

# Core Area

# Liquid Waste Management Plan



Making a difference...together

## Capital Regional District | 2014 Annual Programs Report



View of the Inner Harbour.

The Capital Regional District (CRD), on behalf of the core area participants - Colwood, Esquimalt, Esquimalt First Nation, Langford, Oak Bay, Saanich, Songhees Nation, Victoria and View Royal - manages wastewater and stormwater according to strategies and activities outlined in the Core Area Liquid Waste Management Plan (LWMP). The LWMP is a 25-year plan, under the *Environmental Management Act*, that was originally approved by the B.C. Ministry of Environment (MOE) on March 26, 2003 and most recently amended (Amendment #9) in July 2014.

CRD liquid waste management involves the operation, maintenance, replacement and expansion of wastewater infrastructure, as well as various other activities that have regulatory reporting requirements and commitments to support, inform and educate stakeholders about liquid waste and environmental protection. There are 9 LWMP activities:

1. **Operations, maintenance and capital planning;**
2. **Wastewater and marine environment monitoring;**
3. **Source control;**
4. **Harbours environmental action;**
5. **Stormwater quality;**
6. **Inflow & infiltration management;**
7. **Trucked liquid waste management;**
8. **Onsite wastewater management; and**
9. **Sewage treatment planning**

This overview document provides a summary of 2014 activities, 2015-2016 directions and describes the general scope and integration of the LWMP activities listed above. In addition, this document summarizes the activities undertaken to meet federal wastewater management requirements under the Wastewater Systems Effluent Regulations.

Look for these icons throughout the document for section headings in the 9 program areas:



**Monitoring & Evaluation**



**Outreach & Education**



**Key Initiatives & Accomplishments**



**Looking Ahead**

# Operations, Maintenance & Capital Planning

The CRD is responsible for the operation and maintenance of the core area wastewater system, including wastewater collection from municipal systems, and conveyance, screening and disposal through CRD trunk systems and ocean outfalls. The core budget for this service is approximately \$4.2 million per year with significant capital project expenditures being funded through supplementary budgets.

The core area conveyance system is primarily comprised of four trunk sewer systems: the North West Trunk, the North East Trunk (Clover), the North East Trunk (Bowker) and the East Coast Interceptor.

The 2 North East trunks and the East Coast Interceptor collect wastewater from Victoria, Saanich, Oak Bay and Esquimalt, while the North West Trunk collects wastewater from Colwood, Langford, View Royal and local First Nations. They converge at Clover Point and Macaulay Point pump stations where the wastewater is fine screened and pumped into the Juan de Fuca Strait 1.1 km and 1.7 km off shore, respectively. Screenings are disposed of at Hartland Landfill.

Provincial legislation requires the trunk sewer systems to be classified by the Environmental Operators Certification Program and that appropriate levels of certification are maintained by operations staff. Core area operations staff include Utility Operators that are certified through the program and the B.C. Water and Waste Association, and certified trades staff including millwrights, machinists, electricians, electrical technicians, diesel mechanics and welders.

Operations staff monitor and respond to conveyance system activities and alarms through a Supervisory Control and Data Acquisition (SCADA) system that continually monitors and controls the equipment within the CRD's wastewater facilities. Staff can login to the SCADA system remotely to monitor and control system functions as required, including wetwell levels, pump operation, pump temperature, pump vibration, pump efficiency, heating, ventilation and air conditioning systems, odour control systems, standby generators, screening systems and security systems.



## Monitoring & Evaluation

As previously mentioned, the SCADA system provides electronic monitoring of the sewage infrastructure. Monitoring of wastewater quality and marine outfall effects is undertaken by the Wastewater and Marine Environment Program. More information about this monitoring will be presented in a later section of this brochure.

- Total 2014 discharge volumes (approx):
  - Clover - 16,650,000 m<sup>3</sup>
  - Macaulay - 15,240,000 m<sup>3</sup>
- Total 2014 screening tonnage to Hartland landfill (approx):
  - Clover - 59,600 tn
  - Macaulay - 48,400 tn
- Number of 2014 marine (shoreline) system overflows: 29
- Number of 2014 system odour complaints: 5



Pump inspection at the Marigold pump station.



Pump base replacement at the Currie Minor pump station.

## Key Initiatives & Accomplishments

- Inspection and repair of both the Macaulay and Clover points outfalls. Work included deep-sea inspection, cleaning diffusers and flushing the Macaulay Point outfall.
- Replacement of the Currie Minor pump station #1 and #2 pump bases. This was a significant project because the pump station had to be bypassed through the Oak Bay sewer system back into Currie Major pump station.
- Repair of a corroded section of large diameter (915 mm - 36") steel pipe downstream of the Macaulay Point wetwell pumps. This project was significant because it required an overnight short-outfall bypass so that the corroded section could be isolated.
- Change out of odour control carbon at the Clover Point pump station. The carbon was spent and outside odours were becoming a public nuisance issue.
- Provision of input to contractors constructing the new Craigflower pump station.
- Completion of approximately 95% of preventative maintenance work orders planned for the year.

## Looking Ahead

In 2015-2016, staff plan to:

- Commission the new Craigflower pump station.
- Prepare and implement a new wastewater overflow and spill response plan, in cooperation with Island Health.
- Finish preparing and initiate implementation of the SCADA Master Plan Phase II (Equipment Replacement Strategy).
- Replace Currie Minor pump bases #3 and #4.
- Replace SCADA servers and update ClearSCADA software.
- Replace Macaulay Point odour control carbon.
- Replace a damaged large diameter plug valve on the Macaulay Point pump floor.

# Wastewater & Marine Environment Monitoring

The two core area wastewater outfalls (Clover and Macaulay points) are regulated by the Ministry of Environment (MOE) through permits that specify wastewater quality and flow volume limits, and through marine monitoring commitments made in the LWMP. The outfalls are also subject to wastewater quality monitoring requirements under the federal Wastewater Systems Effluent Regulations.

Outfall monitoring is undertaken by the Wastewater and Marine Environment Program (WMEP). The current monitoring program is a 5-year monitoring cycle, with 2014 representing the fourth year. The program had a 2014 budget of approximately \$1.2 million (included in the \$4.2 million core area sewer system operating budget) and had the following objectives:

- Monitor and assess wastewater quality and quantity.
- Provide compliance monitoring results to regulatory agencies.
- Monitor and assess the potential effects of wastewater discharges to the marine environment.
- Monitor and assess the potential effects of wastewater discharges to human health.
- Provide information to the CRD Regional Source Control Program.
- Provide information to wastewater managers regarding treatment plant and outfall diffuser performance.
- Provide scientific assessment to the general public regarding the use of the marine environment for the disposal of wastewater.



## Monitoring & Evaluation

### Wastewater Monitoring

The 2014 wastewater monitoring consisted of provincial and federal regulatory compliance monitoring, a comprehensive assessment of contaminants and toxicity testing. Results were consistent with previous years. Wastewater from both

outfalls met the regulatory requirements for MOE permits, but not federal regulatory limits. Transitional Authorizations from the federal government allow the CRD to discharge non-compliant effluent until December 31, 2020.

Wastewater toxicity test results were also similar to previous years in that undiluted wastewater, before discharge from both outfalls, was toxic to fish and invertebrates. However, toxicity was only observed in wastewater concentrations well above those expected to occur in the ocean around the outfalls. Toxicity was not predicted to occur farther than 100 metres away from the outfalls. Installation of further treatment for the core area system will reduce effluent toxicity in the future.

### Surface Water & Water Column Monitoring

The majority of surface water results were within water quality guidelines set to protect human health. Only 3 exceedences, which were slightly higher than the provincial guidelines but within Health Canada guidelines, occurred during the winter sampling period.

The deeper water column sampling results confirmed that the wastewater plumes were trapped at depth. Results from deeper depths routinely exceeded human health guidelines at 100 metres away from the outfalls, indicating a greater human health risk for activities, such as SCUBA diving, near the outfalls. These exceedences were expected due to the intended design of the outfall diffusers and the high concentrations of bacteria in the wastewaters. Cadmium and zinc also occasionally exceeded the guidelines for the protection of aquatic life at depth, but observations were based on infrequent sampling and should be interpreted with caution.

Overall, near the outfalls, human health risk and potential for impacts to aquatic life were low at the surface and slightly higher at depth.

The CRD continued to collaborate with Ocean Networks Canada to assess oxygen levels in the waters around the Macaulay outfall. Results will be used to determine how oxygen levels near the outfall compare to levels elsewhere in the Salish Sea and the north east Pacific Ocean.

## Seafloor Monitoring

Seafloor monitoring consisted of sediment and pore-water chemistry, sediment toxicity, benthic invertebrate bioaccumulation and benthic community structure assessments around the Macaulay Point outfall. Sediment chemistry results were generally consistent with previous years with only a small proportion of the results exceeding applicable sediment quality guidelines. Most exceedences occurred within 100 metres of the outfall and none occurred farther than 400 metres away. The remaining 2014 seafloor data is still under assessment.

The CRD collaborated with two Vancouver Aquarium based programs: PollutionWatch, a program measuring seafloor contaminants over the long-term throughout the entire Salish Sea; and the Salish Sea Ambient Monitoring Exchange, a program to encourage consistency in sampling methodology and collaboration on Salish Sea research.

## Key Initiatives & Accomplishments

- Met all 2014 sampling and reporting requirements.
- Developed research collaborations with the Vancouver Aquarium.



Collecting surface water bacteriology samples at Clover Point.



## Looking Ahead

In 2015-2016, program plans are to:

- Continue routine wastewater and surface water/water column sampling.
- Undertake seafloor monitoring around Clover Point (sediment chemistry, mussel assessments) and a finfish survey around both outfalls.
- Initiate an integrated assessment of the 2012 and 2014 Macaulay Point seafloor results.
- Participate as an industrial sponsor for a University of Victoria student who will evaluate the Ocean Networks Canada collaboration results.
- Continue support of the two Vancouver Aquarium programs.
- Review the need for other additional investigations.



Source control inspector checking monitoring device.

## Source Control

The Regional Source Control Program (RSCP) protects core area sewage collection and treatment facilities, public health and safety, and the marine receiving environment by reducing the amount of contaminants that industries, businesses, institutions and households discharge into the district's sanitary sewer systems. The 2014 budget for this work in the core area was \$1.29 million.

The CRD adopted a Sewer Use Bylaw in 1994 to regulate sanitary sewer discharges. The CRD meets or exceeds Canadian best practices for source control and is a nationally recognized leader in this field. The program continues to play an important role in achieving significant wastewater contaminant reductions and protecting sewage facilities throughout the region. Source control is widely accepted as a cost-effective, essential first step in sewage treatment.



## Monitoring & Evaluation

Discharges from larger industrial and institutional facilities in the region are regulated through permits or authorizations. Compliance rates for these facilities remained high in 2014.

The program regulates discharges from smaller businesses using 11 Codes of Practice (COP) and each year it targets specific sectors for full reviews based on associated effluent risks, sector size and state of current data.

In 2014, a total of 964 inspections were conducted in automotive repair, vehicle wash, carpet cleaning, laboratory, photographic imaging and food services operations. This number included repeat site visits to facilities found to be non-compliant on the first visit. At the end of 2014, 91% of COP facilities were fully compliant with bylaw requirements.

Monitoring conducted by staff confirmed compliance at all permitted facilities, provided data for evaluation of carpet cleaning and fermentation treatment works, and assessment of residential and industrial wastewater contaminant loads.



## Outreach & Education

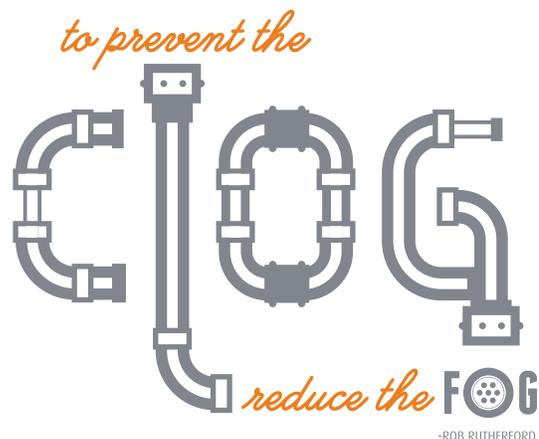
Outreach and education efforts focused on developing and delivering integrated messaging with other CRD programs including:

- Delivery of 2 new “Green 365” campaigns: “In the Kitchen” and “Spring Cleaning”.
- Continued support and resource development for high school educators and students, including the Shaw Ocean Discovery Centre Spring Break Workshops (over 900 participants), two new resource packages developed for students training in food services and automotive repair (including videos, maps, lessons and activities), and continued funding for “My Green School Plan” to promote sustainable behaviour changes.
- Continued work with the BC Pharmacy Association and the Health Products Stewardship Association in developing “point-of-sale” tools including providing shelf signs and flyers to 65 pharmacies promoting proper waste medication disposal for residents. Nearly 12 tonnes of medications were returned in the CRD in 2014, representing the second highest volume of medications collected in the province.
- A residential survey to gauge attitudes, practices and barriers regarding source control behaviours.
- A new Slogan Master campaign to promote the proper disposal of fats, oils and grease (FOG) to multi-unit residential buildings; the winning slogan was “To prevent the clog, reduce the FOG”.



## Key Initiatives & Accomplishments

- Development of regulatory and non-regulatory inspection and outreach tools, with assistance from City of Victoria staff, specific to stormwater inspections that can be applied across the region to protect against stormwater contamination.
- Completion of a thesis regarding partitioning of pharmaceuticals and personal care products in wastewater by a staff member as part of a Royal Roads University Master of Science degree.
- Compilation of sewer infrastructure layers within the program’s compliance tracking database to allow improved assessment of contaminant sources and faster response to significant incidents such as spills.



## Looking Ahead

In 2015-2016, program plans are to:

- Complete a 5-year review of the program (2009-2013), a commitment in the Liquid Waste Management Plan.
- Develop a new 4-year implementation plan (2016-2019) for approval by the Board.
- Conduct COP inspections, monitoring and sector investigations for the automotive repair, vehicle wash, food services, dry cleaning and printing sectors.
- Further develop the division’s “one window approach” to customer service for businesses.
- Develop a business case to review new maintenance and compliance tracking software, in partnership with industry.



Aerial view of Esquimalt Lagoon.

## Harbours Environmental Action

The Harbours Environmental Action Program coordinates environmental protection and improvement efforts in Victoria and Esquimalt Harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon to achieve the following LWMP goals:

- Advocate environmental protection
- Decrease contaminant inputs
- Protect and enhance habitat quality
- Set environmental quality objectives
- Achieve environmentally protective land uses
- Monitor environmental quality

The program implements these commitments in collaboration with community groups, municipal partners, First Nations and other agencies through environmental projects and collaborative, multi-stakeholder harbour initiatives. The 2014 budget for this work was approximately \$280,000.



## Monitoring & Evaluation

### Review of Land & Water Use Applications

CRD staff work closely with municipal staff to provide ecological information on the harbour areas, as requested. The Esquimalt Lagoon Stewardship Initiative and the Gorge Waterway Initiative are designated as referral agencies for major developments happening along the waterway. These groups reviewed and provided comment on several major land use items in 2014, including:

- City of Colwood revisions to their Official Community Plan.
- Neighbourhood plans and development applications for three large developments adjacent to Esquimalt Lagoon.
- Craigflower Bridge design, including some oyster monitoring and the development of interpretive signs for the bridge.
- City of Victoria zoning bylaw for Gorge Waterway Park to create an ecological zone and eliminate the proliferation of anchored boats near the Selkirk Trestle.

## Harbour Water Quality Objectives

Staff continued to work in partnership with MOE to establish water quality objectives specific to the five unique harbours in the CRD's core area. Over the past 3 years, intensive water quality data from 28 marine water sampling locations and 7 creeks draining into the harbours, along with extensive land use data for the creek watersheds, has been interpreted by MOE and resulted in the development of preliminary guidelines. Continuous flow monitoring was also conducted in Colquitz, Colwood, Cecelia and Hospital creeks to support further guideline development and to monitor hydrological changes over time.



## Outreach & Education

### Multi-Stakeholder Initiatives

Staff provide support to and coordinate multi-stakeholder initiatives, such as the GWI and the ELSI. These initiatives create opportunities for collaboration on environmental projects and outreach activities, and provide a forum for the sharing of information between partners. Staff also participate on Department of National Defence's multi-stakeholder Esquimalt Harbour Advisory Committee.

### Restoration Activities

Staff coordinate and support volunteer efforts at several habitat restoration projects around the harbours. In 2014, Camosun College Environmental Studies staff and students propagated approximately 350 dune grass plants that they then planted at two locations on Coburg Peninsula as part of an ELSI Dune Restoration project.

The GWI completed a major shoreline restoration project at Point Ellice House, which resulted in the removal of more than 28 tonnes of invasive English Ivy and the planting of more than 1,000 trees and shrubs to restore the area. Hundreds of volunteer hours have contributed to habitat restoration in the harbours.

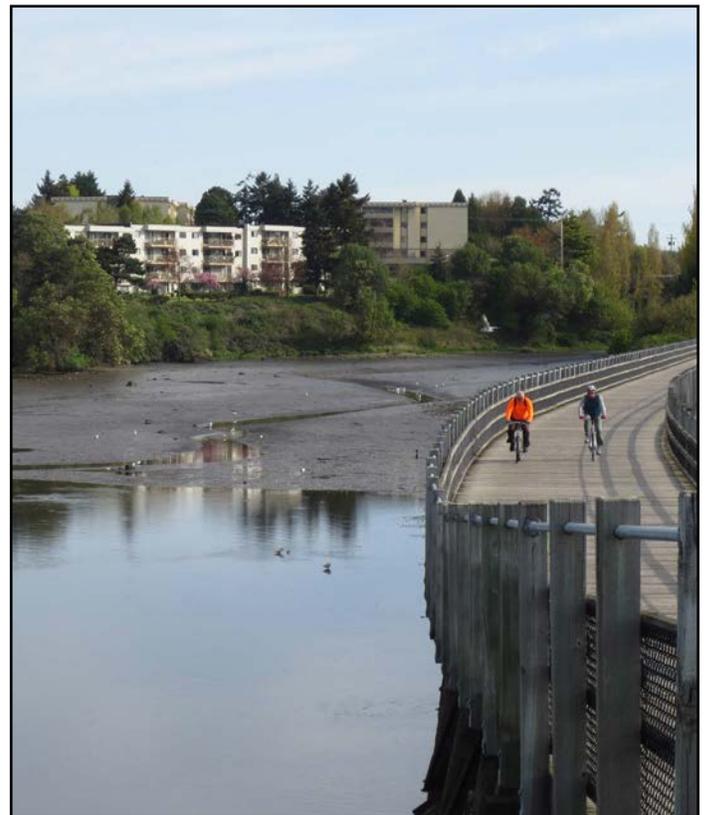
### Community Events

Every year, staff and volunteers attend community events and celebrations, sponsor free public talks and participate in a variety of outreach and education events. In 2014, the program was represented at 10 community events.



## Key Initiatives & Accomplishments

- Consulted with municipal staff about the implications of the harbour water quality objectives.
- Compiled the results and analyzed the data from the Harbour Survey initiated in 2013 (740 responses). The results were presented to the harbour municipalities and several other harbour and community groups.



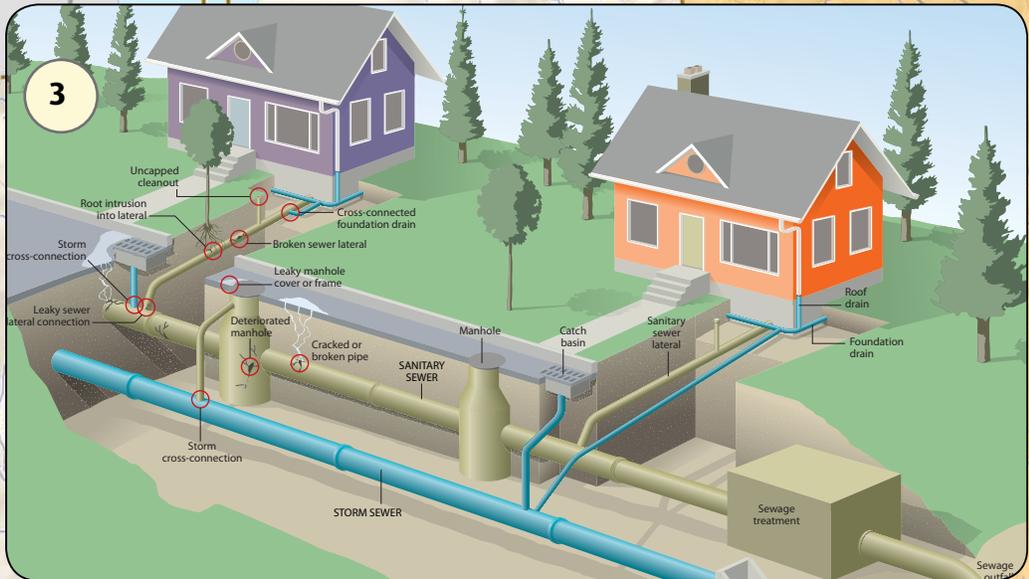
Cyclists on the Selkirk Trestle along the Gorge Waterway.



### Looking Ahead

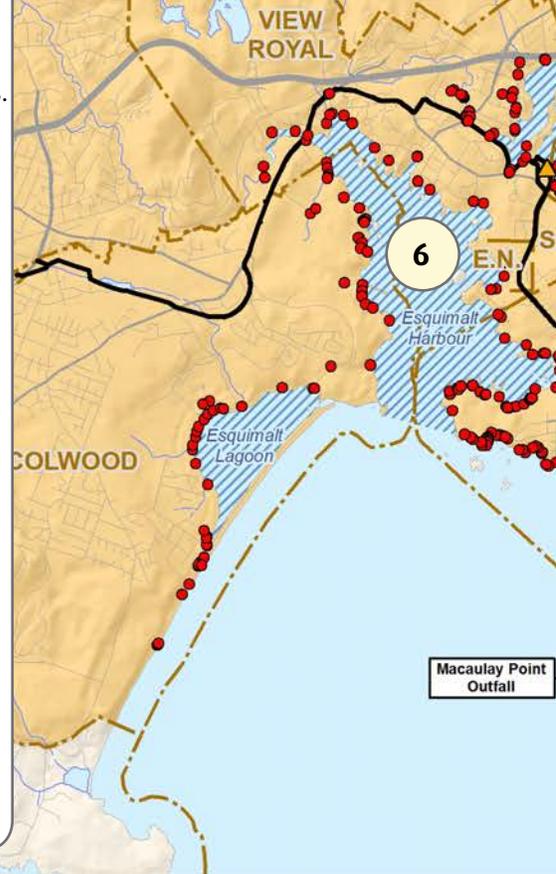
In 2015-2016, program plans are to:

- Facilitate additional municipal and public consultation regarding the implementation of the site-specific harbour water quality objectives.
- Continue planning for an update of the harbour ecological inventory.



## Program Linkages

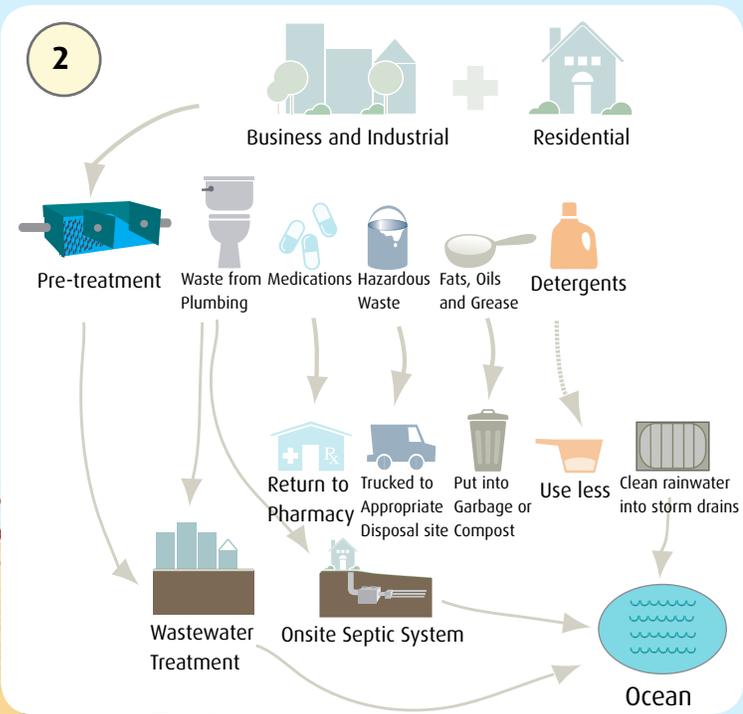
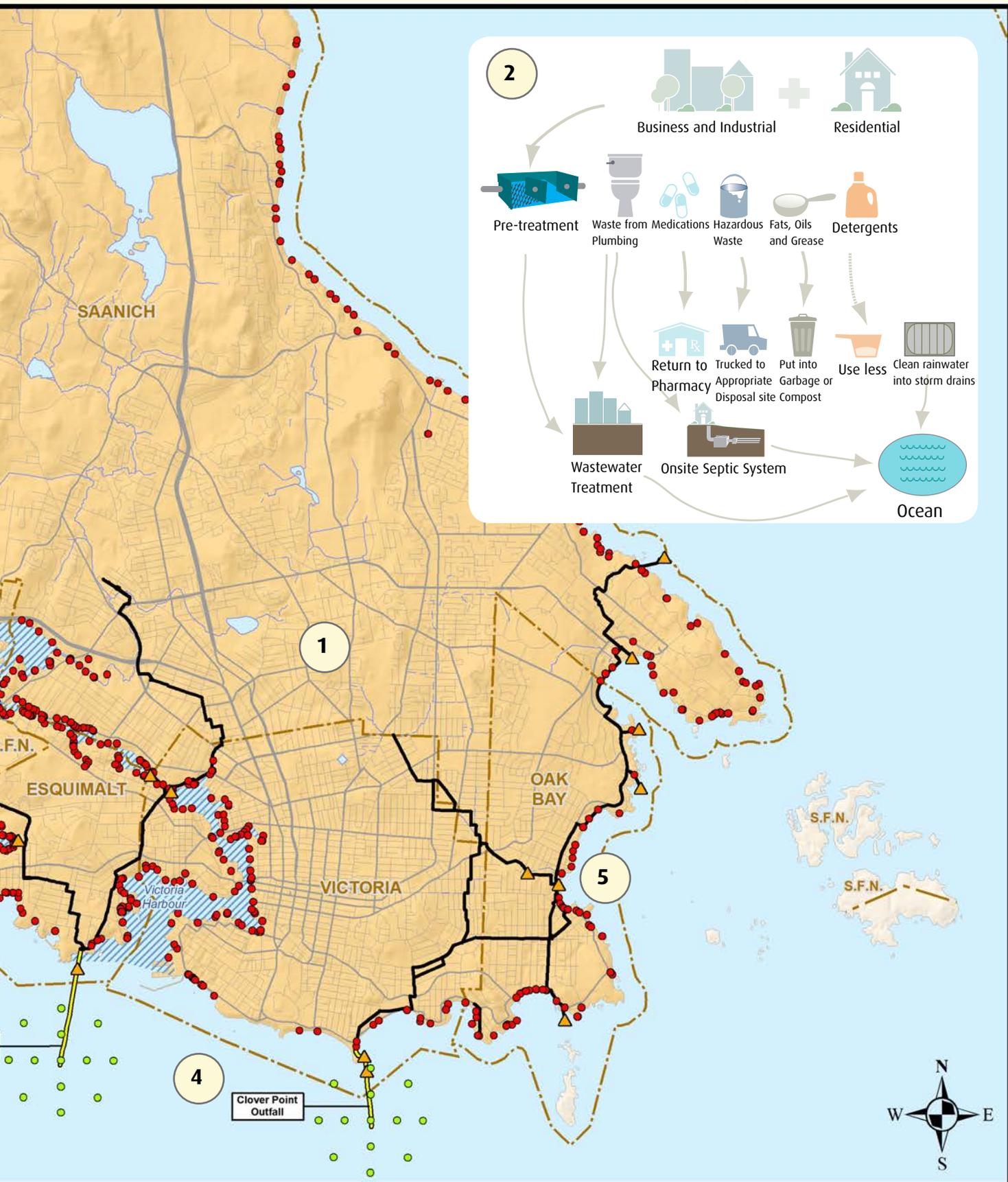
- 1 The CRD's Integrated Water Services operations staff work to operate, maintain and replace the core area trunk sewer, pump stations and outfalls.
- 2 The CRD's Regional Source Control, Trucked Liquid Waste and Onsite Wastewater Management programs all work together to ensure potential contaminants are properly disposed of and do not enter into the environment.
- 3 Inflow and infiltration issues occur throughout the core area. The CRD's Inflow & Infiltration Program works with stakeholders to reduce the amount of rain and groundwater entering the sanitary sewer system.
- 4 The CRD's Wastewater and Marine Environment Program monitors and assesses the impacts of wastewater discharged through the two core area outfalls.
- 5 The CRD's Stormwater Quality Program monitors and assesses the impacts of stormwater discharged at approximately 550 locations in the core area.
- 6 The CRD's Harbours Environmental Action Program coordinates environmental protection and improvement efforts in Victoria and Esquimalt harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon.



Projection: UTM ZONE 10N NAD 83

- Stormwater Sampling Station
- Outfall Sampling Station
- ▲ Sewer Overflow Discharge Point
- ▨ Harbour Area
- Trunk Sewer
- Sewer Outfall
- Streams
- Storm D
- Lakes

Important: This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.



- CRD Boundary
- Freeway/Highway
- Municipal Boundaries
- Major Collector
- LWMP Boundary
- Minor Collector
- Rain / Ditches

## CORE AREA LWMP PROGRAMS TO ASSESS IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT

# Stormwater Quality

The Stormwater Quality Program (SQP) plans, promotes and coordinates the management of stormwater quality in consultation with the municipalities, Department of National Defence and First Nations. The 2014 budget for the program was approximately \$660,000.



## Monitoring & Evaluation

### Stormwater Discharge Evaluations

The core area stormwater discharge survey covers the coastline between the Colwood-Metchosin border in the west and the Saanich-Central Saanich border in the east, including the major harbours.

### Public Health: Fecal Coliforms

There are approximately 550 stormwater discharges along the core area shoreline, between the Colwood-Metchosin border in the west and the Saanich-Central Saanich border in the east, including major harbours. Staff visit priority discharges at least twice a year and the program aims to sample all discharges within a 5-year cycle. The sampling data gathered is used to help partners prioritize infrastructure maintenance and evaluate potential human health risks along the shoreline.

The CRD analyzed 142 stormwater discharges for fecal coliform concentrations from samples collected once during the winter and once during the summer to represent seasonal differences. Thirty-six stormwater discharges were rated high for public health concern in 2014.

In 2007, the number of high-rated discharges increased to 41, prompting municipalities and the CRD to concentrate efforts on decreasing fecal coliform concentrations in these high-rated discharges. In 2014, only 22 of those discharges were still high-rated, a 46% reduction.

Joint efforts between participants and CRD staff have proven successful. Municipal efforts included relining sewer and stormwater pipes, and separating combined sewer/stormwater manholes. Efforts to identify contamination were successful as fecal coliform levels in many discharges previously rated high are now reduced. However, new sources continually appear, which highlights the need for staff to continue surveying all discharges on a 5-year cycle.

### Environment: Chemical Contaminants

The CRD also rates stormwater discharges for environmental concern based on the level of metals and organic contaminants measured in sediment collected within the stormwater collection system (i.e., pipes, manholes, ditches and creeks).

The CRD monitored 32 stormwater discharge catchment areas. Twelve of the discharges were assigned a high contaminant rating.

Sources of chemical contaminants in stormwater sediment can be complex to find and eliminate as sediment is not always available at upstream investigation sites, and the levels fluctuate with rainfall and as lines are cleaned out. Many non-point sources are from roadways, parking lots or transient point sources (e.g., spills) and can persist for a long time.

### Major Watercourse Monitoring

Staff assessed the health of 12 creeks, conducted additional water quality sampling in 3 of the creeks and an assessment of the health of invertebrate animals living in the creek sediment.

As in previous years, the creek water quality parameters of most concern were fecal coliforms, turbidity and phosphorus. This is consistent with what is seen throughout the region wherever there is increased human presence and agriculture. The fecal coliform shellfish harvesting guideline and draft Vancouver Island phosphorus objective were exceeded in all CRD creeks due to human and animal presence in these watersheds.

Overall, creek water quality was the same as last year: poor in Bowker, Cecelia, Douglas, Hospital and Noble creeks, moderate in Bee, Colwood, Millstream and Selleck and good in Craigflower, Colquitz and Goldstream.

### Nearshore Marine Monitoring

Staff undertook annual surface water fecal coliform sampling of Esquimalt Lagoon, Esquimalt and Victoria harbours and worked with MOE to develop preliminary site-specific harbour water quality objectives that will be used to monitor and manage these water bodies over time.

Staff also began intensive monitoring of the beach in Cadboro Bay as a result of persistent high bacterial levels.



## Outreach & Education

In mid-2013, the CRD received a \$75,000 grant from the Royal Bank of Canada’s Blue Water Program to develop educational material about watershed protection. Key grant deliverables include 22 land use watershed maps, 40 watershed flow diagrams, 7 short educational videos, a K-7 watershed school curriculum and the CRD Watershed Warden badge program, featuring Ollie the Otter.



Ollie the Otter, leader of the Watershed Wardens.



## Key Initiatives & Accomplishments

### Bowker Creek Initiative

The Bowker Creek Initiative (BCI) is chaired by the CRD and funded by Oak Bay, Saanich and Victoria. BCI has been active for 10 years and is proudly supported by the CRD. A key 2014 project was the restoration of Bowker Creek at Oak Bay High School. The group also promoted the application of the Bowker Creek Blueprint throughout the watershed, in part by providing municipalities with policies, procedures and tools to assist them in making Blueprint actions “business as usual”, as well as by working with partners to undertake restoration activities.

### Integrated Watershed Management

At 4 meetings with an inter-municipal group, staff worked alongside local government to: pursue effective and collaborative watershed management and stewardship; protect clean water; effectively manage flows; protect and enhance terrestrial, aquatic and near-shore marine habitats; and improve the resiliency and adaptive capacity of watersheds to a changing climate. Staff also participated in 4 learning and sharing workshops with other regional districts and hosted a fifth session on watershed health and assessment.

### CRD Webmap

The CRD Webmap and Harbours Atlas are comprehensive, web-based information tools available at: <http://crdatlas.ca> that provide information about the natural areas in the CRD.



### Looking Ahead

In 2015-2016, program plans are to:

- Undertake a detailed survey of bacterial levels in areas of high public use.
- Continue to investigate contaminant sources in the catchment areas of high-rated stormwater discharges.
- Work with MOE to complete site-specific water quality objectives for the harbours.
- Work with the Onsite Wastewater Management Program to determine if onsite septic systems have an impact on watercourses and the near-shore marine environment.
- Continue annual monitoring of priority creeks to assess creek health.
- Continue to produce educational material about watershed protection as part of the Royal Bank of Canada’s Blue Water Program.



Bowker relief sewer construction.

## Inflow & Infiltration Management

The core area Inflow and Infiltration (I&I) Program works with municipalities and First Nations to reduce the amount of rainwater and ground water that enters the sanitary sewer system. The 2014 budget for this work was \$380,000.

Inflow is rainwater that enters the sanitary sewer system through improper plumbing connections. Infiltration is groundwater that seeps into the sanitary sewer through cracks or loose joints in sewer pipes and manholes. Some I&I is unavoidable and is taken into account during sewer and treatment plant design; however, excessive amounts can result in the following problems:

- Overflows to creeks, ocean, and beaches, which can contaminate the environment and create public health concerns.
- Sewage back-ups into houses and buildings that can destroy belongings and require extensive clean-up and remediation.
- Increased operation and maintenance costs to convey and treat sewage flows.
- Reduction in available capacity in sewer systems requiring premature upgrades.

The I&I Management Plan (2012) contained a systematic approach for recommending work for 108 catchments in the core area. Based on I&I rates and pipe age, catchments are placed into 3 categories: routine monitoring; investigation work required; or rehabilitation planning required.



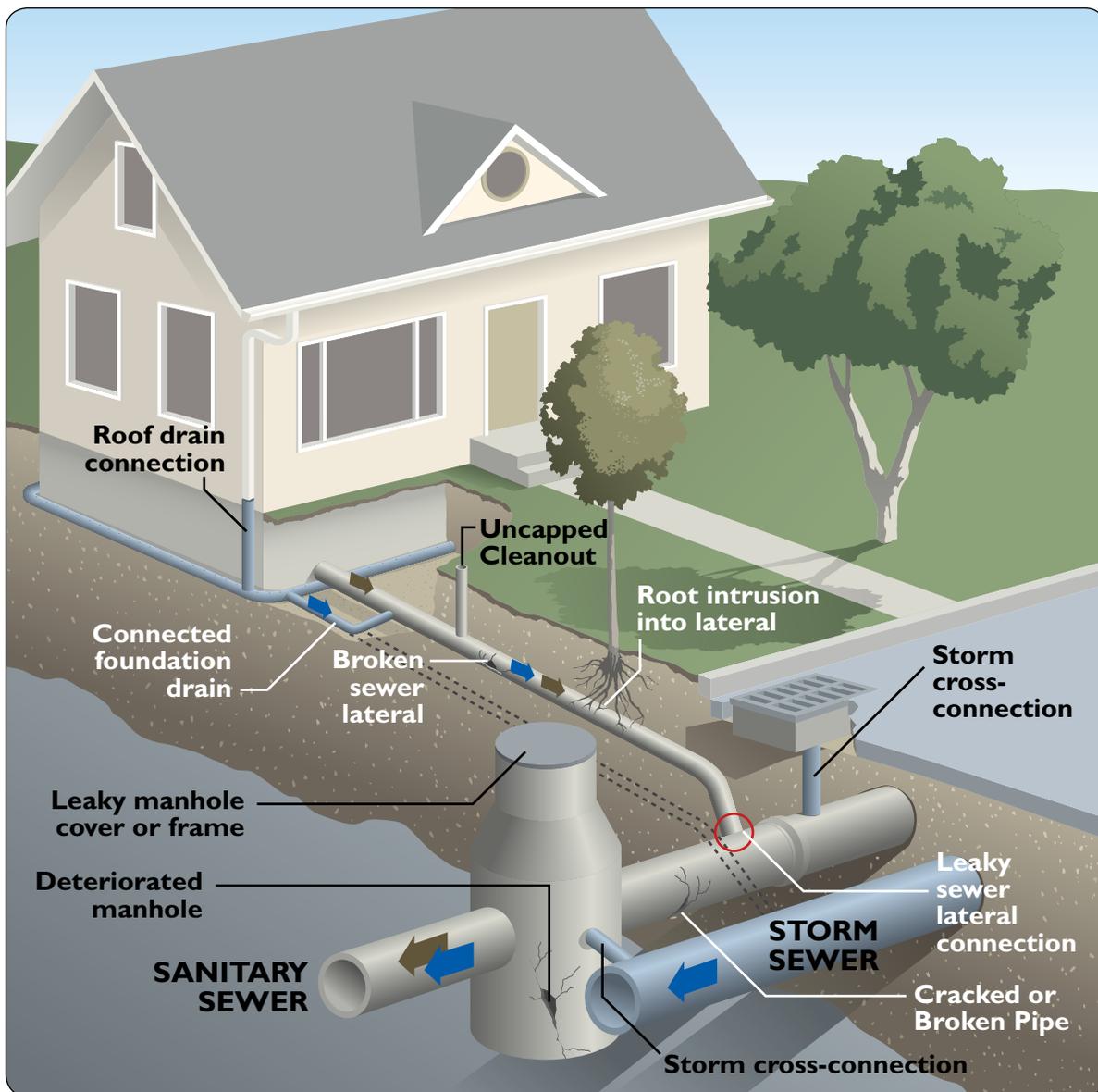
### Monitoring & Evaluation

The CRD analyzed flow monitoring data from 100 locations in the core area. This data was used to quantify inflow during two extreme, short duration, dry weather storm events.



### Outreach & Education

The I&I Program was represented at 17 public events as a part of the overall CRD Outreach program coordinated by CRD Environmental Partnerships.



Cross-section of a sanitary and storm sewer system.



## Key Initiatives & Accomplishments

- Preparation of an update on the Overflow Management Plan (2008) for submission to the Province.
- Development of a "sample" private property I&I model bylaw that regional municipalities can adapt and adopt.
- Commission a private property report documenting current I&I programs elsewhere in Canada, "drivers" for the programs, the regulatory requirements and challenges to implementation of private property I&I programs.



## Looking Ahead

In 2015-2016, program plans are to:

- Continue implementation of the I&I Management Plan.
- Update the regional approach for public education on private property I&I, promoting voluntary inspection and repair and maintenance of aging sewer connections.
- Move forward with development of regional and municipal private property I&I programs.



Typical roadside storm drain.

## Trucked Liquid Waste Management

The Trucked Liquid Waste (TLW) Program coordinates the collection and disposal of non-domestic liquid wastes that cannot be legally discharged to sewer or stormwater systems and must be transported by truck to an offsite disposal facility. Examples of TLW include catch basin, grease interceptor and oil/water separator wastes. The program's objective is to ensure that waste is handled and disposed of in an appropriate and responsible manner in order to protect public health and the environment. The 2014 program budget was approximately \$55,000 and the goals are:

- Ensure appropriate disposal by generators.
- Ensure proper and affordable disposal services are available for all waste.
- Promote appropriate government services.
- Build public support and awareness for the program.



## Monitoring & Evaluation

Staff annually review catch basin quantities disposed of at local disposal facilities and the 2014 assessment determined that overall quantities have declined in the last four years. However, the confirmation of trends in this data is confounded due to the existence of out-of-region disposal facilities, inconsistent catch basin maintenance intervals and variable catch basin sediment accumulation.

Staff maintain relevant information on the CRD website, including direction on proper management and disposal of wastes, catch basin facts, technical reports and tools for waste haulers, as well as a service provider directory. The majority of web visitors sought information about catch basin maintenance and servicing, which was the focus of the 2014 fall ad campaign, confirming that the campaign successfully directed traffic to the website and delivered consistent messaging.



## Outreach & Education

Staff coordinated a number of outreach initiatives specifically targeting waste generators and haulers. Outreach initiatives included:

- Implementation of the fall ad campaign, including advertisements and news articles in various forms of media.
- Development of a short video regarding catchbasin maintenance as part of a series of stormwater protection videos.
- Updating and reviewing the TLW Service Provider Directory.
- Tours of private facilities to increase knowledge of waste processing/disposal in the region and to foster positive working relationships with industry.



## Key Initiatives & Accomplishments

- Hosted annual stakeholder meeting in partnership with the Onsite Wastewater Management Program to promote CRD outreach programs, and to provide opportunity for stakeholders to raise current and emerging issues.
- Developed presentation summarizing program purpose and goals, planned outreach initiatives and studies, and linkages to other CRD services.



Storm drain cleanout with a vacuum truck.



## Looking Ahead

In 2015-2016, program plans are to:

- Promote catch basin clean out and expand the outreach network.
- Consult and collaborate with stakeholders through site visits, the annual fall meeting and the stakeholders group.
- Research best management practices for catch basin disposal throughout southern Vancouver Island.
- Maintain Trucked Liquid Waste website content and the Service Provider Directory.



Older style septic system distribution box.

## Onsite Wastewater Management

The Onsite Wastewater Management Program (OWMP) is a pollution prevention program for septic systems that aims to protect public health and safety, local surface and groundwater resources, and the environment. The program strives to reduce the number of malfunctioning onsite wastewater systems by promoting proper care and maintenance, and regulating pump out frequency. The program is the first of its kind in BC and the CRD is recognized as a leader in the field of septic management by other regional districts and municipalities. The program is authorized by the CRD's Onsite Sewage System Maintenance Bylaw (Bylaw No. 3479) and had a 2014 budget of approximately \$220,000.



## Monitoring & Evaluation

The program has established a robust database of residents with septic systems and, in cooperation with industry, has developed effective practices for monitoring compliance. Staff track 26,498 active onsite systems, 8,752 of which are regulated under Bylaw No. 3479, in the four participating municipalities of Colwood, Langford, Saanich and View Royal. In 2014, 82% of the regulated onsite systems were in compliance, as compared to 30% when the bylaw was implemented in 2008.



## Outreach & Education

Key components are education, outreach and engagement to encourage proper operation and maintenance of the region's privately-owned systems. In 2014, staff directly engaged with 535 people regarding septic system maintenance through participation at five Septic Savvy workshops and 18 information booths at public events. Since 2001, approximately 8,300 people have attended a workshop or engaged with CRD staff at public events.

An 8-week targeted communications campaign entitled "Be Septic Savvy this Summer" was conducted to highlight CRD resources and tools for homeowners with onsite treatment systems. The campaign included print media, social media and radio ads, in conjunction with enhancement of the program website. As a result, website visits more than doubled during the campaign and over 350 Household Information Kits were distributed. Overall, a total of over 5,500 unique visitors accessed the reconfigured website in 2014.

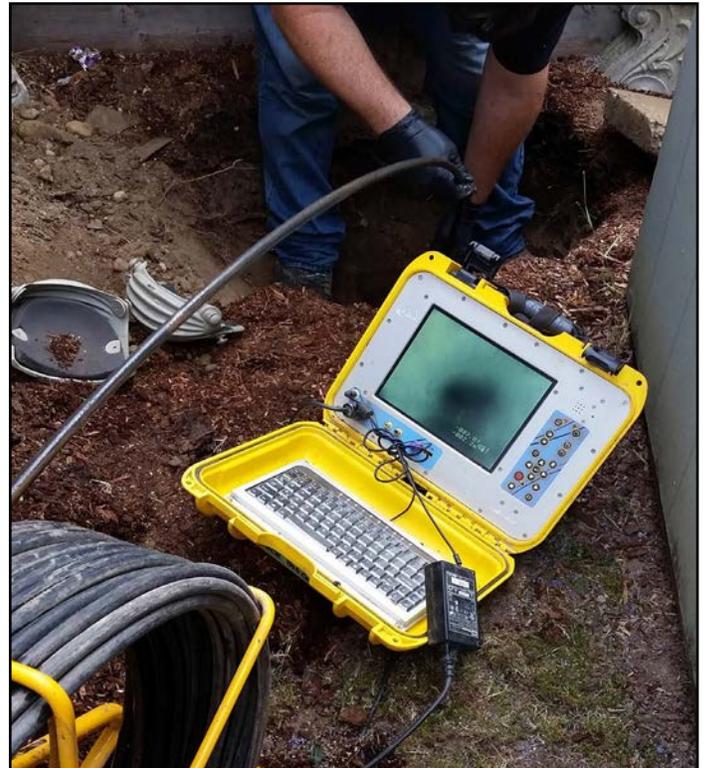
The program also promoted a Maintenance Assessment option that allows for a pump out frequency longer than the 5 years currently mandated under Bylaw 3479. To extend pump out frequency, systems must be individually inspected by an authorized professional and then a suitable pump out frequency for that specific system is determined. To date, there has been interest but no uptake of this option.



## Key Initiatives & Accomplishments

### Study of Industrial, Commercial and Institutional properties within Bylaw No. 3479

- Partnered with the Royal Roads University, Bachelor of Science Program to conduct a study of industrial, commercial and institutional (ICI) properties that have onsite wastewater treatment systems in the bylaw area. The study provided an inventory of all ICI facilities within the bylaw area, a survey of products used by ICI properties that have potential to be environmental and onsite system contaminants, a summary of applicable ICI best practices used elsewhere, a summary of existing ICI onsite system regulations in other jurisdictions, and recommendations on next steps. Report recommendations are currently under review.



Video inspection of a septic system drainfield.

## Cross Training and Collaboration

The Onsite Wastewater Management, Regional Source Control, Cross Connection Control and Demand Management programs are all delivered by the CRD's Environmental Partnerships Division. These programs have strongly integrated mandates, delivery structures and outcomes, and overlap with aspects of the TLW and SQP programs delivered by the CRD's Environmental Protection Division. These CRD programs work collaboratively to ensure that implementation results in strengthened environmental protection and consistent CRD messaging to program partners, industry practitioners and professionals, and the public.

Collaboration includes sharing staff resources within areas of knowledge, cross-training, as well as staff partnerships that allow solutions for issues that span program mandates. CRD divisions work together to make outreach material consistent across programs and often distribute messaging on behalf of the other programs at outreach events. Staff cross-training also reduces the number of CRD visits to ICI properties and RSCP COP businesses. A "one window approach" to customer service spanning all relevant programs is also under development.

## Stakeholder Engagement

Staff host an annual meeting with onsite wastewater practitioners and professionals in conjunction with the TLW and RSCP programs. Specific content includes discussion of new provincial regulations for standard practice on planning, installation, and maintenance of onsite treatment systems, and consumer protection information.



### Looking Ahead

In 2015-2016, program plans are to:

- Release updated industry practitioner and homeowner forms based on feedback from the 2014 workshop.
- Review the recommendations of the ICI onsite study.
- Undertake a pilot study to evaluate interest in the Maintenance Assessment option for residents, and consider a revision to the Bylaw to allow for pump out frequencies longer than five years.
- Explore potential for incentives to encourage onsite system repair.

# Sewage Treatment Planning

Between 2009 and 2014, the Core Area Liquid Waste Management Committee, CRD staff and consultants, and the Core Area Wastewater Program Commission worked to create and implement a sewage treatment and resource recovery system for the core area. This was initiated based on a July 2006 order from the MOE to develop a fixed schedule for implementing secondary wastewater treatment for the core area.

## Key Initiatives & Accomplishments

- An amendment to the LWMP (Amendment #9) detailing the McLoughlin Point plan was submitted to MOE and approved in July.
- The plan to build at McLoughlin Point was put on hold by the CRD Board in June, in response to public input from the residents of Esquimalt, the host municipality.
- Langford, Colwood, View Royal, Esquimalt and the Songhees Nation formed the Westside Select Committee to begin planning for a new project to treat sewage and recover resources in those municipalities and the Nation in June.
- Construction at the new Craigflower pump station continued. This project was initiated in 2013 and will be completed in September 2015.
- The application for a Transitional Authorization under the federal Wastewater Systems Effluent Regulations, was submitted in June and approved in August. Under these regulations and the associated Transitional Authorizations, the CRD is allowed to temporarily exceed effluent quality limits, but must have at least secondary treatment in place for core area wastewater by December 31, 2020.
- Planning and design for a wastewater attenuation tank in Haro Woods occurred. Further work on this project has been put on hold until additional details have been determined for the core area treatment plan.



## Looking Ahead

In 2015-2016, sewage treatment planning activities will include:

- Development of solution sets for both distributed and centralized treatment scenarios, that include assessments of potential treatment sites, technologies and system configurations.
- High-level costing of the solution sets from the perspectives of: lowest cost, highest environmental protection, and a balance between cost and environmental protectiveness.
- Public consultation on solution sets.
- Site confirmation.
- Submission of a LWMP amendment reflecting the above decisions.
- Confirmation of federal and provincial funding contributions.



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