



REGIONAL
DISTRICT
OF NANAIMO



2022 Annual Report

Liquid Waste Management Plan

Submitted to the Ministry of Environment and Climate Change Strategy
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Table of Contents

1)	<i>Introduction</i>	1
	1.1 Regional District of Nanaimo	1
	1.2 Wastewater Services	1
	1.3 Liquid Waste Management Plan	2
	1.5 Annual Report	2
2)	<i>LWMP Commitments</i>	2
3)	<i>Ongoing Program Implementation</i>	6
	3.1 Meetings	8
	3.1.1 LWMP Monitoring Committee.....	8
	3.1.2 W3C.....	8
	3.1.3 Regional Strategy for Rainwater Management.....	8
4)	<i>Emerging Issues</i>	8
	4.1 Shellfish Harvesting Areas.....	9
	4.1.1 Conditional Management Plan	9
	4.2 Contaminants of Emerging Concern.....	9
	4.3 Heritage Resources	10
	4.4 Climate Change.....	10
	4.4.1 Sea Level Rise Adaptation	10
	4.4.2 Bay Avenue Pump Station Replacement.....	10
	4.5 Non-Point Sources of Pollution	10
5)	<i>LWMP Refinements</i>	10
	5.1 Public Wastewater Systems	11
	5.2 Private Onsite Systems	11
	5.3 Pollution Control Centres.....	11
6)	<i>LWMP Review and Amendment</i>	12

1) Introduction

1.1 Regional District of Nanaimo

The Regional District of Nanaimo (RDN) provides regional governance and services to 170,000 people on the central east coast of Vancouver Island. Communities in the RDN include the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach, as well as seven unincorporated Electoral Areas (A, B, C, E, F, G, and H) and communities of the Snuneymuxw First Nation, Snaw-naw-as First Nation, and Qualicum First Nation as shown in Figure 1.

Figure 1. Communities in the Regional District of Nanaimo



1.2 Wastewater Services

The RDN provides services for wastewater treatment and disposal. The RDN treats wastewater from 135,000 people and operates four treatment facilities:

- Greater Nanaimo Pollution Control Centre (GNPCC)
- French Creek Pollution Control Centre (FCPCC)
- Nanosee Bay Pollution Control Centre (NBPCC)
- Duke Point Pollution Control Centre (DPPCC).

About 35,000 people and businesses are outside sewer service areas and use privately-owned onsite (septic) systems for wastewater treatment. Island Health also authorizes a small number of properties to use holding tanks. The RDN also treats trucked liquid waste from septic tanks and holding tanks.

1.3 Liquid Waste Management Plan

The RDN Liquid Waste Management Plan (LWMP) is the region’s long-range plan to manage wastewater. It forms our Provincial authorization to discharge along with Operational Certificate ME-05989 (DPPCC) and Permits PE-338 (GNPCC), PE-4200 (FCPCC), PE-7214 (NBPCC).

The LWMP organizes specific commitments into ten programs. The ten LWMP programs are:

1. Public Wastewater Systems Program
2. Private Onsite Systems Program
3. Source Control Program
4. Odour Control Program
5. Rainwater Management / Drinking Water & Watershed Protection (DWWP) Program
6. Volume Reduction Program
7. Inflow & Infiltration Program
8. Pollution Control Centres Program
9. Resource Recovery Program
10. Biosolids Program

The LWMP programs make 118 commitments. The LWMP also identifies five emerging issues to follow.

1.5 Annual Report

The RDN prepares an annual report on the LWMP by June 30 of each year. This 2022 annual report tracks the status of the 118 program commitments. It is organized into the following sections:

- Section 2 updates the status of outstanding commitments.
- Section 3 highlights ongoing progress towards select commitments that were previously met.
- Section 4 documents progress to address emerging issues.
- Section 5 summarizes refinements made to the commitments.
- Section 6 shows the steps towards a future LWMP amendment.

2) LWMP Commitments

The 2021 LWMP Annual Report documented that, by the end of 2021, 106 of the 118 commitments were already met. Table 1 provides an updated status of the outstanding LWMP commitments.

In 2022:

- Two commitments were met (see Rainwater Management / DWWP Program in Table 1).
- Ten commitments were in progress; scheduled for the future; or will be removed or adjusted through an LWMP amendment that is underway now.

The status of all LWMP commitments up to 2023 is summarized on the RDN website at:

getinvolved.rdn.ca/25609/widgets/104091/documents/87256.

Table 1. Status of In Progress and Outstanding Commitments

Program	Commitment	Status
Public Wastewater Systems	No outstanding commitments	
Private Onsite Systems	No outstanding commitments	
Source Control	No outstanding commitments	
Odour Control	No outstanding commitments	
Volume Reduction	No outstanding commitments	
Rainwater Management / Drinking Water and Watershed Protection	Collaborate with Development Services, Water Services, Energy & Sustainability Services, and member municipalities to create a Rainwater Management Plan.	Met in 2022: Completed the Regional Strategy on Rainwater Management.
	Subject to Board approval of the Rainwater Management Plan, Wastewater Services and Water Services will coordinate the plan, administer the budget, and oversee collaboration with other departments and jurisdictions.	Met in 2022: In March 2022 the RDN Board (Motion 22-205) endorsed the Regional Strategy for Rainwater Management for collaborative implementation with member municipalities, Provincial agencies, and community partners.
Inflow & Infiltration	Design [NBPCC treatment] upgrades to RDN infrastructure so flows up to 2 times [average dry weather flow] ADWF will receive secondary treatment and all flows in excess of this amount will receive primary treatment.	In Progress: Awarded contract for preliminary design in December 2020. Completed Preliminary Design in 2022. Recommended change for LWMP Amendment: On February 2, 2022, the Board passed Motion 22-124 to seek an amendment to the LWMP to change the timeline for NBPCC secondary treatment upgrade to prioritize critical sewer upgrades in the same service area.
	Enhance the source control program to encourage landowners to check gutters and outside drains for connection to the sewer system, avoid planting trees and shrubs over sewer laterals, ensure basement drains and sump pumps are not connected to the sanitary sewer, and replace broken or leaky pipes located on private property.	Applied for an infrastructure planning grant in 2020 to complete an Inflow & Infiltration Homeowners Best Practices Guide. The application was not successful. Scheduled: To be addressed in LWMP Amendment currently underway.

Program	Commitment	Status
Pollution Control Centres	Upgrade NBPCC to provide secondary treatment by 2023. [The LWMP also notes that the RDN may readdress the timeline in the future through an LWMP Amendment].	<p>In Progress: Awarded contract for preliminary design in December 2020. Completed Preliminary Design in 2022.</p> <p>Recommended change for LWMP Amendment: On February 2, 2022, the Board passed Motion 22-124 to seek an amendment to the LWMP to change the timeline for NBPCC secondary treatment upgrade to prioritize critical sewer upgrades in the same service area. Project information is posted at: getinvolved.rdn.ca/nbpcc.</p>
	Expand FCPC capacity.	<p>In Progress: Detailed design underway. Completing value engineering and follow-up studies in 2021 and 2022 to improve project design and provide maximum value to the community. Project information is posted at: getinvolved.rdn.ca/french-creek-expansion.</p>
	Coordinate with Development Services through the [Official Community Plan] OCP review process to identify property owners in growth containment boundaries [in Nanoose Bay] who are interested in establishing public wastewater services.	<p>An Electoral Area E OCP review has not occurred since LWMP approval in 2014.</p> <p>Recommended change for LWMP Amendment: Remove this during future LWMP amendment because Development Services’ determines the OCP review process and timeline.</p>
	[For NBPCC] Consider resource recovery, visual, and olfactory buffers and the number of pump stations required.	<p>In Progress: Completed Preliminary Design in 2022. Pump stations will be covered in a separate future project.</p> <p>Recommended change for LWMP Amendment: On February 2, 2022, the Board passed Motion 22-124 to seek an amendment to the LWMP to change the timeline for NBPCC secondary treatment upgrade to prioritize critical sewer upgrades in the same service area.</p>

Program	Commitment	Status
	<p>Review and update the Fairwinds sewer servicing agreement and [Development Cost Charge] DCC bylaw for the Nanoose Bay area.</p> <p>Develop a DCC bylaw to allow properties in the growth containment area to purchase capacity at DPPCC.</p>	<p>Recommended change for LWMP Amendment: Remove from LWMP amendment because DCC collection and reviews are governed separately by the <i>Local Government Act</i>.</p>
Resource Recovery	<p>Examine opportunities for using reclaimed water for the Fairwinds Golf Course.</p>	<p>Recommended change for LWMP Amendment: Remove this during future LWMP amendment because the RDN will participate in a discussion if initiated by Fairwinds Golf Course.</p>
Biosolids	<p>Improve the quality of biosolids through upgrades to wastewater treatment infrastructure and innovative technologies and techniques (i.e., decrease volatile solids content and pathogen concentrations).</p>	<p>In Progress:</p> <ul style="list-style-type: none"> ▪ Completed a review of biosolids management options used in other jurisdictions in 2022. The report concluded that: <ul style="list-style-type: none"> ○ 98% of Canadian jurisdictions reviewed manage biosolids using land application. ○ The current management techniques are a good fit for the challenges and opportunities unique to this region. ○ No other options have merits that far outweigh the options currently used in the RDN. ▪ 2022 Biosolids annual report includes a review of advancements in biosolids technologies in Canada. <p>Recommended change for LWMP Amendment: Consider focusing the program on the continuation of existing programs since FCPC biosolids consistently meets Class A quality. GNPCC biosolids consistently meets Class B quality.</p>

3) Ongoing Program Implementation

Table 2 highlights ongoing progress towards select commitments that were met in past years. Section 3.1 documents meetings held to support LWMP program implementation.

Table 2. Ongoing Program Implementation in 2022

Program	Commitment	Activity
Public Wastewater Systems	Coordinate with Development Services through the OCP review process to identify property owners in growth containment boundaries who are interested in establishing public wastewater services.	Wastewater Services supports the OCP review process. The schedule is led by Development Services and the Area F OCP review was underway in 2022.
Private Onsite Systems	Enhance the source control component of the SepticSmart program.	Provided over \$58,000 SepticSmart rebates in 2022 to residents for septic system improvements. To date, this program has contributed more than \$300,000 to maintain septic systems in the RDN.
Source Control	Monitor influent and biosolids quality and review discharge permits to assess potential contaminant sources.	Continued monitoring a select list of Contaminants of Emerging Concern in influent and effluent at GNPCC and FCPC.
Odour Control	Incorporate odour controls into the design phase of future capital works projects including upgrade of GNPCC, NBPC and expansion of FCPC.	Significant odour control improvements are underway or planned for FCPC: <ul style="list-style-type: none"> ▪ Upgrading the lateral piping in the trickling filter to improve flow distribution over the trickling filter media and eliminate “dead zones” that cause odours. ▪ Replacing the headworks windows to prevent the escape of odours. ▪ Optimising operation of the autothermal thermophilic aerobic digestion (ATAD) odour control system to improve the level and consistency of odour treatment. ▪ Monitoring odour dispersion with Vancouver Island University and using the data to optimize system management.
Rainwater Management / Drinking Water and Watershed Protection	Establish watershed performance targets and standards to mitigate the impacts of land development.	The RDN completed Phase 2 of the Watershed Performance Targets for the French Creek Water Region which included an implementation, monitoring, and adaptive management plan for this pilot area.

Program	Commitment	Activity
	Monitor water quality in selected streams to study the impact of land use on watershed health (e.g., Community Watershed Monitoring).	Completed the 12 th year of surface water quality sampling with the RDN Community Watershed Monitoring Network . This includes 15 trained stewardship groups in over 26 watersheds.
	Implement the Water Conservation Plan.	<p>Implemented the Regional District of Nanaimo Water Service Areas Water Conservation Plan (2020-2030) by:</p> <ul style="list-style-type: none"> ▪ Enhancing water awareness through Team WaterSmart outreach events, curriculum-connected school materials, workshops. ▪ Encouraging sustainable practices through rebate programs. ▪ Coordinating with Water Service Providers to communicate regional watering restrictions.
	Continue to provide water education, incentive programs and watershed monitoring partnerships.	<ul style="list-style-type: none"> ▪ Provided over 130 rebates to residents for rainwater harvesting; wellhead upgrades; well water testing; and irrigation and soil improvements. ▪ Offered in-person and virtual workshops and activities to engage the community in water stewardship education: <ul style="list-style-type: none"> ○ Water to Earth Month events and activities ○ 1 WellSmart webinar ○ A Community Watershed Monitoring network stewardship appreciation and recruitment event attended by volunteers from across the region ○ Delivered curriculum connected School Modules for Freshwater Stewardship with educators in SD68 & SD69 ○ DWWP Educational Videos in partnership with Nanaimo Area Land Trust. ▪ Completed the 9th year of groundwater monitoring via the RDN Volunteer Observation Well Network which includes 30 wells and completed the third year of a Pre-Summer Regional Groundwater Analysis report shared with residents, water purveyors, and provincial partners.

Program	Commitment	Activity
Pollution Control Centres	Explore federal and provincial grant options to fund secondary treatment	Applied to the Investing in Canada Infrastructure Program (Rural and Northern Communities) for grant funding for the NBPCC sewer upgrades in 2021.
	Revise DCC bylaws at GNPCC, NBPCC, and FCPC.	DCC Bylaw review underway for GNPCC and FCPC.
	Other	Continued to inform residents of major projects through the RDN website .
Biosolids	Other	Beneficially managed 7,188 tonnes of biosolids in 2022.

3.1 Meetings

3.1.1 LWMP Monitoring Committee

In 2022, LWMP Monitoring Committee meetings were held on March 3 and May 26. Recent meeting agendas and minutes are available at rdn.bc.ca/agendas-minutes-videos.

3.1.2 W3C

The RDN hosts Wastewater and Water Collaborative (W3C) meetings twice a year to meet with staff from the City of Nanaimo, District of Lantzville, City of Parksville and Town of Qualicum Beach to advance regional programs and policies related to the LWMP. In 2022, W3C meetings were held on April 27 and October 4. A W3C Working Group also met on June 23, 2022 to participate in an inflow and infiltration workshop.

3.1.3 Regional Strategy for Rainwater Management

In 2022, Water Services hosted Rainwater Working Group meetings on March 11, May 27, and November 22 to advance the Regional Strategy for Rainwater Management.

4) Emerging Issues

The LWMP recognizes that new issues may emerge from innovations in water quality monitoring and from an evolving regulatory environment. The LWMP commits to keeping informed on the emerging issues listed below.

- Shellfish Harvesting Areas
- Contaminants of Emerging Concern
- Heritage Resources
- Climate Change
- Non-point Sources of Pollution.

4.1 Shellfish Harvesting Areas

The RDN participated in the Pacific Region Interdepartmental Shellfish Committee Oyster Norovirus Mitigation Working Group in 2022. This group focused on understanding sources of pollution and ways to protect water quality and shellfish safety in Baynes Sound.

4.1.1 Conditional Management Plan

- The Canadian Shellfish Sanitation Program (CSSP) is a federal food safety program, jointly administered by the Canadian Food Inspection Agency, Environment Canada, and Fisheries and Oceans Canada. The program provides assurance that bivalve molluscan shellfish (i.e., mussels, oysters, and clams) meet food safety and quality standards for both domestic and international markets, thereby protecting the public from the health risks of consuming contaminated shellfish.
- Under the CSSP, Conditional Management Plans may be developed to allow shellfish harvesting in areas in proximity to wastewater infrastructure. These areas meet the standards for safe harvest of shellfish, except when a temporary source of pollution exists. As long as the pollution source is not present, the Conditional Management Plan allows the shellfish harvesting area to remain open.
- FCPC currently operates with a Conditional Management Plan for two pump stations that have bypasses. The bypasses are designed to allow untreated wastewater to discharge to the marine environment if the volume of wastewater entering the interceptor exceeds the capacity of the pump station. Bypasses prevent damage to infrastructure and reduce the risk of flooding private residences. These bypasses have been in place since the system was built in the 1970's and during this time there has been no reported need to bypass the flow. Furthermore, pump redundancy, back-up power, and a Supervisory Control and Data Acquisition System make it unlikely that an overflow would occur at these locations. RDN's Conditional Management Plan outlines the roles and responsibilities of each partner, as if a discharge of untreated wastewater occurs from the pump station bypasses. The FCPC Conditional Management Plan has been in effect since 2015.

4.2 Contaminants of Emerging Concern

Contaminants of emerging concern, sometime called emerging contaminants, refer to a variety of pharmaceuticals, personal care products, and industrial contaminants. Many contaminants of emerging concern lack established methods for sample collection and testing. Similarly, Provincial or Federal standards for acceptable levels are not present for many of these contaminants.

Most of the contaminants in wastewater come from private residences and businesses. For that reason, the RDN will continue to improve the quality of effluent through strategic investments in critical infrastructure as well as by promoting the Source Control Program and Sewer Use Regulatory Bylaw.

To better understand contaminants of emerging concern in RDN wastewater:

- In 2018, the RDN hired a consultant to prepare a memo on contaminants of emerging concern and microplastics. The memo was included in that year's annual report.
- In 2020, the RDN initiated a study to investigate contaminants of emerging concern in wastewater at GNPCC and FCPC. Samples were collected and analyzed in 2020 and 2021. Study results were presented at the [October 26, 2021, Regular Board Meeting](#).

- In 2022, the RDN continued to monitor select contaminants of emerging concern to build upon the study initiated in 2020.

4.3 Heritage Resources

The Province of BC protects heritage sites through the *Heritage Conservation Act*. This protection applies to both private and Crown land and a provincial heritage permit is required before altering or developing a heritage site. Before 2019, the RDN determined archaeological potential as warranted for each project. Since 2019, RDN Wastewater Services has held Blanket Permits/Multi-assessment Permits from the Archaeology Branch. The RDN also obtains site-specific permits when appropriate.

4.4 Climate Change

4.4.1 Sea Level Rise Adaptation

The RDN is preparing for sea level rise through the Sea Level Rise Adaptation Program. Progress is as listed below. More information is available at: rdn.bc.ca/sea-level-rise-adaptation-program.

- 2015: Terms of Reference completed
- 2017: the RDN acquired the LIDAR data (with a \$10,000 contribution from Wastewater Services)
- 2017: the RDN was awarded a \$150,000 grant to acquire coastal floodplain mapping
- 2018: Updated the Floodplain Management Bylaw No. 1496
- 2018-2019: Coastal flood hazard mapping
- 2020: Coastal flood hazard information was released
- 2021: Coastal flood hazard information revised.

4.4.2 Bay Avenue Pump Station Replacement

The Bay Avenue Pump Station conveys about 85% of the City of Parksville's wastewater to FCPCC. A pump station replacement was underway in 2021 and 2022. This project was designed to move critical electrical and controls equipment above the year 2100 floods levels, including wave run-up and free board. Before the replacement this critical equipment was located below the recommended safe design elevation.

4.5 Non-Point Sources of Pollution

Non-point sources of pollution come from sources other than an outfall pipe. Some examples of non-point pollution include agricultural and stormwater runoff, onsite sewage systems, and discharges from vessels.

- The LWMP Private Onsite Systems Program addresses pollution from onsite sewage systems.
- The RDN also has agreements with BC Ferries and Seaspan to establish a pump ashore program at GNPCC and DPPCC to accept and treat the wastewater produced on the vessels.

5) LWMP Refinements

The Liquid Waste Management Plan states that the LWMP Monitoring Committee may recommend refinements to the plan to keep implementation on track with the overall objectives and targets without an amendment or update. Annual review and refinement provide the flexibility to sustainably manage

wastewater and adapt to changes. No additional refinements were made in 2022. However, refinements to the LWMP in previous years are summarized below. Future changes may be implemented through a LWMP Amendment.

5.1 Public Wastewater Systems

The LWMP identifies an action to draft a bylaw to allow properties with failing onsite systems to connect to sewer services, where available. Implementation of such a bylaw requires the modification of several bylaws, some which are not implemented by Wastewater Services. Instead of a bylaw, the RDN will continue to assess properties case by case.

The LWMP identifies an action to develop a webpage to inform the public of historic sewer servicing studies and of the criteria for the provision of future sewer services. Historic sewer servicing studies are available upon request since they lose their relevancy over time. A guide that walks homeowners through the sewer connection application process is posted on the [RDN website](#).

5.2 Private Onsite Systems

The LWMP identifies an action item to:

- Review and revise the Pump & Haul Local Service Establishment Bylaw (No. 975) and the Sewage Disposal Regulation Bylaw (No. 1224) so only grandfathered properties and properties with failed onsite systems qualify for the septage receiving rate reduction, and
- Work with Island Health and Building Inspection Services to limit holding tanks on new developments.

Holding tanks are permitted by Island Health; the authority to limit pump and haul tanks lies with the Province of BC. When addressing the action items above, it became clear that the role of Wastewater Services is to set quality standards and establish a rate structure for wastewater treatment. To this extent, in 2017, the RDN repealed Bylaws No. 975, 988, 1217, and 1224 and replaced them with Bylaw No. 1732. Bylaw No. 1732 establishes the quality criteria and rate structure for wastewater treatment. Key points are summarized in Appendix C of the 2016 LWMP Annual Report. RDN Wastewater Services will work with Island Health if there are efforts led by that agency to limit holding tanks.

The LWMP identifies an action item to work with Development Services to adopt draft changes to Land Use and Subdivision Bylaw (No. 500) which would enable the RDN to acquire privately-owned onsite systems serving at least 60 parcels, if petitioned. To date, RDN has not received a petition, so bylaw changes are not justified. The RDN will continue to assess a petition on a on a case-by-case basis.

5.3 Pollution Control Centres

The LWMP says that the RDN will expand and provide secondary treatment at GNPCC by 2018. Construction of the Secondary Treatment Upgrade Project was underway in 2018. GNPCC began providing secondary treatment in 2020.

This program supports working with RDN Development Services through the OCP review process to identify property owners in growth containment boundaries in Nanoose Bay who are interested in establishing public wastewater services. Since the OCP review schedule is determined by Development services, and an OCP is seldom reviewed, it is recommended to remove this item during future LWMP amendment and manage this initiative as part of routine interdepartmental collaboration.



6) LWMP Review and Amendment

In 2021, the RDN initiated an LWMP amendment. Since then, the RDN has advanced the LWMP Amendment with the following actions:

- **October 28, 2021:** LWMP Monitoring Committee Meeting to introduce the LWMP Amendment, the Terms of Reference, and the Communication and Engagement Plan.
- **November 2, 2021:** Submitted LWMP Amendment Terms of Reference to the Ministry of Environment and Climate Change Strategy.
- **November 30, 2021:** Met with ENV staff to discuss Wastewater Capital Projects and the LWMP Amendment.
- **December 7, 2021:** Received Board approval of the LWMP Amendment Communication and Engagement Plan.
- **December 9, 2021:** Launched the [Public Engagement Website for the LWMP Amendment](#)
- **December 21, 2021:** Mailed letters to First Nations organizations introducing the LWMP and the intentions for the amendment.
- **February 2, 2022:** the Board passed Motion 22-124 to seek an amendment to the LWMP to change the timeline for NBPCC secondary treatment upgrade to prioritize critical sewer upgrades in the same service area.
- **April 26, 2022:** Presented an Introduction to the Liquid Waste Management Plan Amendment to Snuneymuxw First Nations staff.
- **May 13, 2022:** Added a [video to the RDN website introducing the LWMP](#).
- **August 2022:** Added an Introduction to Wastewater Services and the Liquid Waste Management Plan to the LWMP Amendment website.

Progress on the LWMP Amendment will continue in 2023.



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