69							
T-Manganese	mg/L	0.05	</=0.05	AO	**0.247**	0.0021							
T-Mercury	mg/L	0.001	0.001	MAC	<0.01	<0.01							
T-Nickle	mg/L					<0.001							
T-Phosphorus	mg/L					<0.01							
T-Potassium	mg/L				2.1	0.3							
T-Selenium	mg/L	0.01	0.01	MAC	<0.0006	<0.0006							
T-Silver	mg/L					<0.00001							
T-Sodium	mg/L	200	</=200	AO	21	5.69							
T-Uranium	mg/L	0.1	0.1	MAC	<0.0004	<0.0004							
T-Zinc	mg/L	5	<5	AO	0.2	0.003							
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	***1**	1							
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1	<1							
E.coli	cfu/100ml	<1	<1	cfu/100ml	<1	<1							

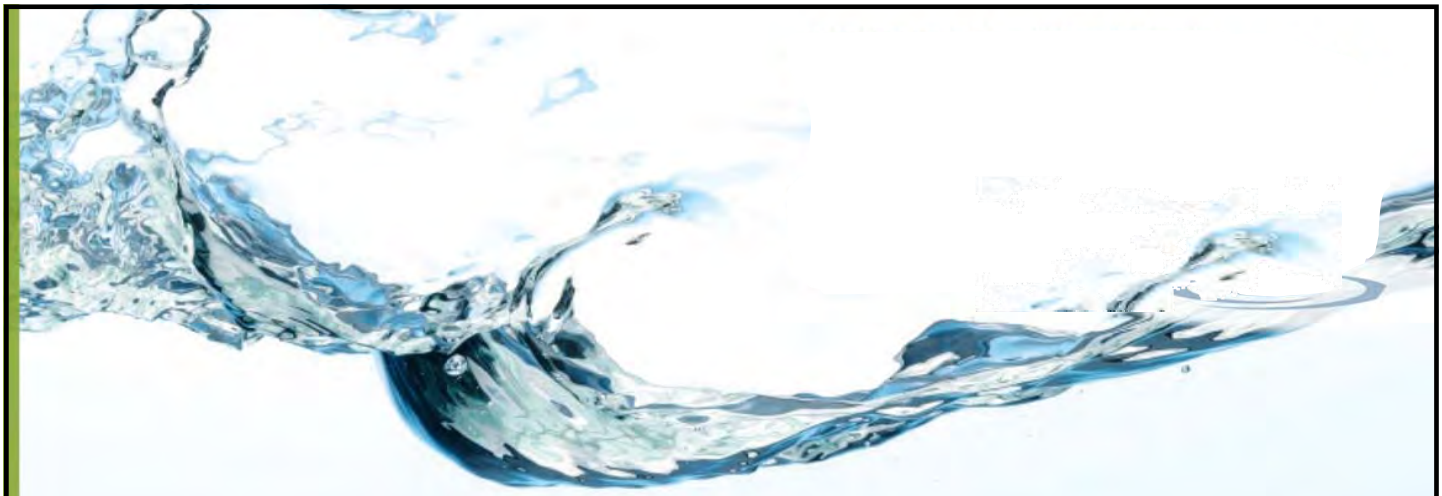
Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

APPENDIX C

EMERGENCY RESPONSE PLAN

* Emergency Response Plan not included in Public Copy.



SAN PAREIL

Water Service Area
Annual Report
2010

Prepared by:

REGIONAL DISTRICT OF NANAIMO
Water Services Department
June 2011

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Table of Contents

1. Introduction

The following annual report describes the San Pareil Water Service Area and summarizes the water quality and production data from 2010. 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 2011.

2. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River bridge on the east side of the City of Parksville. There are 280 water service connections in San Pareil. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water is chlorinated and stored in one reservoir. A back-up propane generator is present on site. A map of the San Pareil Water System is provided in Appendix A.

2.1 Groundwater Wells

Four groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. Two of the wells are not currently in use: Well #2 is an older, shallow well that is kept on stand-by. Well #3 was converted to a monitoring well when Well #4 was drilled.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Not in use
#3	7.0 m	Yes	Not in use
#4	5.7 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m³ (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is summarized in the table below. Fire hydrants (16) are located throughout the water service area, but the hydrants do not meet current requirements for spacing and /or fire flows.

Watermain Material	Length of mains in San Pareil Water Service Area	Prevalence in Water Service Area
Asbestos-concrete: 150mm or smaller 200mm or larger	 6.0 km none	 91% n/a
PVC: 150mm or smaller 200mm or larger	 0.2 km 0.4 km	 3% 6%

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

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 coliforms, E.Coli Temperature, pH, Conductivity Chlorine residual, Salinity Total Dissolved Solids
Weekly (Health Dept. Requirement)	BC Centre for Disease Control	Total coliforms, E.Coli
Monthly	RDN (in-house) Laboratory	Iron, Manganese
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 at www.rdn.bc.ca in the Environmental/Water section, under "Water Service Areas" 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

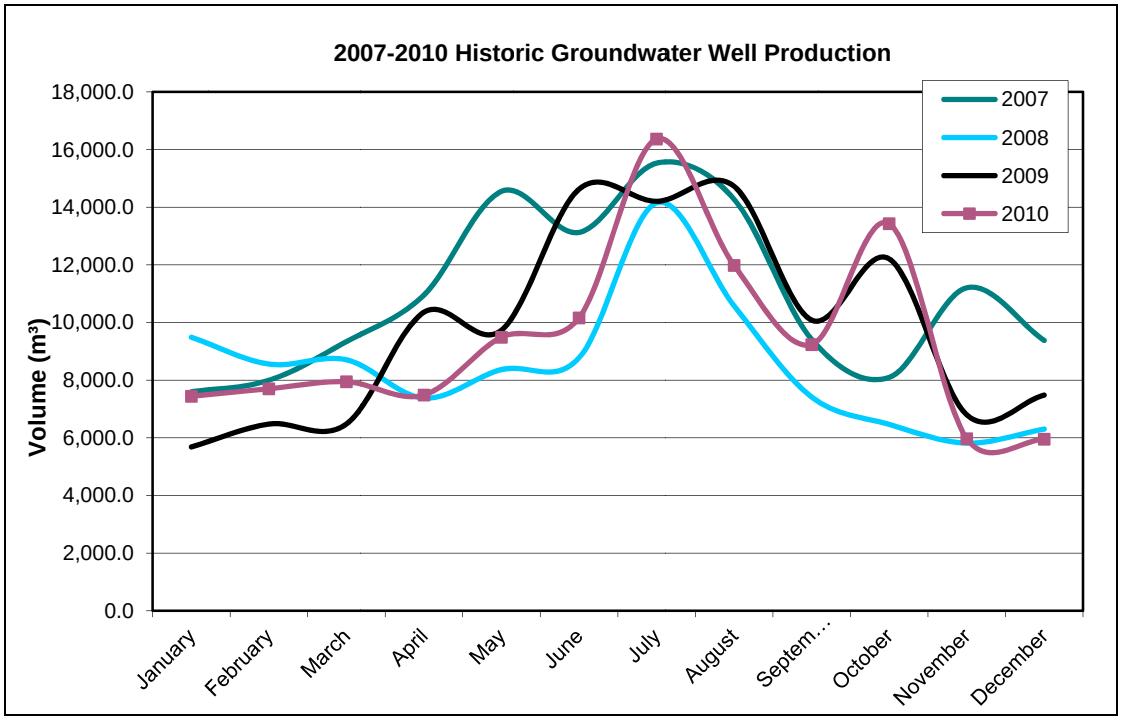
Very few complaints or inquiries were received from the San Pareil water service area in 2010, and were typically related to water leaks or high water bills.

San Pareil Well Site

6.

Groundwater Production and Consumption

The monthly groundwater production for San Pareil for the past 4 years is shown in the chart below. Groundwater production in 2010 was typically lower than previous years.



Consumption

In the Fall/Winter of 2010, the average usage per home in San Pareil was 0.48 cubic metres per day (106 imperial gallons). In the summer, the average water usage was 1.03 cubic metres per day (227 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 277 L/day (based on 2.4 people/household). This consumption is 9% less than the RDN system average of 305 L/day/capita in 2010.

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. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance) in the Fall.

Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Water System Projects

8.1 2010 Completed Studies & Projects

- Completed GWUDI Assessements of San Pareil wells;
- Replaced the water supply main from the reservoir to the distribution system;
- Completed pre-design engineering and costs for the proposed upgrades in San Pareil;
- Completed annual fire hydrant maintenance;
- Installed automated chlorine analyzers;
- Installed stand-alone water sampling stations;
- Updated the outdoor sprinkling regulations;
- Prepared a Draft Cross-Connection Control Bylaw;
- Carried out a comprehensive water conservation campaign (Team WaterSmart);
- Updated and improved the RDN website at www.rdn.bc.ca;
- Updated the Emergency Response Plan;
- Utilized the Auto E-message service to notify member residents of water service disruptions and upcoming maintenance activities;
- Applied a low-flush toilet incentive;
- Maintained excellent customer complaint and service request response times;
- Continued quality control through regular testing and monitoring of our water systems; and
- Completed additional educational programs.

8.2 2011 Proposed Projects & Upgrades

- Public approval of San Pareil reservoir and pumphouse improvements;
- GWUDI Well Improvements and upgrades; and
- Complete the Cross-Connection Control bylaws, and establish a procedure for reviewing commercial and industrial properties for water system risks.

9. 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, and pump failure. The ERP was reviewed and updated in 2010, 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.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

In 2010, a Draft Cross-Connection Control Bylaw was prepared, and is anticipated to be finalized in 2011. Additionally, the program in 2011 will include:

- A formal survey of existing and potential cross-connections, and
- An audit of RDN-owned facilities in each water service area.

11. Closing

An annual report for the year 2011 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2012. Annual reports are also available on our website at www.rdn.bc.ca in the Environmental/Water section, under "Water Service Areas" then "WaterSmart Communities".

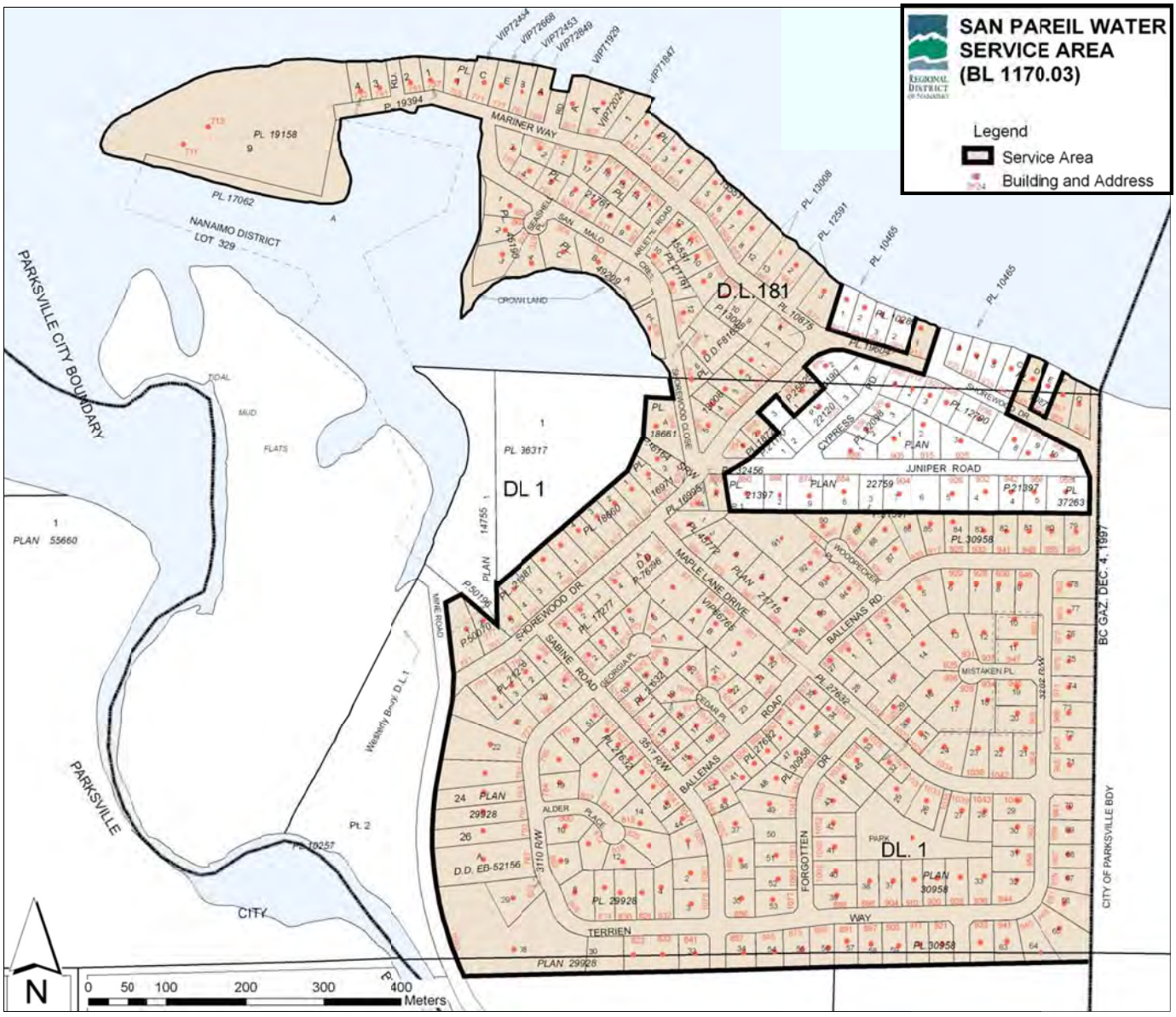
APPENIDX A

MAP OF SAN PAREIL

WATER SERVICE AREA

SAN PAREIL

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

REGIONAL DISTRICT OF NANAIMO

San Pareil Distribution Water Analysis Results

Location: Terrien Way

Canadian Drinking Water Guidelines Package

*2001 Sample collected at 787 San Malo

water SMART zero waste

MAC=Maximum Acceptable Concentration IMAC=Interim Maximum Acceptable Concentration AO=Aesthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines

Parameters	Water Quality Guidelines				14-Dec		28-Jun	06-Mar	23-Apr		20-Apr	17-May	22-May	27-May	13-May	18-May
	Units	CDWG	BCAWQG		1999	2000	2001*	2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	5		3	2	2	6	<5	<5	26	<5	<5	24
Conductivity	uS		700	MAC	66		82.8	68	85	71.1	69	65.5	62.1	56.6	66.8	69.9
TDS	mg/L	500	</=500	AO	74		40	7	20	53	40	47	26	58	62	72
Hardness (CaCO3)	mg/L	80-100	</=500	AO	22		27.6	24	21.6	22	24	21	21	15	24	22
pH	pH units	6.5-8.5	6.5-8.5	AO	6.75		6.08	6.15	6.47	6.5	6.5	6.5	6.7	6.63	6.8	6.7
Turbidity	NTU's	5	1	MAC	0.12		<0.05	<0.05	0.23	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity	mg/L				27.2		23	20	36	17	24	22	21	20	21	25
Chloride	mg/L	250	</=250	AO	3.8		7.3	5.94	5.48	6.5	5.7	4.9	4.8	4.9	7.3	5
Fluoride	mg/L	1.5	1.5	MAC	<.05		<0.04	0.07	<0.01	<1.0	<1.0	<0.1	<1.0	<0.1	<1.0	<1.0
Sulfate	mg/L	500	</=500	AO	1.6		1.69	1.55	1.8	10	<2	1.6	<2.0	<2.0	2	<2.0
Nitrate	mg/L	10	10	MAC	0.09		0.045	0.09	0.07	0.2	<0.1	0.06	<0.1	<0.1	0.1	<0.1
Nitrite	mg/L	1			<.002		0.017	<0.006	<0.01	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1
T-Aluminum	mg/L		0.2	MAC	0.15		0.013	0.016	0.021	0.016	0.01	<0.005	0.011	<0.05	0.013	0.019
T-Antimony	mg/L		0.006	MAC			<0.006	<0.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002
T-Arsenic	mg/L	0.025	0.025	IMAC	<.001		<0.01	<0.01	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002
T-Barium	mg/L	1.0	1	MAC	0		0.0043	0.0038	0.003	0.003	0.003	0.002	0.002	<0.005	0.002	0.002
T-Boron	mg/L	5.0	5	MAC	<.05		0.011	0.01	0.012	0.009	0.01	0.007	0.01	<0.02	0.008	0.008
T-Cadmium	mg/L	0.005			<.0002		<0.0006	<0.0006	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0003	<0.00001	<0.00001
T-Calcium	mg/L				7.71		9.2	7.8	7.2	7.4	7.6	6.9	6.9	5	7.71	7.13
T-Chromium	mg/L	0.05	0.05	MAC	<.001		<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.003	<0.0004	<0.0004
T-Copper	mg/L	1.0	</=1	MAC	0.024		0.012	0.01	0.011	0.008	0.01	0.005	0.007	0.005	0.007	0.007
T-Iron	mg/L	0.3	</=0.3	AO	<.05		0.094	0.025	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	0.02	<0.01
T-Lead	mg/L	0.01	0.01	MAC	0.001		0.002	<0.002	0.0009	0.0006	0.0009	0.0003	0.0003	<0.0005	0.0005	0.0004
T-Lithium	mg/L														<0.001	<0.001
T-Magnesium	mg/L		</=700	AO	0.73		1.13	1.1	0.9	0.9	1.1	1	1	0.7	1.05	1.06
T-Manganese	mg/L	0.05	</=0.05	AO	0.005		0.0012	0.0026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	0.0024	0.004
T-Mercury	mg/L	0.001	0.001	MAC	<.05		<.0001	<.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.01	<0.01	<0.01
T-Nickel	mg/L														<0.001	<0.001
T-Phosphorus	mg/L														<0.01	<0.01
T-Potassium	mg/L				0.13		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.2	0.2	0.1
T-Selium	mg/L	0.01	0.01	MAC	<.002		0.007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.003	<0.0006	<0.0006
T-Silver	mg/L														<0.00001	<0.00001
T-Sodium	mg/L	200	</=200	AO	3.14		3.9	4.1	4.7	4.3	<0.4	4	4	4.4	4.61	4.29
T-Uranium	mg/L	0.1	0.1	MAC	<.0005		<0.06	<0.02	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0004	<0.0004
T-Zinc	mg/L	5	<5	AO	<.005		0.0084	0.007	0.004	0.005	0.005	0.002	0.012	<0.005	0.008	0.007
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1	<1.0	<1.0	<1.0
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1		<1	n/a	n/a	<1	<1	<1	<1			
E.coli	cfu/100ml	<1	<1	cfu/100ml								<1	<1	<1.0	<1.0	<1.0
Tannins & Lignins					n/a		n/a	0.12	n/a	n/a	n/a	n/a				
Trihalomethanes	mg/l	0.1		MAC	n/a		n/a	n/a	n/a	n/a	n/a	0.005				

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 1: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	28-Oct
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	2	11	<5	6	<5	<5	<5	<5	<5
Conductivity	µS		700	MAC	138	92.3	82.2	83.8	130.3	68.5	80	114.2	79.8
Total Dissolved Solids	mg/L	500	</=500	AO	27	53	73	12	40	100	32	68	34
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**33.9**	**31**	**29**	**27**	**40**	**23**	**26**	**35**	**27**
pH	pH units	6.5-8.5	6.5-8.5	AO	**6.32**	**6.39**	6.6	7	6.8	7.28	6.53	6.9	6.8
Turbidity	NTU's	5	1	MAC	0.02	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alkalinity	mg/L				22	27	26	23	26	26	26	25	29
Chloride	mg/L	250	</=250	AO	15.71	7.8	8.3	8.7	20.7	5.9	8.1	14.4	7.8
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sulfate	mg/L	500	</=500	AO	1.47	3.9	2.5	<2	2	<2.0	<2.0	<2.0	<2.0
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Aluminum	mg/L		0.2	MAC	0.007	0.032	0.012	0.008	0.007	0.012	<0.005	<0.005	0.011
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002
T- Barium	mg/L	1.0	1	MAC	0.006	0.006	0.005	0.004	0.007	0.004	0.004	0.005	0.004
T-Boron	mg/L	5.0	5	MAC	0.013	0.013	0.013	0.013	0.014	0.01	0.008	0.021	0.012
T-Cadmium	mg/L	0.005			0.00009	0.00023	0.00014	<0.00001	<0.00001	0.00006	<0.00001	<0.00001	<0.00001
T-Calcium	mg/L				11.1	10.2	9.7	9	13.3	7.6	8.54	11.6	8.81
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.00001	0.0007
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.002	0.001	0.006	0.003	0.008	0.006	0.004	0.009
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.010	<0.01
T-Lead	mg/L	0.01	0.01	MAC	<0.0001	0.0003	<0.0001	0.0014	0.0006	0.0011	0.0009	0.0006	0.001
T-Lithium	mg/L											<0.001	<0.001
T-Magnesium	mg/L		</=700	AO	1.5	1.4	1.1	1.1	1.7	1	1.13	1.57	1.17
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.001	0.0016	<0.005
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.01	<0.01	<0.00001
T-Nickel	mg/L											<0.001	<0.001
T-Phosphorus	mg/L											<0.01	<0.01
T-Potassium	mg/L				<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.2	0.2	0.1
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0003	<0.0006	<0.0006	<0.0006
T-Silver	mg/L											<0.00001	<0.00001
T-Sodium	mg/L	200	</=200	AO	5	4.6	4.5	5.2	6.3	4.2	3.95	5.82	4.17
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004
T-Zinc	mg/L	5	<5	AO	0.001	0.009	0.001	0.012	0.005	0.013	0.008	0.004	0.015
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***>200**	***39**	***38**	***3**	***6.4**	**19.2**	**13.7**
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	<1	<1	
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	<1	<1	<1.0

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 2: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective.
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	3	<5	<5	10	<5	6	off		
Conductivity	µS		700	MAC	106	80.7	89.5	92.2	117.4	75	off		
Total Dissolved Solids	mg/L	500	</=500	AO	13	47	73	70	12	40	off		
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**31.7**	**26**	**32**	**30**	**37**	**25**	off		
pH	pH units	6.5-8.5	6.5-8.5	AO	6.52	**6.29**	**6.4**	6.8	6.6	7.19	off		
Turbidity	NTU's	5	1	MAC	0.02	0.6	<0.5	1.6	0.8	<0.5	off		
Alkalinity	mg/L				20	23	26	23	23	20	off		
Chloride	mg/L	250	</=250	AO	14.19	8.3	10.2	11.7	18.7	6.8	off		
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	off		
Sulfate	mg/L	500	</=500	AO	1.35	3.6	2.2	<2	<2.0	<2.0	off		
Nitrate (N)	mg/L	10	10	MAC	0.08	<0.1	<0.1	<0.1	<0.1	<0.1	off		
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Aluminum	mg/L		0.2	MAC	0.009	0.038	0.011	0.013	0.013	0.011	off		
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	off		
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T- Barium	mg/L	1.0	1	MAC	0.005	0.003	0.005	0.005	0.006	0.004	off		
T-Boron	mg/L	5.0	5	MAC	0.012	0.012	0.014	0.013	0.013	0.011	off		
T-Cadmium	mg/L	0.005			0.0005	0.00095	0.00008	<0.00001	<0.00001	<0.00001	off		
T-Calcium	mg/L				10.1	8.5	10.7	10	12.2	8.2	off		
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.003	<0.001	0.007	0.004	0.005	off		
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	**0.5**	0.2	0.1	off		
T-Lead	mg/L	0.01	0.01	MAC	0.0001	0.0004	<0.0001	0.0014	0.0008	0.0005	off		
T-Magnesium	mg/L		</=700	AO	1.5	1.2	1.3	1.3	1.6	1.1	off		
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	0.016	0.026	0.019	off		
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	off		
T-Potassium	mg/L				<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	off		
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	off		
T-Sodium	mg/L	200	</=200	AO	3.7	4.3	4.8	5.4	5.5	4.2	off		
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Zinc	mg/L	5	<5	AO	0.002	0.003	0.001	0.009	0.004	0.006	off		
											off		
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			***310**	***7**	***131**	***23**	off		
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	off		
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	off		

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 3: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				16-Oct	22-Oct	26-Oct	19-Oct	24-Oct	23-Oct	30-Oct	26-Oct	
	Units	CDWG	BCAWQG		2002	2003	2004	2005	2006	2007	2008	2009	2010
Color	CU	15	</=15	AO	2	<5	<5	5	<5	<5	off		
Conductivity	µS		700	MAC	108	101.1	85.8	97.4	119.4	76.8	off		
Total Dissolved Solids	mg/L	500	</=500	AO	27	60	67	78	38	107	off		
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**32.5**	**34**	**30**	**33**	**37**	**25**	off		
pH	pH units	6.5-8.5	6.5-8.5	AO	6.53	**6.45**	6.6	6.9	6.7	7.2	off		
Turbidity	NTU's	5	1	MAC	0.05	0.41	<0.5	<0.5	<0.5	<0.5	off		
Alkalinity	mg/L				21	26	24	24	22	21	off		
Chloride	mg/L	250	</=250	AO	17.94	11.4	10	12.6	19.7	7.2	off		
Fluoride	mg/L	1.5	1.5	MAC	0.05	<0.6	<1.0	<1.0	<1.0	<1.0	off		
Sulfate	mg/L	500	</=500	AO	1.4	3.5	2.1	<2	2.2	<2.0	off		
Nitrate (N)	mg/L	10	10	MAC	0.07	<0.1	<0.1	0.1	<0.1	<0.1	off		
Nitrite (N)	mg/L	1			<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Aluminum	mg/L		0.2	MAC	0.006	0.006	<0.005	0.006	0.007	0.008	off		
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	off		
T-Arsenic	mg/L	0.025	0.025	IMAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T- Barium	mg/L	1.0	1	MAC	0.003	0.003	0.003	0.003	0.003	0.002	off		
T-Boron	mg/L	5.0	5	MAC	1.012	0.015	0.014	0.014	0.014	0.011	off		
T-Cadmium	mg/L	0.005			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	off		
T-Calcium	mg/L				10.4	10.9	10	10.9	12.3	8	off		
T-Chromium	mg/L	0.05	0.05	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Copper	mg/L	1.0	</=1	MAC	<0.001	0.001	0.002	0.006	0.004	0.004	off		
T-Iron	mg/L	0.3	</=0.3	AO	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	off		
T-Lead	mg/L	0.01	0.01	MAC	0.0021	0.0012	0.0014	0.0012	0.0006	0.0004	off		
T-Magnesium	mg/L		</=700	AO	1.6	1.6	1.3	1.5	1.6	1.1	off		
T-Manganese	mg/L	0.05	</=0.05	AO	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	off		
T-Mercury	mg/L	0.001	0.001	MAC	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	off		
T-Potassium	mg/L				<0.4	0.4	<0.4	0.5	<0.4	<0.4	off		
T-Selenium	mg/L	0.01	0.01	MAC	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	off		
T-Sodium	mg/L	200	</=200	AO	4.2	4.9	4.7	5.6	5.4	4.3	off		
T-Uranium	mg/L	0.1	0.1	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	off		
T-Zinc	mg/L	5	<5	AO	0.004	0.002	0.003	0.009	0.006	0.005	off		
											off		
Total Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	***2**	***59**	***2**	off		
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml			<1	<1	<1	<1	off		
E.coli	cfu/100ml	<1	<1	cfu/100ml					<1	<1	off		

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

REGIONAL DISTRICT OF NANAIMO

San Pareil Well Water Analysis Results

San Pareil Well # 4: 1190 Plummer Road

Canadian Drinking Water Guidelines Package

MAC=Maximum Acceptable Concentration IMAC= Interim Maximum Acceptable Concentration AO= Asthetic Objective.
CDWG=Canadian Drinking Water Guidelines BCAWQG=British Columbia Approved Water Quality Guidelines
Red font indicates non-compliance with Canadian Drinking Water Guidelines
* raw well water

water SMART zero waste

Parameter	Water Quality Guidelines				30-Oct	26-Oct	27-Oct						
	Units	CDWG	BCAWQG		2008	2009	2010	2011	2012	2013	2014	2015	2016
Color	CU	15	</=15	AO	**23**	<5	<5						
Conductivity	µS		700	MAC	80	111.3	86.5						
Total Dissolved Solids	mg/L	500	</=500	AO	200	76	50						
Hardness (CaCO3)	mg/L	80-100	</=500	AO	**120**	**36**	**29**						
pH	pH units	6.5-8.5	6.5-8.5	AO	7.73	7	6.8						
Turbidity	NTU's	5	1	MAC	<0.5	<0.5	<0.5						
Alkalinity	mg/L				25	24	23						
Chloride	mg/L	250	</=250	AO	3.7	15.3	9.2						
Fluoride	mg/L	1.5	1.5	MAC	<1.0	<1.0	<1.0						
Sulfate	mg/L	500	</=500	AO	<2.0	2.2	2						
Nitrate (N)	mg/L	10	10	MAC	<0.1	0.2	<0.1						
Nitrite (N)	mg/L	1			<0.1	<0.1	<0.1						
T-Aluminum	mg/L		0.2	MAC	<0.005	<0.005	0.013						
T-Antimony	mg/L		0.006	MAC	<0.0002	<0.0002	<0.0002						
T-Arsenic	mg/L	0.025	0.025	IMAC	0.0022	0.0004	<0.0002						
T- Barium	mg/L	1.0	1	MAC	0.009	0.003	0.003						
T-Boron	mg/L	5.0	5	MAC	0.079	0.022	0.009						
T-Cadmium	mg/L	0.005			0.00001	<0.00001	<0.00001						
T-Calcium	mg/L				29.2	11.6	9.38						
T-Chromium	mg/L	0.05	0.05	MAC	0.0004	<0.0004	0.0007						
T-Copper	mg/L	1.0	</=1	MAC	0.015	0.003	0.009						
T-Iron	mg/L	0.3	</=0.3	AO	**0.46**	<0.01	0.024						
T-Lead	mg/L	0.01	0.01	MAC	0.0007	0.0004	0.0012						
T-Lithium	mg/L					<0.001	<0.001						
T-Magnesium	mg/L		</=700	AO	11	1.69	1.36						
T-Manganese	mg/L	0.05	</=0.05	AO	**0.247**	0.0021	0.008						
T-Mercury	mg/L	0.001	0.001	MAC	<0.01	<0.01	<0.00001						
T-Nickel	mg/L					<0.001	<0.001						
T-Phosphorus	mg/L					<0.01	<0.01						
T-Potassium	mg/L				2.1	0.3	0.2						
T-Selenium	mg/L	0.01	0.01	MAC	<0.0006	<0.0006	<0.0006						
T-Silver	mg/L					<0.00001	<0.00001						
T-Sodium	mg/L	200	</=200	AO	21	5.69	4.34						
T-Uranium	mg/L	0.1	0.1	MAC	<0.0004	<0.0004	<0.0004						
T-Zinc	mg/L	5	<5	AO	0.2	0.003	0.008						
Total Coliform	cfu/100ml	<1	<1	cfu/100ml	***1**	1	**6.4**						
Fecal Coliform	cfu/100ml	<1	<1	cfu/100ml	<1	<1							
E.coli	cfu/100ml	<1	<1	cfu/100ml	<1	<1	<1.0						

Note: Total coliforms can be an indicator of adverse water quality if the result in the re-sample is confirmed positive. (United States Environmental Protection Agency (EPA), 2008) RDN Water samples are always tested for Fecal coliform bacteria at the same time as Total coliforms to rule out the presence of harmful pathogens.

*Resampled and had <1 for all Coliforms

Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Jan-10	995 Sabine	0	0	0	0	9	6.8	0.74	38	0	79.8	0.01	0.003
12-Jan-10	Lot 4 San Malo	0	0	0	0	8	6.5	0.89	35	0	72.8		
20-Jan-10	813 Alder	0	0	0	0	9		0.43	82	0.1	172.4		
26-Jan-10	875 Seashell Pl	0	0	0	0	8	6.4	0.31	44	0	93.7		
	Average	0	0	0	0	8.5	6.6	0.59	49.8	0.0	104.7	0.01	0.003
	Maximum	0	0	0	0	9	6.8	0.89	82	0.1	172.4	0.01	0.003
	Minimum	0	0	0	0	8	6.4	0.31	35	0	72.8	0.01	0.003

Red font indicates non-compliance with Canadian Drinking Water Guidelines

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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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)
9-Feb-10	995 Sabine	0	0	0	0	9	6.3	0.41	44	0	93.8	0.03	0.009
17-Feb-10	962 Ballenas Rd	0	0	0	0	9	6.4	0.60	41	0	87.4		
23-Feb-10	793 Terrien Way	0	0	0	0	8	6.1	0.70	40	0	86.8		
23-Feb-10	787 San Malo	0	0	0	0	8	6.0	0.51	40	0	87.4		
	Average	0	0	0	0	8.5	6.2	0.56	41.3	0.0	88.9	0.03	0.009
	Maximum	0	0	0	0	9	6.4	0.7	44	0	93.8	0.03	0.009
	Minimum	0	0	0	0	8	6	0.41	40	0	86.8	0.03	0.009

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		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Mar-10	995 Sabine			0	0	9	6.4	0.73	37	0	78.4	0.01	0.001
9-Mar-10	787 San Malo	0	0	0	0	8	6	0.54	38	0	81.6		
17-Mar-10	793 Terrien Way	0	0	0	0	9	5.9	0.84	34	0	73.8		
24-Mar-10	962 Ballenas Rd	0	0	0	0	9	5.9	0.50	34	0	71.7		
30-Mar-10	995 Sabine	0	0	0	0	9	6.5	0.49	33	0	69.9		
	Average	0	0	0	0	8.8	6.1	0.62	35.2	0.0	75.1	0.01	0.001
	Maximum	0	0	0	0	9	6.5	0.84	38	0	81.6	0.01	0.001
	Minimum	0	0	0	0	8	5.9	0.49	33	0	69.9	0.01	0.001

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Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Apr-10	787 San Malo	0	0	0	0	9	6	1.26	34	0	73.7	0.02	0.020
13-Apr-10	793 Terrien Way	0	0	0	0	8	6	0.95	32	0	68.2		
20-Apr-10	962 Ballenas Rd	0	0	0	0	9	6.5	0.67	33	0	70.5		
27-Apr-10	995 Sabine	0	0	0	0	10	6.4	0.35	33	0	70		
	Average	0	0	0	0	9.0	6.2	0.81	33.0	0.0	70.6	0.02	0.02
	Maximum	0	0	0	0	10	6.5	1.26	34	0	73.7	0.02	0.02
	Minimum	0	0	0	0	8	6	0.35	32	0	68.2	0.02	0.02

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Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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)
9-Jun-10	787 San Malo	0	0	0	0		6.8	0.71	33	0	70	0.02	0.001
15-Jun-10	793 Terrien Rd	0	0	0	0		6.7	0.97	31	0	66.7		
22-Jun-10	962 Ballenas Rd	0	0	0	0		6.5	0.85	34	0	71.3		
29-Jun-10	995 Sabine	0	0	0	0		6.3	0.91	42	0	89		
	Average	0	0	0	0	#DIV/0!	6.6	0.86	35.0	0.0	74.3	0.02	0.001
	Maximum	0	0	0	0	0	6.8	0.97	42	0	89	0.02	0.001
	Minimum	0	0	0	0	0	6.3	0.71	31	0	66.7	0.02	0.001

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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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-May-10	787 San Malo	0	0	0	0	11	6.4	0.71	39	0	83	0.02	0.001
12-May-10	793 Terrien Way	0	0	0	0	9	6.2	0.71	31	0	66.2		
19-May-10	962 Ballenas	0	0	0	0	13	6.5	0.72	34	0	72		
25-May-10	995 Sabine	0	0	0	0	n/a	6.4	0.87	35	0	74		
	Average	0	0	0	0	11.0	6.4	0.75	34.8	0.0	73.8	0.02	0.001
	Maximum	0	0	0	0	13	6.5	0.87	39	0	83	0.02	0.001
	Minimum	0	0	0	0	9	6.2	0.71	31	0	66.2	0.02	0.001

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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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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)
6-Jul-10	878 San Malo	0	0	0	0		6.5	0.98	39	0	82	0.01	0.002
13-Jul-10	932 Balenas	0	0	0	0		6.4	0.88	39	0	81		
21-Jul-10	995 Sabine	0	0	0	0	14	6.8	0.96	38	0	80		
26-Jul-10	793 Terrien	0	0	0	0	13	6.5	0.76	43	0	91		
	Average	0	0	0	0	13.5	6.6	0.90	39.8	0.0	83.5	0.01	0.002
	Maximum	0	0	0	0	14	6.8	0.98	43	0	91	0.01	0.002
	Minimum	0	0	0	0	13	6.4	0.76	38	0	80	0.01	0.002

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

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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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Aug-10	787 San Malo	0	0	0	0	16	6.8	0.64	42	0	90	0.02	0.001
9-Aug-10	962 Ballenas	0	0	0	0	15	6.7	0.57	43	0	90.4		
17-Aug-10	793 Terrien	0	0	0	0	13	6.5	0.67	44	0	93.8		
23-Aug-10	995 Sabine	0	0	0	0	15	6.7	0.72	58	0	128		
31-Aug-10	793 Terrien			0	0	13	6.7	0.64	45	0	95		
	Average	0	0	0	0	14.4	6.7	0.65	46.4	0.0	99.4	0.02	0.001
	Maximum	0	0	0	0	16	6.8	0.72	58	0	128	0.02	0.001
	Minimum	0	0	0	0	13	6.5	0.57	42	0	90	0.02	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines

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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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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)
8-Sep-10	787 San Malo	0	0	0	0	16	6.3	0.61	48	0	98	0.03	0.002
15-Sep-10	793 Terrien	0	0	0	0	13	6.3	0.61	46	0	97		
21-Sep-10	995 Sabine	0	0	0	0	15	6.8	0.49	47	0	99		
28-Sep-10	962 Ballenas	0	0	0	0	15	7	0.69	48	0	101		
	Average	0	0	0	0	14.8	6.6	0.60	47.3	0.0	98.8	0.03	0.002
	Maximum	0	0	0	0	16	7	0.69	48	0	101	0.03	0.002
	Minimum	0	0	0	0	13	6.3	0.49	46	0	97	0.03	0.002

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Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Oct-10	787 San Malo	0	0	0	0	14	6.7	0.56	43	0	91.9	0.03	0.004
13-Oct-10	793 Terrien Way	0	0	0	0	13	6.8	0.32	43	0	91.8		
18-Oct-10	995 Sabine	0	0	0	0		7.3	0.81	45	0	96		
25-Oct-10	962 Balenas	0	0	0	0	12	7.2	0.4	47	0	100		
	Average	0	0	0	0	13.0	7.0	0.52	44.5	0.0	94.9	0.03	0.004
	Maximum	0	0	0	0	14	7.3	0.81	47	0	100	0.03	0.004
	Minimum	0	0	0	0	12	6.7	0.32	43	0	91.8	0.03	0.004

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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

San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Nov-10	787 San Malo	0	0	0	0	12	6.7	0.61	42	0	87.8	0.02	0.003
9-Nov-10	793 Terrien Way	0	0	0	0	11	6.8	0.65	37	0	78.1		
16-Nov-10	962 Ballenas	0	0	0	0	11	6.9	0.47	39	0	83.2		
24-Nov-10	995 Sabine	A	A	0	0	9	6.5	0.67	38	0	84		
30-Nov-10	787 San Malo			0	0	10	7	0.61	36	0	77		
	Average	0	0	0	0	10.6	6.8	0.60	38.4	0.0	82.0	0.02	0.003
	Maximum	0	0	0	0	12	7	0.67	42	0	87.8	0.02	0.003
	Minimum	0	0	0	0	9	6.5	0.47	36	0	77	0.02	0.003

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A-Transport time too long to laboratory.

Aesthetic Objective for Iron is • 0.3 mg/L

Aesthetic Objective for Manganese is • 0.05mg/L

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San Pareil Water Analysis - 2010 Monthly Report

		Health Department		In-House									
Date	Sample Location (Address)	Fecal Coliform *	Total Coliform *	Fecal Coliform *	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-Dec-10	787 San Malo	0	0	0	0	8	6.4	0.72	38	0	80.3	0.03	0.023
7-Dec-10	793 Terrien	0	0	0	0			0.95					
14-Dec-10	995 Sabine	0	0	0	0		6.9	0.57	40	0	84.6		
14-Dec-10	962 Ballenas	0	0	0	0			0.48					
21-Dec-10	995 Sabine			0	0		6.5	0.67	39	0	87		
30-Dec-10	793 Terrien			0	1		7.2	0.75	45	0	97		
	Average	0	0	0	0.16667	8.0	6.8	0.69	40.5	0.0	87.2	0.03	0.023
	Maximum	0	0	0	1	8	7.2	0.95	45	0	97	0.03	0.023
	Minimum	0	0	0	0	8	6.4	0.48	38	0	80.3	0.03	0.023

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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.

Total coliforms can be an indicator of adverse water quality if the result in the resample is positive (US Environmental Protection Agency). RDN water samples are always tested for fecal coliform bacteria at the same time as total coliforms to rule out the presence of harmful pathogens. If background bacteria (BG), total or fecal bacteria are detected location is resampled. If the bacteria test is overgrown (OG) location is also resampled.

APPENDIX C

EMERGENCY RESPONSE PLAN

REGIONAL DISTRICT OF NANAIMO

EMERGENCY RESPONSE PLAN

REGIONAL DISTRICT OF NANAIMO

WATER SYSTEMS

REVISION DATE - JUNE 2011

REGIONAL DISTRICT OF NANAIMO

Contents

Prime Responsibilities

- Provide safe drinking water.
- Provide potable water for sanitation purposes.
- Provide water for fire suppression.
- Prevent unnecessary loss of stored water.
- Restore the integrity of the entire water system as soon as possible.
- Maintain integrity and quality of supply.

Emergency Response and Recovery Actions

- Analyze the type and severity of the emergency.
- Provide emergency assistance to save lives.
- Reduce the probabilities of additional injuries or damage.
- Provide situational reporting to appropriate agencies as required.
- Perform emergency repairs based on priority demand.
- Return system to normal levels. (recovery)
- Evaluate response and preparedness plan.
- Revise plan as necessary.
- Provide maps, notices, and direction necessary for water recovery.

Communication Check List

In an emergency it will be important to contact the key people shown below. This will help reduce confusion and assist in ensuring any important messaging is done so correctly and quickly.

IF REQUIRED, CONTACT P.E.P or V.I.H.A. BEFORE MAKING THE FOLLOWING CONTACTS AS PER THE EMERGENCY PLANS

RDN Priority Contacts

MANAGER OF WATER SERVICES.....MIKE DONNELLY
(250) 390-6560

G.M. REGIONAL & COMMUNITY UTILITIES.....JOHN FINNIE
(250) 390-6560

COMMUNICATIONS COORDINATOR..... ADRIENNE MERCER
(250) 390-4111

EMERGENCY COORDINATOR.....JANI THOMAS
(250) 713–2057(cell)

Key Communication Options

Management Support

- Contact Electoral Area Director
- Contact the local radio station and provide a brief message if public health and safety are at risk. Follow up with a press release.

Field Staff Support

- Post notices on household front doors.
- Attach warning signs to existing Water Sprinkling Regulation signs in each community.
- Put up roadside signage at the entrance to the community.

Administrative Support

- Provide information message on the RDN web site.
- Review after hours office and voice mail messaging.
- Provide notification to other RDN staff.

Emergency Contact Numbers

Personnel Contacts

Name	*Position*	*Phone*
Dave	**Chief Operator**	**(250) 248-4914**
Randy	**Operator II**	**(250) 248-4914**
Heather	**Operator III**	**(250) 248-4914**
Brian	**Operator III**	**(250) 248-4914**
Brad	**Operator II**	**(250) 248-4914**
Lyndon	**Operator II**	**(250) 248-4914**
Mike Donnelly	**Manager of Water Services**	**(250) 390-6560**
Deb Churko	**Engineering Technologist**	**(250) 390-6560**
Jack Eubank	**Bylaw Officer**	**(250) 390-6560**
John Finnie	**General Manager**	**(250) 390-6560**

Electoral Area Directors

Electoral Area	*Director*	*Phone*	*email address*
A	Joe Burnett	722-2656	quaillanding@shaw.ca
B	Gisele Rudischer	247-8795	giselerudischer@gmail.com
C	Maureen Young	754-5896	Maureen_young@shaw.ca
E	George Holme	468-7237	gholme@shaw.ca
F	Lou Biggemann	248-9078	lwb@shaw.ca
G	Joe Stanhope	248-6401	jstanhope@shaw.ca
H	Dave Bartram	757-9737	dwbartram@shaw.ca

Government Agency Contacts

Ministry of Environment	Nanaimo	(250)	751-3100
Department of Fisheries and Oceans	Nanaimo		754-0230
Provincial Emergency Preparedness (PEP)			
and Dangerous Goods Spills	Victoria		1-800-663-3456
Environmental Health Office	Parksville		947-8222
Bill Wrathall, Env. Health Officer	Parksville		947-8222
Environmental Health Office	Nanaimo		755-6215
Murray Sexton, Public Health Engineer	Nanaimo		755-6293
Medical Health Officer	Nanaimo		740-6988
		or after hours	1-800-204-6166
City of Parksville Public Works	Parksville		248-5412
Town of Qualicum Beach Public Works	Qualicum Beach		752-6921
District of Lantzville	Lantzville		390-4006

Emergency

Hospital	- Nanaimo	754-2141
	- Parksville phone number (Nanaimo hospital)	248-2332
Ambulance	- Parksville	911 or 248-3511
	- Nanaimo	911 or 758-8181
Police	- Parksville	911 or 248-6111
	- Nanaimo	911 or 754-2345
Fire Department	- Parksville	911 or 248-3242
	- Nanoose Bay	911 or 468-7141
	- Qualicum Beach	911 or 752-6921
	- Cedar	911 or 722-3122

Priority Services

BC Hydro (Qualicum Beach number)	**(250)**	**752-8012 *or***
BC Hydro– Derek Leik 755-4734		**1-888-769-3766**
Telus		**811-2323 *or***
Telus- Paul McGrath cell 248-0983		**741-7713 *or* 741-7716**
Teresen Gas		**248-4880**
Shaw Cable (Nanaimo)		**754-5571**
CP Rail		**1-800-716-9132**
French Creek Pollution Control Centre		**248-5794**
Chlorine Manufacturer (Brentagg)		**1-800-661-1830**

Community Contacts

District 69 School Board Office	**248-4241**
Nanoose Bay School	**468-7414**
Nanoose Children's Centre	**468-1784**
Nanoose Place	**468-5339**
Nanoose Post Office	**468-7722**
Naval Base (Department of National Defense)	**756-5021 *or* 468-5004**

Excavation Services

Shoreline Equipment (Doug Penny)	**468-7759 *or***
	755-9502 (cell)
Lundine Backhoe Service (Jim Lundine)	**752-6808 *or***
	951-1508 (cell)

Electrical Contractors

Canem Electric	**468-1887**
East Isle Power (Harvey Sommerfeld)	**821-0415 *or***
	954-7463 (cell)
TC Trades (Tom Frenette)	**756-0077 *or***
	250-668-0078

Other Services

Plumbing Services (Maci Motor – Pump Repair)	**(250)**	**248-4423**
Bulk water supply (BC Water Service)		**954-3628**
Bottled water supply (Water Pure & Simple)		**752-1373**
EPCOR (Parksville)		**951-2460**
Sand and Gravel (Ozero)		**752-1482**
Sand and Gravel (Luissier & Sons)		**468-9994**
Pump Trucks (Action Tank Service)		**248-3833**
Pump Trucks and Toilet Rentals (A-1 Septic)		**248-4438**
Portable Washrooms (Coast Toilet Rentals)		**753-7552**
Running Water Enterprises (Water Hauling Service)		**947-5197**
Woods Water Hauling		**758-2677**
Fyfe's Well and Water Services		**752-4986** ***or*** ***248-0830 (cell)***

Suppliers

Four Star Waterworks (piping)	**954-3546**
Hwy Four Rentals (equipment & pumps)	**248-1100**
Iritex Pumps and Irrigation – (pumps)	**248-7028**
Windsor Plywood (miscellaneous building supplies)	**752-3122**
Albertsons Hardware (miscellaneous building supplies)	**248-6888**
Robinson Rentals	**753-2465**
United Rentals	**758-3911**

Media Services

Adrienne Mercer, RDN Communications Coordinator	**1-877-607-4111** ***or*** ***713-1075 (cell)***
Radio Station (CKWV) Nanaimo and Parksville	**758-1131**
TV Station (CHEK)	**383-2435**
Newspaper (PQ News and The Weekender)	**248-4341**
The Oceanside Star	**954-0600**
Nanaimo Daily News / Harbour City Star	**729-4212**

Emergency Response Plans

Contamination of Source (Spills,Accidents,Vandalism)

Actions:
Shut down pump
Notify Provincial Emergency Program (PEP)
Notify Health Unit
Notify all users if necessary under direction of Health Unit
Contact government agencies for advice and assistance
Contact local media for public service announcements
Post signs and deliver notices to homes and businesses. (See attached samples)
Arrange alternate source if necessary – i.e., bottled or bulk water
Advise RDN supervisory personnel

Contacts:
Local Health Unit (Environmental Health Department)
Provincial Emergency Preparedness, Police, Ministry of Environment
All schools and community centres – *see "Priority Contacts" List*
RCMP if there has been vandalism

Loss of Source – Loss Of Reservoir or Supply Lines

Actions:
Ensure pumps are shut off. (To protect pump)
Notify all users
Contact government agencies for advice and assistance
Arrange alternate source – i.e., bottled water, bulk water, storage tank
Advise RDN supervisory personnel if necessary

Contacts:
Local Health Unit (Environmental Health Department) and Ministry of Environment

Flood Conditions

Actions:
Notify all users regarding the potential for water contamination, loss of pump, power, etc, Users should be advised to store some drinking water in advance, and to boil any suspect water for two minutes or disinfect with chlorine when flood conditions exist
Phone government contacts
Contact local media for public service announcement when customers can not be reached by phone
Post signs or deliver notices if necessary. (See attached samples)
Arrange alternate source if possible – i.e. bottled water, bulk hauler or storage tank
Advise RDN supervisory personnel

Contacts:
Local Health Unit (Environment Health Department), Provincial Emergency Preparedness, and Ministry of Environment

Broken Water Main

Actions:
Shut pump off when backflow conditions have been prevented
Call for repairs as required – i.e. excavator, backhoe
Notify all users of interruption of service
Advise local Public Health office
Arrange alternate source if necessary
Advise RDN supervisory personnel

Contacts: Advise local Public Health office. (Environmental Health Department)

Chlorination Failure

Actions:
Advise local Public Health Office
Shut off well pumps. Monitor reservoir levels.
Notify all users to boil water for two minutes or take other disinfection procedures in accordance with recommendations of local health officials
Post signs or deliver notices if necessary. (See attached samples)
Arrange chlorinator repairs
Advise RDN supervisory personnel

Contacts:
Local Health Unit (Environmental Health Officer)
Chlorinator manufacturer

Pump Failure

Actions:
Notify all users of interruption of service
Call for repairs: pump manufacturer if necessary
Advise local Public Health office (if interruption not short term)
Arrange alternate source if necessary – bottled or bulk water, etc.
Advise RDN supervisory personnel if necessary

Contacts: Local Health Unit (Environmental Health Department)

Power Failure

Actions:
Call BC Hydro. Find out when power will be restored
Start back-up generator or arrange to get one
Notify all users about interruption of service if backup not capable of maintaining supply
Post signs or deliver notices if necessary. (See attached samples)
Advise local Public Health Office
Arrange alternate source if necessary – bottled or bulk water, etc.
Advise RDN supervisory personnel

Contacts: Local Health Unit (Environmental Health Department)

Backflow or Back Siphonage

Actions:
Advise Medical Health Officer at local Health unit
Notify all users to boil water for two minutes or take other disinfection procedures in accordance with recommendations of local health officials
Purge and disinfect lines as directed, after corrections have been made
Post signs or deliver notices if necessary. (See attached samples)
Advise RDN supervisory personnel

Contacts: Local Health Unit (Environmental Health Department)

Bacteria Count (RDN Lab)

Actions:
Advise Medical Health Officer at local Health unit
Follow procedures in accordance with recommendations of local health officials
Post signs or deliver notices if necessary. (See attached samples)
Advise RDN supervisory personnel

Contacts: Local Health Unit (Environment Health Department)

APPENDICES

Sample

NOTICE

Boil Water Advisory

Effective date: _____

Please note that all water used for domestic purposes (drinking, cooking, etc.) should be boiled before consumption. The boiling should be at a rolling boil and for a minimum of one minute.

RDN Water Services staff are continually monitoring the water supply system and will provide updates as they become available.

Watch for information updates at www.rdn.bc.ca (WaterSmart) and listen to your local radio station for more information.

This advisory will be in effect until further notice.

For further information contact the

Regional District of Nanaimo at:
1-877-607-4111 or 1-250-390-4111
Water Services Field Office: 1-250-248-4914

Sample

NOTICE

Boil Water Order

Effective date: _____

Please note that all water used for domestic purposes (drinking, cooking, etc.) should be boiled before consumption. The boiling should be at a rolling boil and for a minimum of two minutes.

RDN Water Services staff are continually monitoring the water supply system and will provide updates as they become available.

Watch for information updates at www.rdn.bc.ca (WaterSmart) and listen to your local radio station for more information.

This order will be in effect until further notice.

For further information contact the

Regional District of Nanaimo at:
1-877-607-4111 or 1-250-390-4111
Water Services Field Office: 1-250-248-4914

WARNING

Sample

This Water is Considered Unfit for Drinking or Domestic Use

Effective date: _____

For further information contact the

Regional District of Nanaimo at:
1-877-607-4111 or 1-250-390-4111
Water Services Field Office: 1-250-248-4914

Sample

NOTICE

Water Supply Service Interruption

Effective date: _____

Please be advised that your water service may be interrupted or off for periods during the day.

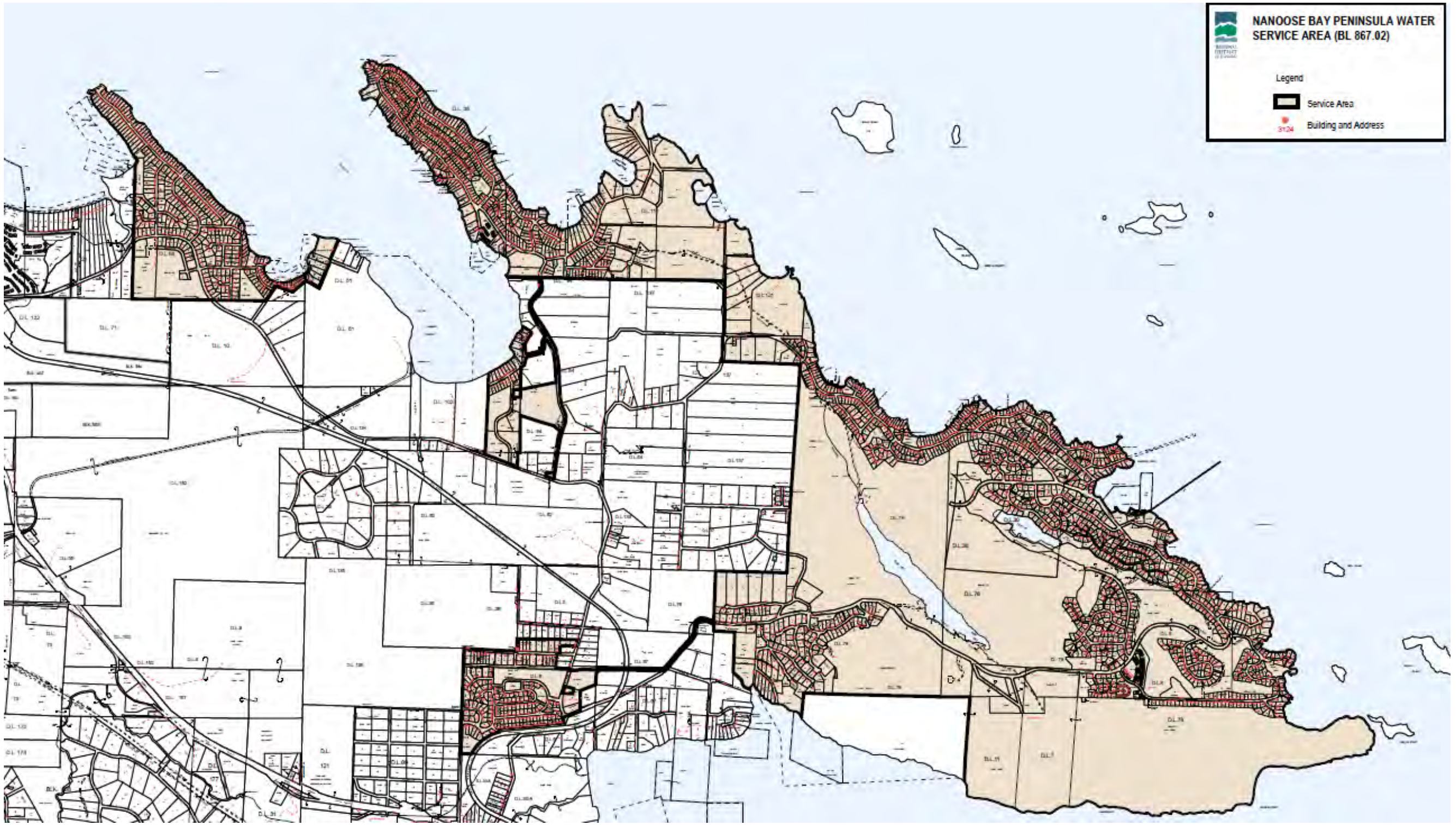
When service is resumed, the water may be discoloured. This is due to disturbed deposits in the pipes and is not harmful.

This advisory will be in effect until further notice.

For further information contact the

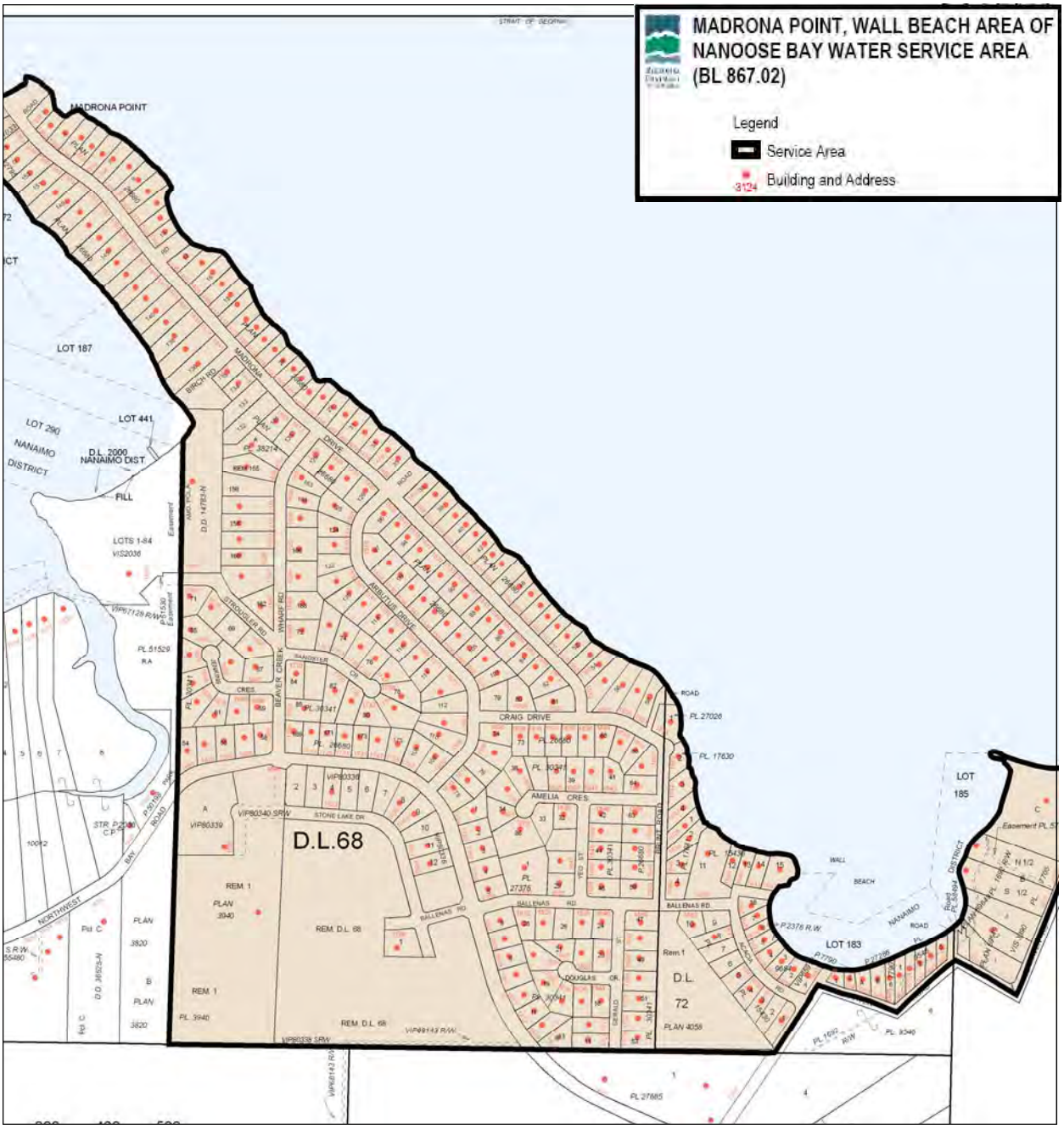
Regional District of Nanaimo at:
1-877-607-4111 or 1-250-390-4111
Water Services Field Office: 1-250-248-4914

MAPS
Water Service Areas



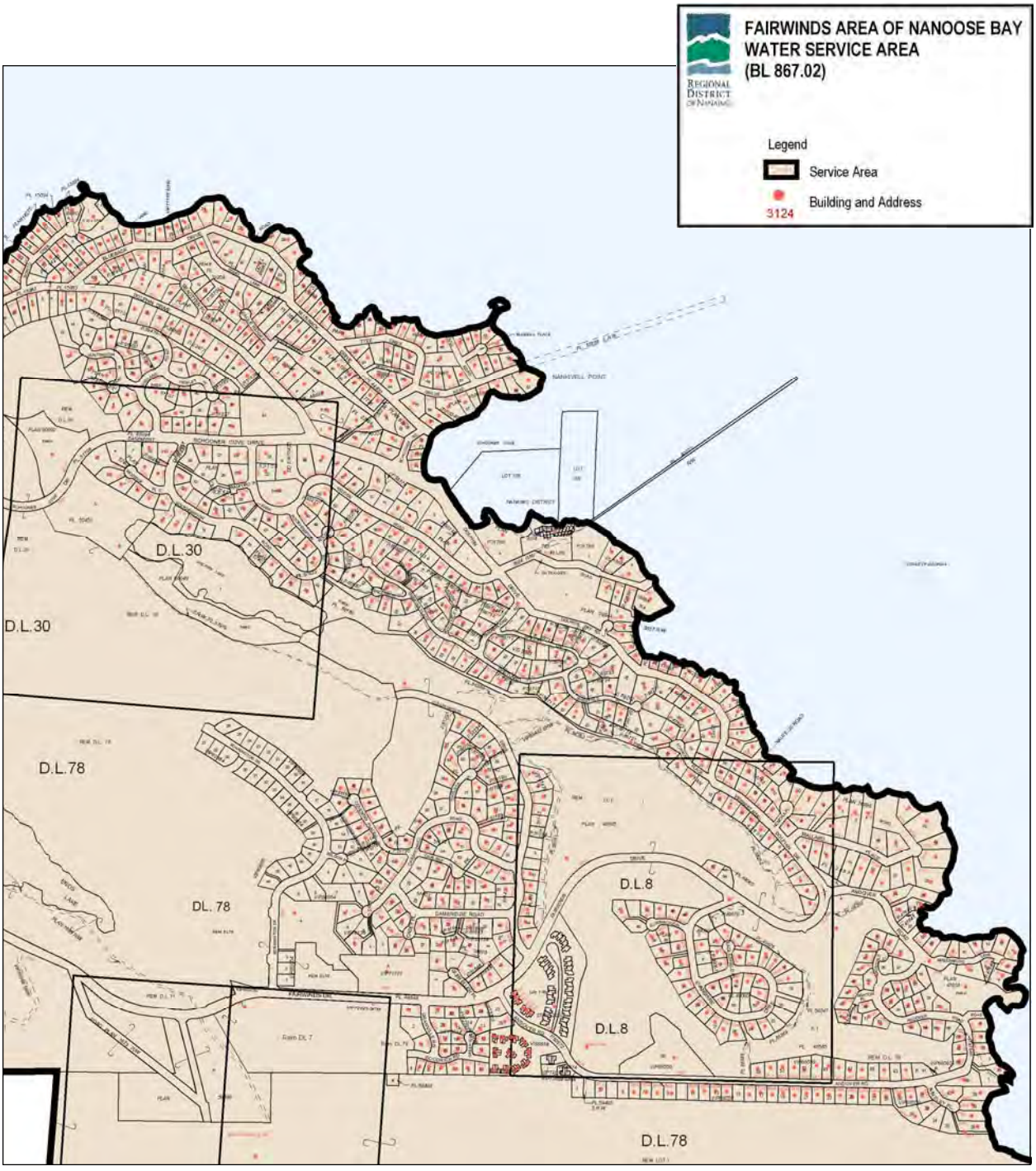
MAP 1 NANOOSE BAY PENINSULA

MAP 2 MADRONA / WALL BEACH



REGIONAL DISTRICT OF NANAIMO

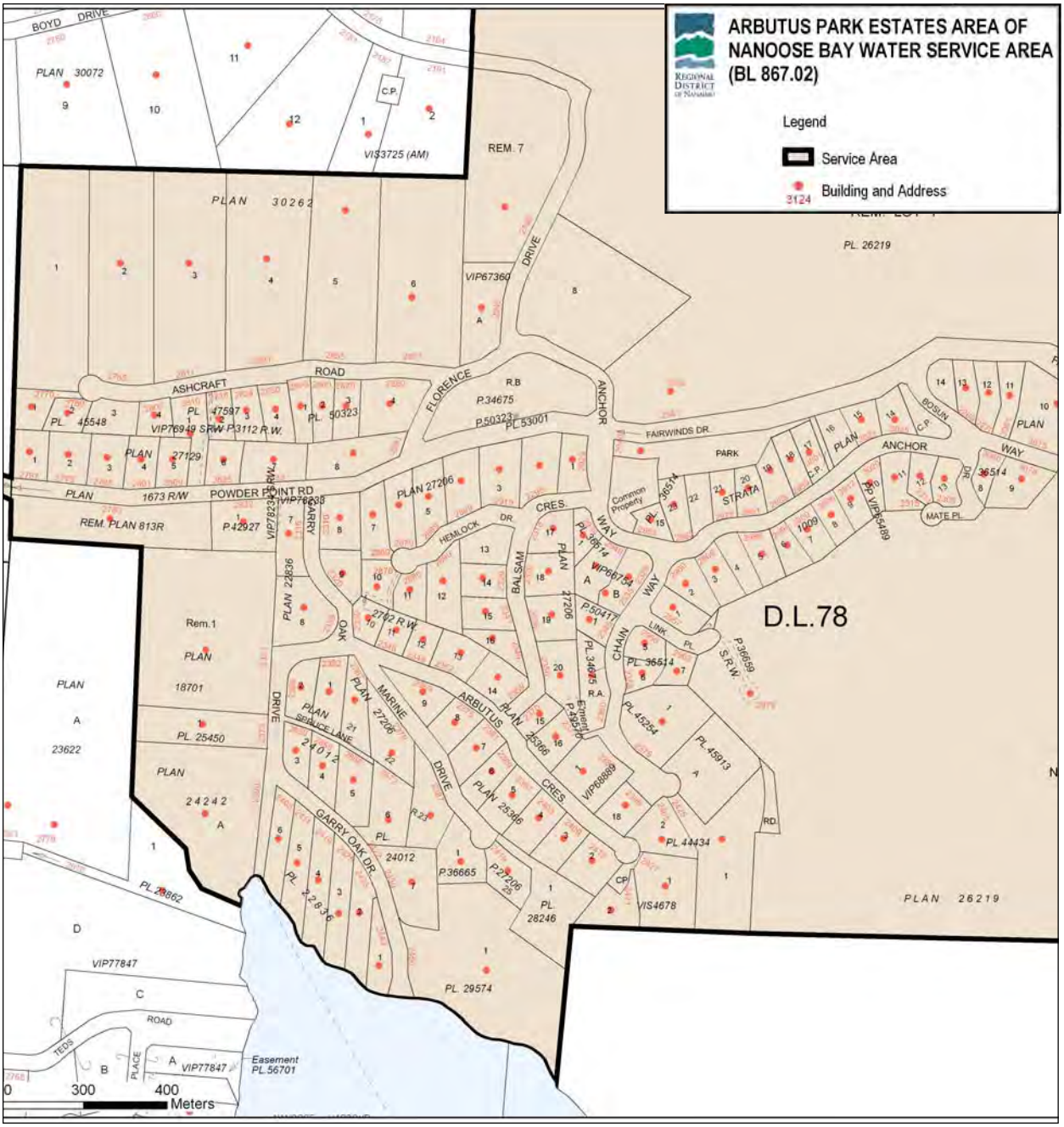
EMERGENCY RESPONSE PLAN
WATER SYSTEMS



MAP 3 FAIRWINDS

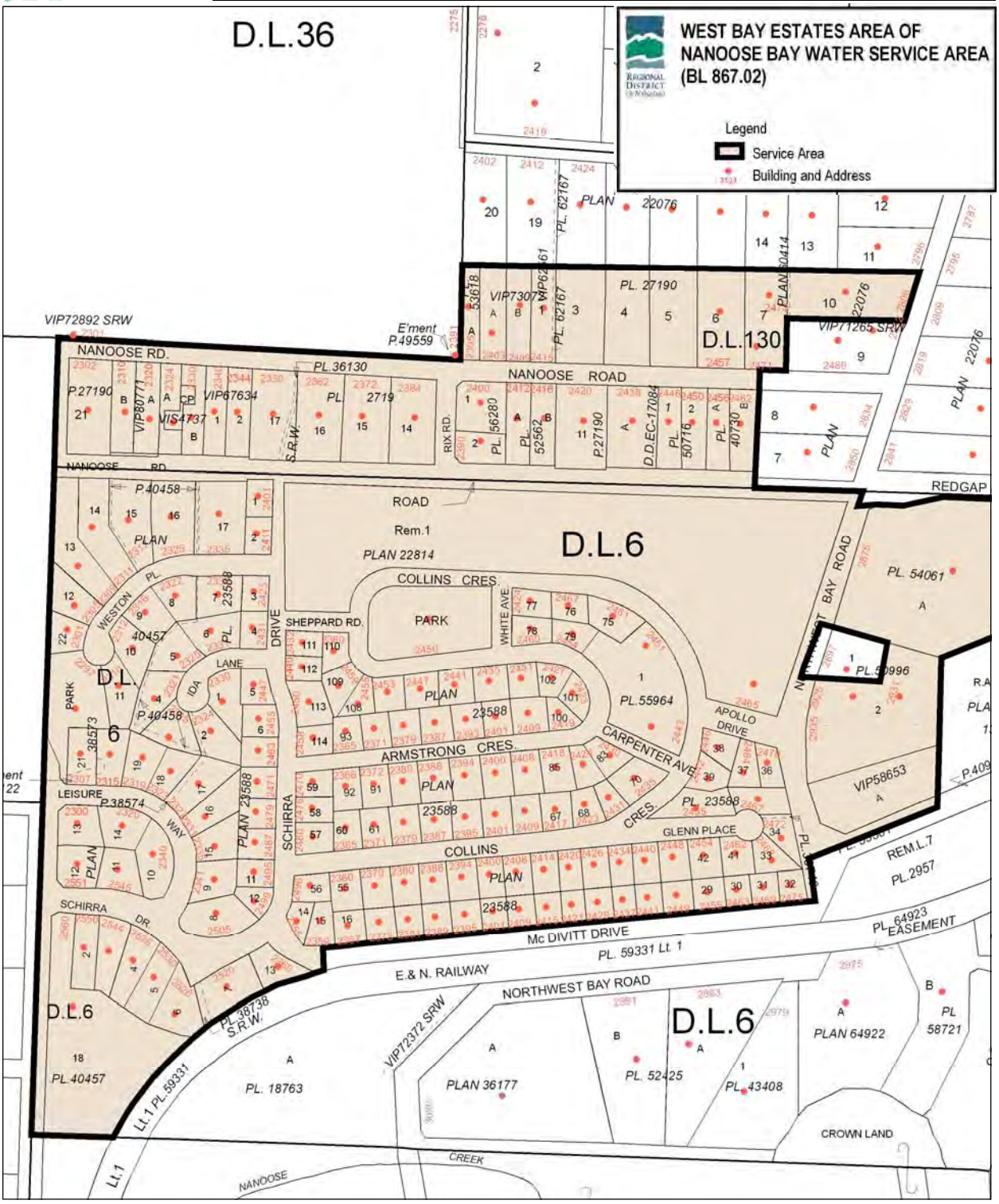
waterSMART zero waste

MAP 4 ARBUTUS PARK



REGIONAL DISTRICT OF NANAIMO

EMERGENCY RESPONSE PLAN
WATER SYSTEMS

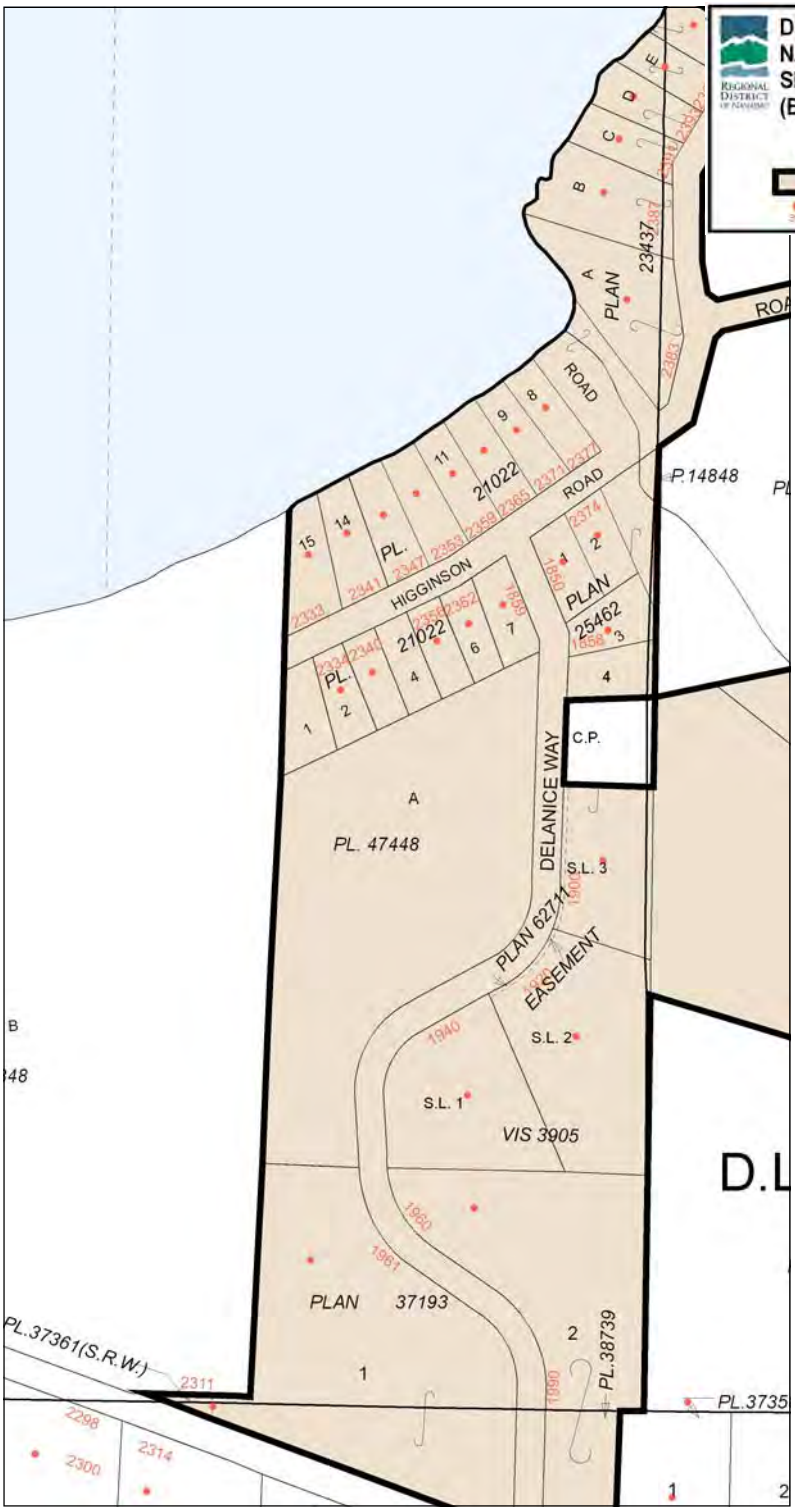


MAP 5 WEST BAY

waterSMART zero waste

REGIONAL DISTRICT OF NANAIMO

EMERGENCY RESPONSE PLAN
WATER SYSTEMS



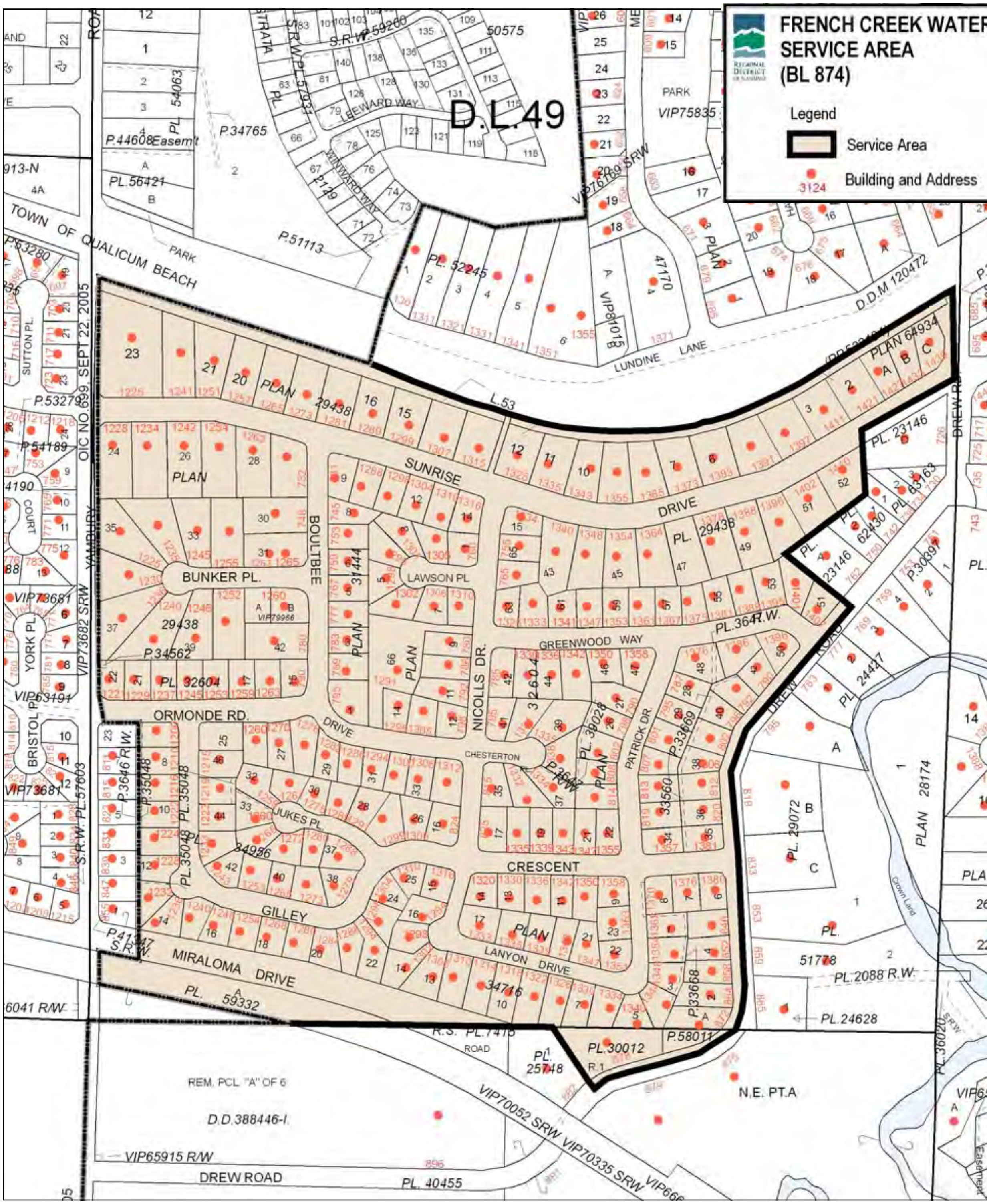
MAP 6 DRIFTWOOD

water SMART zero waste

Regional District of Nanaimo

EMERGENCY RESPONSE PLAN

WATER SYSTEMS



MAP 7 FRENCH CREEK

water SMART zero waste

REGIONAL DISTRICT OF NANAIMO

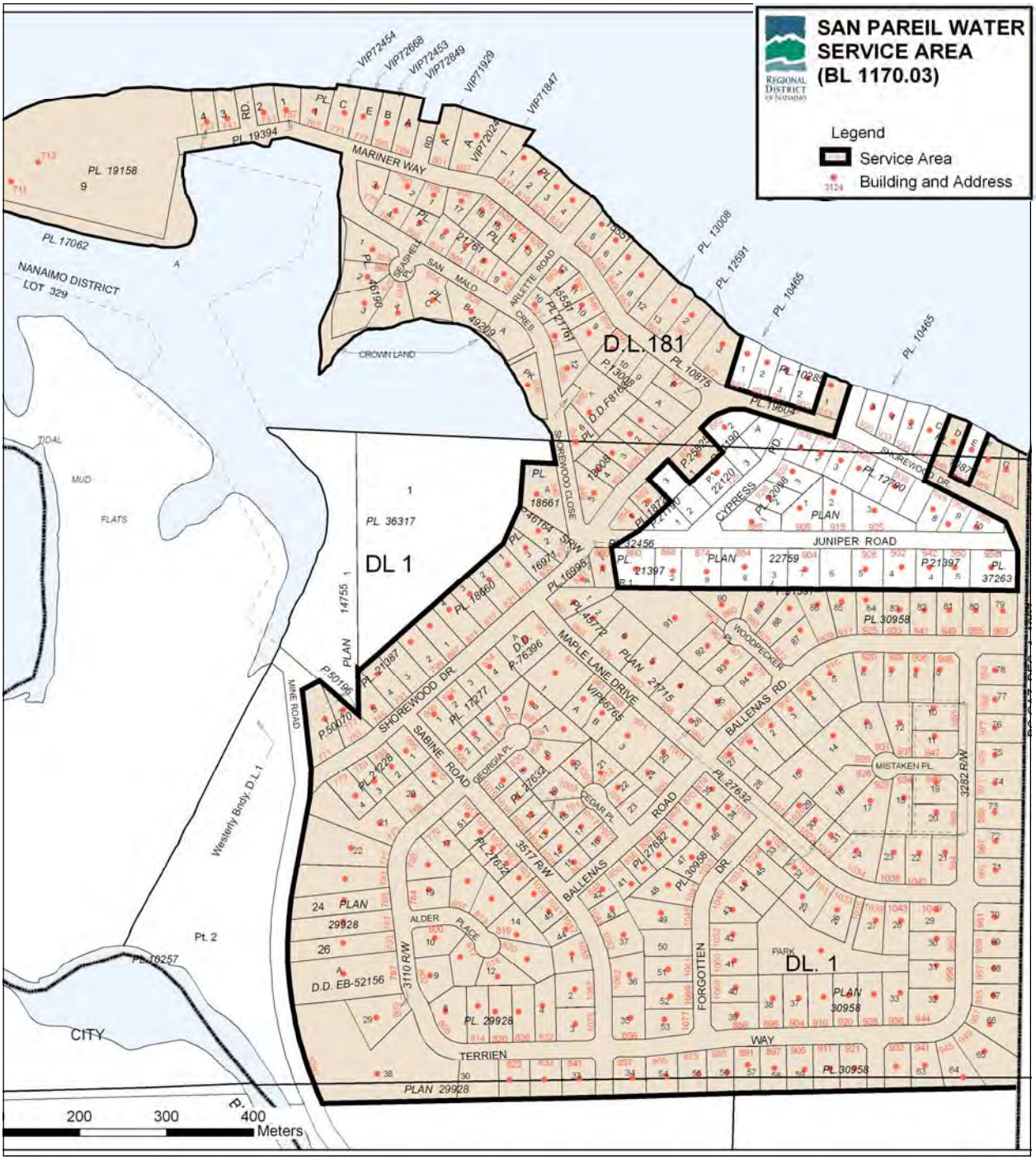
EMERGENCY RESPONSE PLAN
WATER SYSTEMS

MAP 8 SURFSIDE

waterSMART zero waste

REGIONAL DISTRICT OF NANAIMO

EMERGENCY RESPONSE PLAN
WATER SYSTEMS

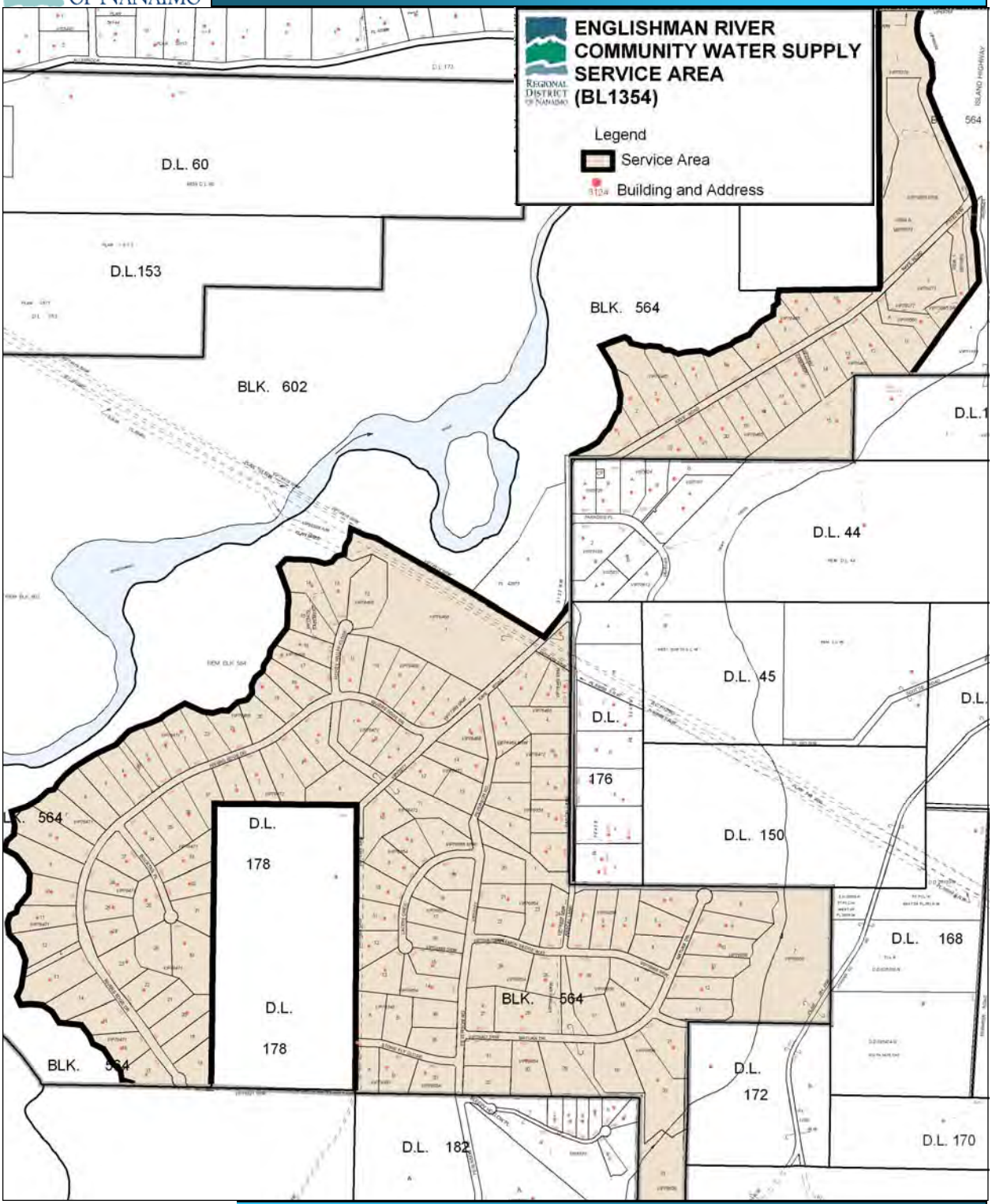


MAP 9 SAN PAREIL

waterSMART zero waste

REGIONAL DISTRICT OF NANAIMO

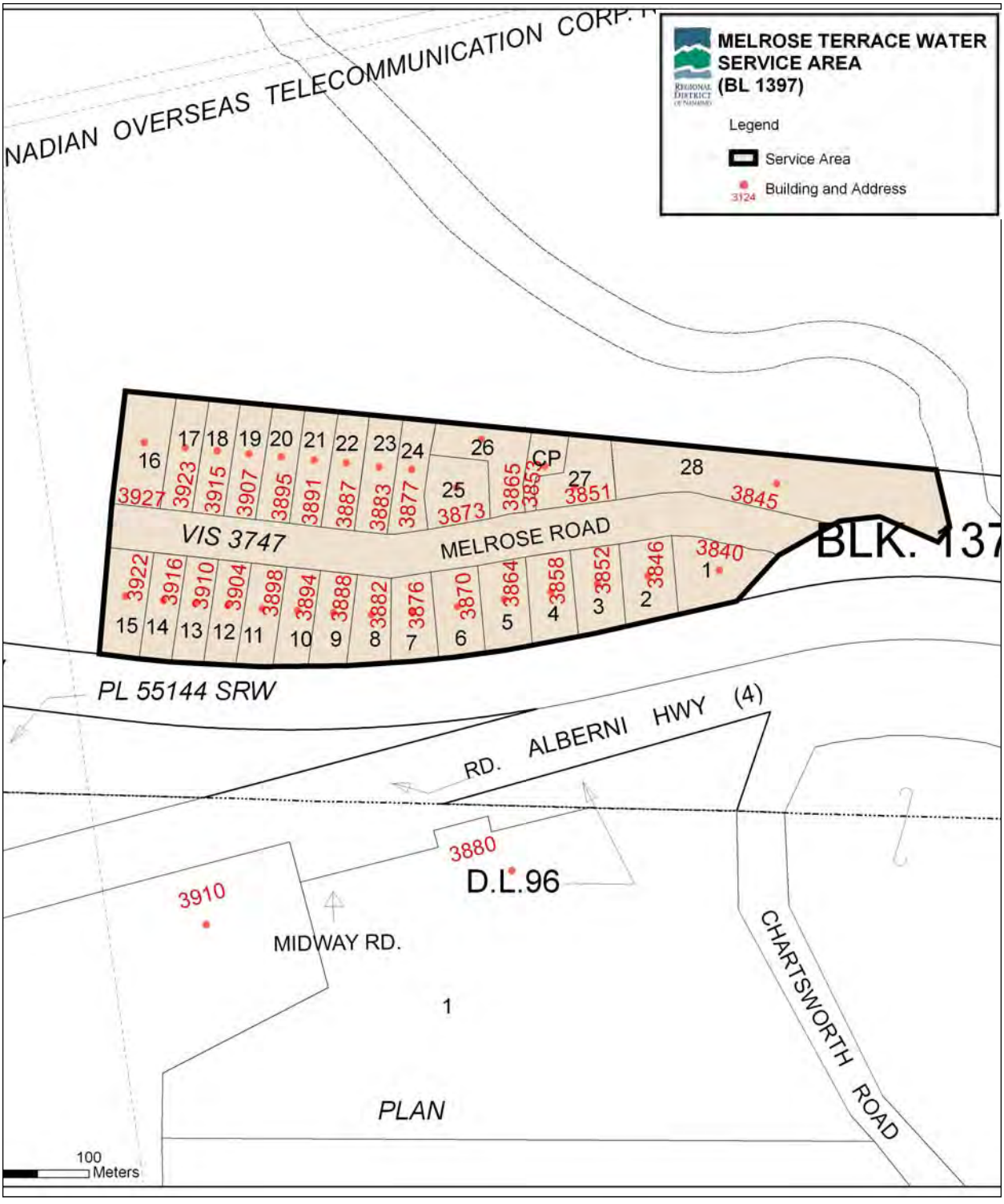
EMERGENCY RESPONSE PLAN
WATER SYSTEMS



MAP 10 ENGLISHMAN RIVER

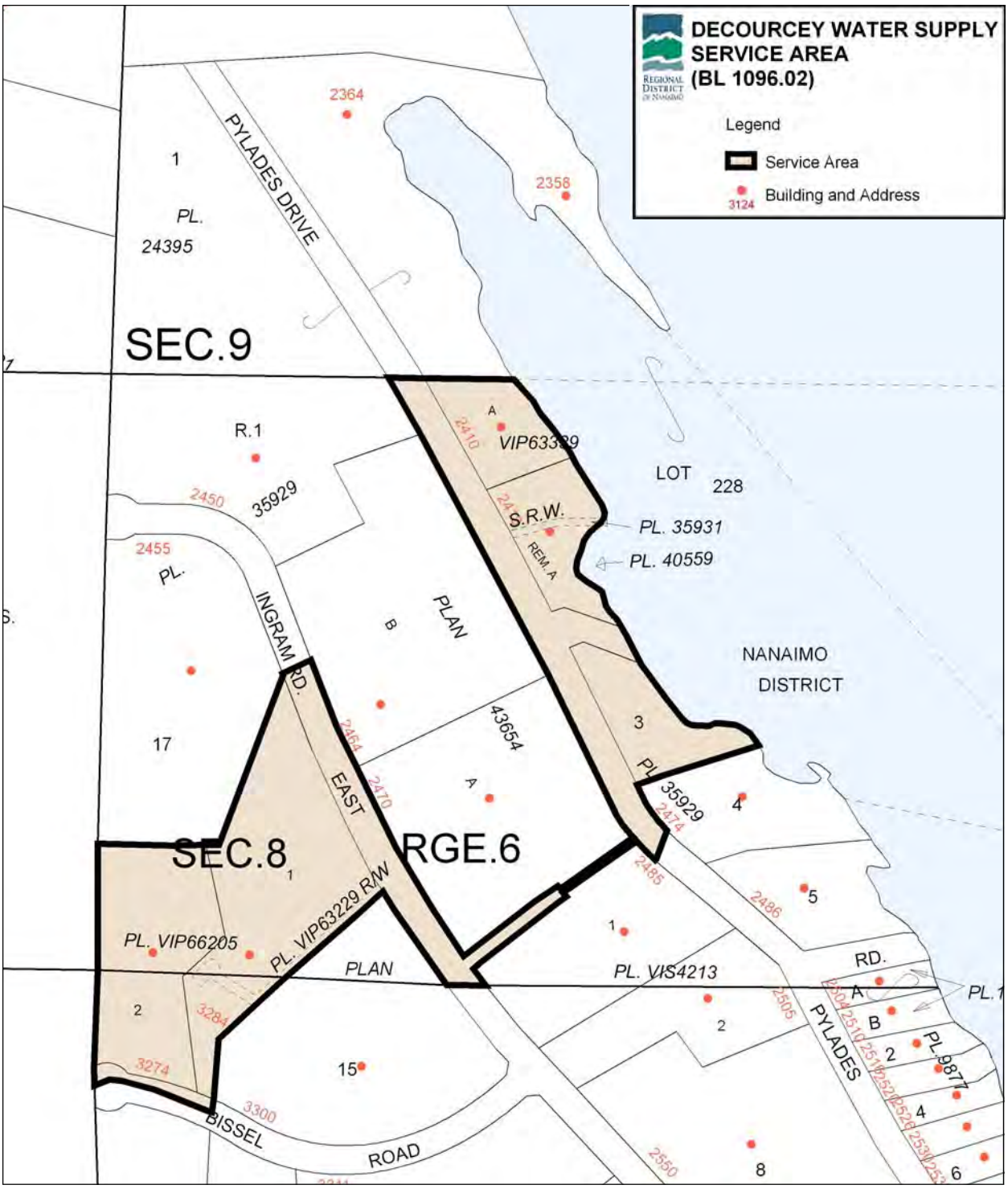
waterSMART zero waste

MAP 11 MELROSE



REGIONAL DISTRICT OF NANAIMO

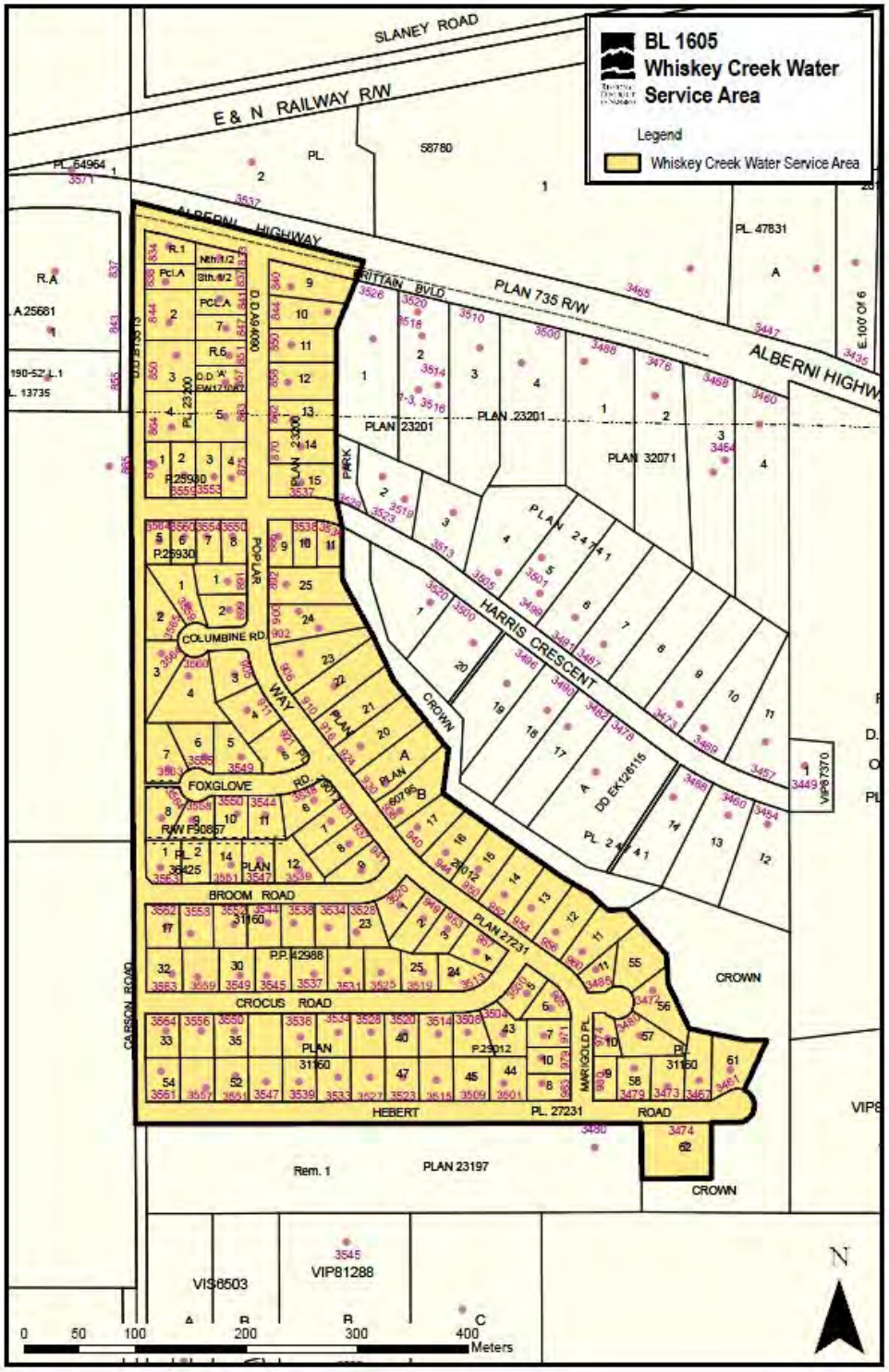
EMERGENCY RESPONSE PLAN
WATER SYSTEMS



MAP 12 DECOURCEY

waterSMART zero waste

MAP 13 WHISKEY CREEK



SAN PAREIL

Water Service Area Annual Report 2011

Prepared by:

REGIONAL DISTRICT OF NANAIMO

Water Services Department

June 2012

6300 Hammond Bay Rd, Nanaimo, BC Canada V9T 6N2 | Ph 250-390-6560 | Fax 250-390-1542 | Email: dchurko@rdn.bc.ca

Table of Contents

1. Introduction

The following annual report describes the San Pareil Water Service Area and summarizes the water quality and production data from 2011. 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 2012.

2. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River bridge on the east side of the City of Parksville. There are 280 water service connections in San Pareil. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water is chlorinated and stored in one reservoir. A back-up propane generator is present on site. A map of the San Pareil Water System is provided in Appendix A.

2.1 Groundwater Wells

Four groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. Two of the wells are not currently in use: Well #2 is an older, shallow well that is kept on stand-by. Well #3 was converted to a monitoring well when Well #4 was drilled.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Yes	Not in use
#3	7.0 m	Yes	Not in use
#4	5.7 m	Yes	Treated

2.2 Reservoirs

One concrete service reservoir is present at 1090 Plummer Road, and has a capacity of 340 m^3 (75,000 imperial gallons).

2.3 Distribution System

The water distribution system in San Pareil is summarized in the table below. Fire hydrants (16) are located throughout the water service area, but the hydrants do not meet current requirements for spacing and /or fire flows.

Watermain Material	Length of mains in San Pareil Water Service Area	Prevalence in Water Service Area
AC: 150mm or smaller AC: 200mm or larger	6.0 km none	91% n/a
PVC: 150mm or smaller PVC: 200mm or larger	0.2 km 0.4 km	3% 6%

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. 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)	North Island Labs	Complete potability testing of raw well water (including T-Ammonia in 2012)
Annual System Water Testing (every Spring)	North Island Labs	Complete potability testing of distribution system (including T-Ammonia in 2012)

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 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

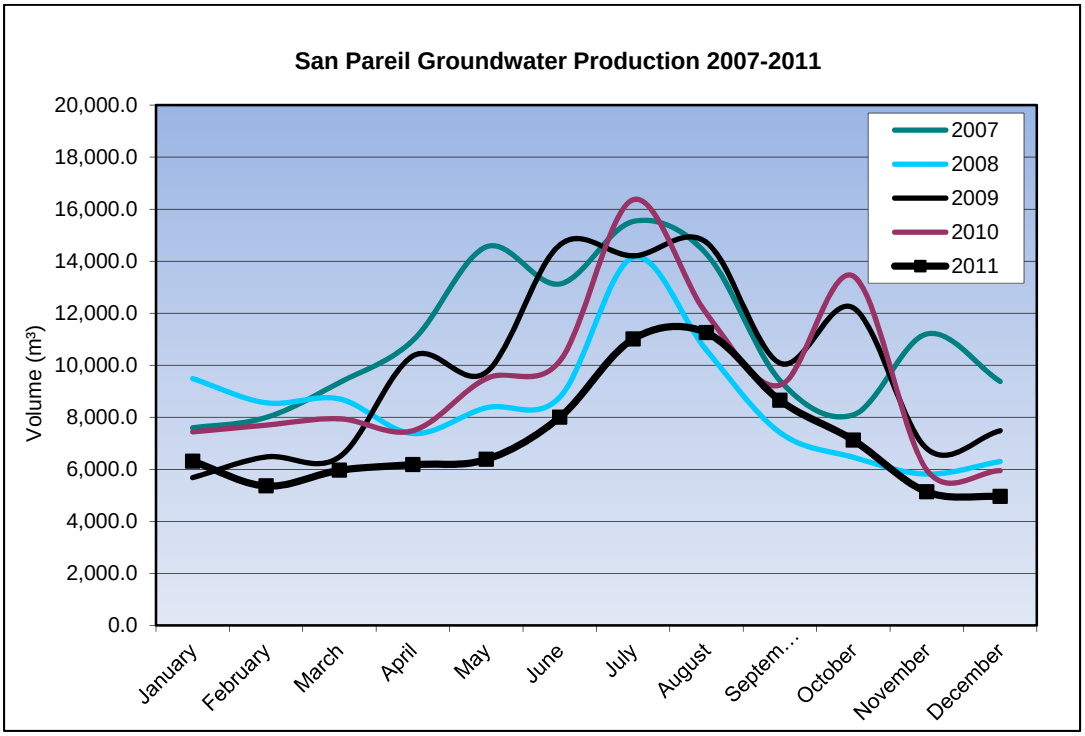
Very few complaints or inquiries were received from the San Pareil water service area in 2011, and were typically related to water leaks or high water bills.

Fire insurance and the necessary water supply upgrades were discussed at length with residents of the San Pareil water service area in 2011. Updates on the upcoming construction and improvements can be found at www.sanpareilwater.ca .

San Pareil Well Site

6. Groundwater Production and Consumption

The monthly groundwater production for San Pareil for the past 5 years is shown in the chart below. Groundwater production in 2011 was typically lower than previous years.



Consumption

In the Fall/Winter of 2011, the average usage per home in San Pareil was 0.46 cubic metres per day (101 imperial gallons). In the summer, the average water usage was 0.88 cubic metres per day (193 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 251 L/day (based on 2.4 people/household). This consumption is 7% less than the RDN system average of 269 L/day/capita in 2011.

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. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance) in the Fall.

Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Water System Projects

8.1 2011 Completed Studies & Projects

- Completed the San Pareil Fire Protection Service Area Establishing & Borrowing Bylaws;
- Achieved public approval and tendering of pumpstation and reservoir upgrades;
- Installed surface seal around San Pareil Well #1;
- Completed San Pareil Wellhead Protection Plan;
- Undertook a GWUDI Assessment of San Pareil wells;
- Completed a well yield assessment of San Pareil Well #4;
- Completed annual fire hydrant maintenance;
- Amalgamated RDN water systems' rates & regulations into one bylaw;
- Enforced the outdoor sprinkling regulations;
- Prepared a Draft Cross-Connection Control Bylaw;
- Carried out a comprehensive water conservation campaign (Team WaterSmart);
- Updated and improved the RDN website at www.rdn.bc.ca;
- Updated the Emergency Response Plan;
- Utilized the Auto E-message service to notify member residents of water service disruptions and upcoming maintenance activities;
- Applied a low-flush toilet incentive;
- Maintained excellent customer complaint and service request response times;
- Continued quality control through regular testing and monitoring of our water systems; and
- Completed additional educational programs.




San Pareil Well #1 Surface Seal Installation, July 2011

8.2 2012 Proposed Projects & Upgrades

- Upgrade watermains to help improve fire flows;
- Clean and flush San Pareil Well #4;
- Finalize GWUDI report (for wells potentially under the direct influence of surface water);
- Install signs along Plummer Road to encourage groundwater protection awareness;
- Complete the Cross-Connection Control bylaws, and establish a procedure for reviewing commercial and industrial properties for water system risks;
- Update the Standard Operating Procedures; and
- Apply a rainwater harvesting (rain barrel) incentive.

9. 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, and pump failure. The ERP was reviewed and updated in 2011, 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.

10. Cross Connection Control

A formalized Cross Connection Control Program was initiated in 2007. Cross connection controls in-place include dual check valves at each service connection, fire hydrant use permits, and water supply bylaws noting discontinued service if a threat to the water supply is perceived by staff.

In 2010, a Draft Cross-Connection Control Bylaw was prepared, and is anticipated to be finalized in 2012. Additionally, the program in 2012 will include:

- A formal survey of existing and potential cross-connections, and
- An audit of RDN-owned facilities in each water service area.

11. Closing

An annual report for the year 2012 will be prepared and submitted to the Vancouver Island Health Authority in the Spring of 2013. Annual reports are also available on our website at www.rdn.bc.ca in the SERVICES section, under “Water & Utility Services” then “WaterSmart Communities”.

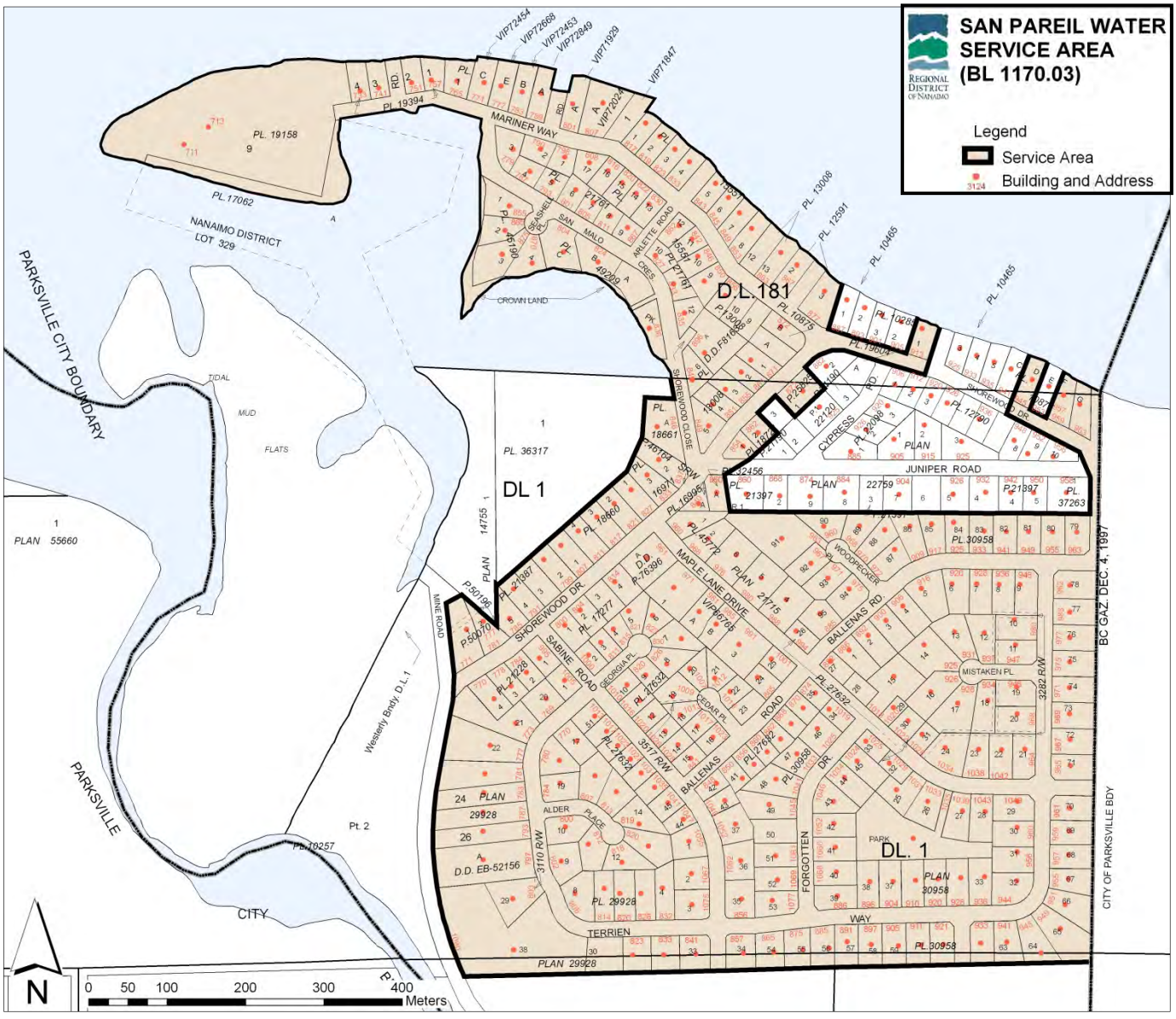
APPENDIX A

MAP OF SAN PAREIL

WATER SERVICE AREA

SAN PAREIL

WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS