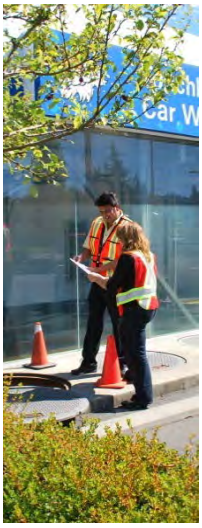
Regional Source Control Program

Annual Report 2010

Environmental Sustainability Department	Environmental Partnerships Division



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CAPITAL REGIONAL DISTRICT
REGIONAL SOURCE CONTROL PROGRAM ANNUAL REPORT 2010

EXECUTIVE SUMMARY

The purpose of the Capital Regional District (CRD) Regional Source Control program (RSCP) is to protect sewage collection and treatment facilities, biosolids quality, 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 CRD adopted a Sewer Use Bylaw in 1994 to regulate sanitary sewer discharges. Implementation of a region-wide program began in 1995 with regulation of larger industries under a permit system, followed by adoption of the first regulatory codes of practice (COP) for commercial sectors in 1999. Codes of practice were developed, adopted and implemented by the end of 2005 to regulate discharges from approximately 2,000 businesses within 11 sectors. The RSCP works to ensure that the bylaw and its associated policies and procedures are applied consistently within all CRD sewage collection areas.

The RSCP went through a period of significant change early in 2010 as a result of the implementation of the CRD Service Delivery Review. Following a subsequent re-organization, the program became part of a new division, Environmental Partnerships (Partnerships), with a mandate to deliver collaborative and responsible environmental services that engage and inspire changes in behaviour for the stewardship, protection and well-being of our region.

Some early successes following this change in direction included initiation of information sharing and coordinated inspections with two other programs within the new division–Cross Connection Control (CCC) and Demand Management (DM). It is anticipated that there will be increased collaboration between these programs, municipalities, business groups, institutions and other agencies in 2011 and beyond.

The overall percentage of regulated businesses with proper waste treatment installed reached 96%, the highest level achieved to date. Sectors operating under COP maintained high levels for installation and use of proper waste treatment measures. Permitted industrial facilities and facilities operating under authorizations also maintained high compliance levels.

Results of sewage effluent data collected at the main CRD outfalls since the last trend analysis (2008) suggest that previously reported decreasing trends for key contaminants have continued, or reached a point of no significant change. The percentage of treatment plant biosolids and mixed liquor samples that met Class A standards for metals reached 100% for the second consecutive year.

The residential outreach initiative "Clean Water Begins at Home" was enhanced through the completion of the social media campaign "Sustainable U" Source Control 101 and "The Ocean is Our Home" exhibit at the Shaw Ocean Discovery Centre in Sidney. Information obtained from the provincial Medications Return Program has shown that residential outreach messaging continues to be successfully delivered.

The observed significant decreasing trends in contaminants are a result of the ongoing consistent application of source control regulations, inspections and promotion of best management practices through program outreach initiatives. This highlights the important role that the source control program plays, and will continue to play, in achieving wastewater contaminant reductions and protecting sewage collection and treatment facilities throughout the region, particularly in view of the initiation of core area sewage treatment in future.

The 2010 annual report presents background information, a summary of program activities and accomplishments over the period January to December 2010 and a brief account of initiatives planned for 2011. The main activities and accomplishments of the program in 2010 are outlined as follows.

Industrial, Commercial and Institutional (ICI) Liquid Waste Regulation

- 100% use of proper waste treatment measures was maintained in seven code sectors (treatment works installed or offsite waste management used): photographic imaging, dental, laboratory, dry cleaning, carpet cleaning, fermentation and recreation.
- Greatest increase in the level of proper waste treatment (15%) was recorded within the vehicle wash sector–as a result of additional inspections in 2010.
- A record high level of proper waste treatment was attained in the food services sector (95%); this was an additional 3% increase over that reported in 2009. Full compliance with the COP (88%) was the highest recorded to date for this sector.
- A new COP inspection plan focusing on businesses discharging priority contaminants to sewer was successfully implemented for the second consecutive year and most inspection targets were met or exceeded.
- All permit inspections scheduled at the beginning of 2010 were completed within the year. Permits discharging priority contaminants received at least one or two additional inspections.

Monitoring

- First year of new monitoring plan focusing on priority sectors and contaminants–all new monitoring targets were met.
- The goal of collecting audit samples from each permitted site twice per year was achieved.

Enforcement

- No tickets were issued under the CRD Ticket Information Authorization Bylaw.
- No charges were laid under the Sewer Use Bylaw in 2010.

Contaminants Management

- A consultant was hired in November 2010 to review the existing priority contaminants list and make recommendations for possible modifications, identify potential priority contaminant sources, develop reduction strategies and targets. Recommendations from this study, completed in June 2011, will be considered for further action during the development of the RSCP implementation plan.

Contaminant Reductions

- Preliminary results of Macaulay and Clover point effluent and Saanich Peninsula Wastewater Treatment Plant (SPWWTP) influent and effluent monitoring in 2010 generally indicate similar concentrations and loads of contaminants to those reported in the 2008 trend assessment. This suggests that previously reported trends are either continuing or levelling off.
- For the second consecutive year, Ganges Wastewater Treatment Plant (GWWTP) mixed liquor results met the Class A criteria for all metals, including mercury.
- Biosolids quality at SPWWTP continued to meet Class A criteria.
- Five-year contaminant reduction targets have been successfully achieved for all COP sectors–with the exception of the vehicle wash and printing sectors.

Significant Incident Response

- There were three incidents recorded in CRD trunk sewers and pump stations (PS) in 2010. These incidents emphasized the need for sampling equipment to be located at key CRD PS and for operations staff to be trained to obtain samples during incidents.

Residential Outreach

- RSCP staff maintained the promotion of the three "Clean Water Begins at Home" campaigns (Fats, Oils and Grease Reduction, Surfactant Reduction and Medications Return) through print, radio and web-based advertisements and outreach events.
- In 2010, the CRD continued to record a higher medication return rate per capita than most regional districts in the province (second only to the Sunshine Coast). Over eight tonnes of medications were collected–representing a 164% increase over the amount collected in 2007, the year before the CRD Medications Return campaign was launched.
- The social media campaign, "Sustainable U" Source Control 101, came to a successful completion in April 2010. This was the first corporately-supported social media campaign developed and launched as a pilot by the CRD. The campaign reached over 41,000 residents and made source control messaging available to males 18-34 years of age throughout the CRD.
- Under a partnership developed in 2009 with Shaw Ocean Discovery Centre in Sidney, "The Ocean is Our Home" exhibit was launched at the Centre in June and ran until October 2010. The exhibit consisted of a hands-on display linking common household activities with potential impacts on the marine receiving environment–highlighting the protective role of source control and other CRD programs. The target audience for the exhibit was school age students and the general public.
- In 2010, initial discussions with home care professionals from the Vancouver Island Health Authority (VIHA) were held with the goal of promoting proper waste medication disposal within the home care sector.

Business Outreach

- Stakeholders from the food services and automotive repair sectors were engaged to help develop outreach tools that will promote compliance and commitment to source control practices.
- The 2010 CRD EcoStar award event was co-sponsored by RSCP and staff participated in the evaluation committee for the Water Stewardship, Community Environmental Leader and Youth Leader categories.

Partnerships Initiatives

- In 2010, RSCP staff commenced coordinated inspections with two other programs within the division (CCC and DM) and formalized inspection-notification agreements with external jurisdictions (municipal plumbing inspectors and VIHA health inspectors).
- RSCP staff worked closely with DM to expand inspection services offered to include water audits for local businesses.
- In an effort to expand and improve the quality of service to both residents and the ICI sector, RSCP staff regularly participated in Partnerships cross training sessions in 2010.

Data Management

- The new database for the program was completed and implemented in 2010. This database provides users with a more flexible interface, better data security and error tracking.

Program Planning and Development

- The final report for the third five-year independent review of the program for the period 2004-2008 was delivered in March 2010. The findings of this report will be used to assist in the development of the next RSCP five-year plan–for the period 2011-2015.
- A consultant was selected in November 2010 to undertake a review of the current RSCP permit fee structure. The final report will be delivered in 2011.

Performance Measures

- Highest percentage of regulated businesses with proper waste treatment installed to date (96%).
- For the second consecutive year, the percentage of biosolids and mixed liquor samples that meet Class A standards for metals was 100%.
- Percentage of priority contaminants showing no increase in loads to the core area environment (79%) –based on last trend analysis for 1990-2008 data.

Next Steps–2011/12

The main areas of program development in 2011/2012 include:

- Completion and presentation of a program implementation plan for the period 2011-2015.
- Implementation of a new COP inspection plan for 2011, including investigations to resolve compliance issues within the vehicle wash and printing sectors.
- Investigation into the regulatory approach used for the carpet cleaning, recreation facility and fermentation COP sectors.
- Implementation of a COP monitoring plan focusing on the carpet cleaning, dry cleaning, dental and food services sectors.
- Implementation and distribution of food services and automotive outreach tools developed in consultation with stakeholder representatives.
- Incorporation of initiatives to promote source control practices related to household cleaners under the “Clean Water Begins at Home” banner.
- Implementation of Source Control 201 to further promote source control practices to youth.
- Engagement of recreation centre stakeholders to develop outreach tools to promote source control practices.
- Application of a public survey to measure the success of the three “Clean Water Begins at Home” campaigns, the Shaw Ocean Discovery Centre exhibit and Source Control 101.
- Further coordination of source control, demand management, cross connection and onsite systems activities and messaging under a blended “water management approach”.

CAPITAL REGIONAL DISTRICT
REGIONAL SOURCE CONTROL PROGRAM ANNUAL REPORT 2010

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX

CAPITAL REGIONAL DISTRICT
REGIONAL SOURCE CONTROL PROGRAM ANNUAL REPORT 2010

1.0 INTRODUCTION

Source control is a waste management strategy that is aimed at reducing the amount of contaminants that industries, businesses, institutions and households discharge to sewers. The need for a Source Control program within the Capital Regional District (CRD) was assessed during the period 1990-1992 and a commitment to develop a program followed in 1993.

Following discussions with municipal representatives in 1993, it was agreed that the CRD would assume full responsibility for regulating the quality of wastewater entering its trunk sewers and sewage treatment facilities by applying for designation as a sewage control area. In 1993, the CRD also committed to the development and implementation of a region-wide Source Control program and adoption of a Sewer Use Bylaw under the *BC Environmental Management Act*. This bylaw was designed to serve as the main regulatory instrument for source control in sanitary sewer systems, creating a level playing field for businesses and institutions throughout the district.

The first phase of implementation of the Regional Source Control program (RSCP) began in 1995, following adoption of the Sewer Use Bylaw in August 1994. This early phase (1995-1998) focused on identifying, inspecting, assessing and permitting larger industrial facilities operating within the CRD. In 1998, the focus of the program shifted toward development, adoption and implementation of codes of practice (COP) to regulate discharges from a large number of smaller commercial and institutional facilities. The first of these COP were adopted in 1999 and development and implementation of a total of 11 COP was achieved by early 2005.

A five-year internal review of the program was completed in 1999 and annual reporting on the achievements of the program was initiated the following year as one of the commitments in the Core Area Liquid Waste Management Plan (LWMP). The first independent five-year review of the RSCP was completed in 2005. The main recommendations from this review were incorporated into a five-year plan for the period 2006-2010. A comprehensive internal program review, with a focus on reducing priority contaminants, was undertaken in 2008. This led to the development of a revised work plan for 2009-2010, updating the five-year plan and including efforts to increase program efficiency. A second independent review of the program was completed in 2010. The findings of this review, covering the period 2004-2008, will be used to develop a new five-year plan for 2011-2015.

The objectives of the RSCP are documented in the 1996 Saanich Peninsula LWMP and the Core Area LWMP (July 2000). The program objectives, which were reviewed in 2008, are as follows:

- protect the marine receiving environment adjacent to the CRD's sewage outfalls
- protect sewage facilities belonging to the CRD and its member municipalities
- protect the health and safety of sewage workers and the general public
- protect the quality of sewage sludge and biosolids
- protect treatment plants against upsets
- consistently apply the program for all users of CRD sewage facilities

The Core Area and Saanich Peninsula LWMPs contain commitments to prepare an annual report on the RSCP for submission to the CRD Board and the BC Ministry of Environment (MOE). This annual report presents a summary of program activities and accomplishments over the period January-December 2010 and provides a brief account of initiatives planned for 2011.

The RSCP is a key component of effective wastewater treatment and will form an integral part of the core area wastewater treatment strategy. The current program meets or exceeds Canadian best practices for source control and the CRD is a nationally recognized leader in this field.

2.0 BACKGROUND

2.1 Program Components

The activities undertaken by RSCP staff in 2010 have been categorized under the following component headings:

- inspections
- monitoring
- enforcement
- outreach
- partnerships initiatives
- contaminants management
- data management
- planning and development

2.2 Policies and Procedures

The following policies and procedures are used to provide guidance and ensure fair and consistent application of the CRD Sewer Use Bylaw and associated enforcement, cost recovery and monitoring activities.

POLICIES APPROVED BY CRD BOARD

- Regional Source Control Program Enforcement Policy
- Regional Source Control Program Fees and Charges Policy
- Sewer Use Bylaw Process of Review
- Regional Source Control Program Code of Practice Management Policy–Food Services

OPERATING PROCEDURES

- Sampling and Analysis Procedure Manual
- Analytical Result Reporting Procedure
- Non-domestic Waste Discharge Reporting Procedure
- Significant Incident Reporting–Communications Protocol

The policies and procedures are periodically updated to reflect changes within the program.

2.3 Sewage Collection Areas and Sewage Facilities

The CRD Sewer Use Bylaw applies to any discharge of non-domestic waste into a sewer that is connected to a sewage facility operated by the CRD. The RSCP is designed to ensure that the bylaw and its associated policies and procedures are applied consistently within the separate collection areas for these sewage facilities.

The CRD owns and operates eight wastewater treatment plants, as shown in Table 1. Four of these plants–Macaulay Point, Clover Point, Saanich Peninsula and Ganges–receive significant industrial, commercial or institutional wastewater flows, while the remaining four are small plants receiving mostly residential flows.

The sewage flows into each treatment plant are reported in the annual compliance monitoring reports for CRD sewage outfalls.

Ten member municipalities, three electoral areas and six other participating areas with sanitary sewers were regulated under the RSCP in 2010. Estimated annual sewage flows contributed by each participating area, over the period 1 October 2009 to 30 September 2010, are listed in Table 2. The annual sewage flows are used to calculate the municipal requisition for the RSCP (see Section 3.9).

Table 1 CRD Treatment Plants and Sewage Collection Areas–2010

CRD Sewage Treatment Plant	Sewage Collection Areas
Macaulay Point	Victoria (west), Esquimalt, Saanich (west), View Royal, Colwood, Langford, Department of National Defence, Esquimalt First Nation, Songhees First Nation
Clover Point	Victoria (east), Oak Bay, Saanich (east)
Saanich Peninsula	Sidney, Central Saanich, North Saanich, Pauquachin First Nation, Tseycum First Nation, Institute of Ocean Sciences
Ganges	Township of Ganges (Salt Spring Island Electoral Area)
Maliview	Maliview area (Salt Spring Island Electoral Area)
Schooner Way	Buck Lake area (Southern Gulf Islands Electoral Area)
Canon Crescent	Magic Lake Estates (Southern Gulf Islands Electoral Area)
Port Renfrew	Port Renfrew (Juan de Fuca Electoral Area)

Table 2 Annual Sewage Flows 2009/2010

Participant	Estimated Annual Flow (m^3/year)*	Percentage of Total Flows
Saanich	10,853,648	27.74%
Oak Bay	3,222,201	8.23%
Victoria	14,999,440	38.33%
Esquimalt	2,539,094	6.49%
View Royal	637,712	1.63%
Colwood	990,635	2.53%
Langford	1,817,904	4.65%
Sidney	1,422,109	3.63%
Central Saanich	1,505,109	3.85%
North Saanich	439,687	1.12%
Esquimalt First Nation	6,540	0.02%
Songhees First Nation	229,846	0.59%
Pauquachin First Nation	37,897	0.10%
Tseycum First Nation	15,645	0.04%
Institute of Ocean Sciences	8,948	0.02%
Department of National Defence	96,026	0.25%
Ganges Sewer	163,873	0.42%
Maliview Sewer	21,988	0.06%
Magic Lakes Estates Sewer	100,983	0.26%
Port Renfrew Sewer	20,552	0.05%
Total Flow	**39,129,837**	**100.0%**

Note:
*Yearly flows cover the period 1 October 2009 to 30 September 2010

3.0 REGIONAL SOURCE CONTROL ACTIVITIES AND ACCOMPLISHMENTS–2010

Regional source control activities and accomplishments in 2010 are discussed under the following broad groups of activities:

- industrial, commercial and institutional liquid waste regulation
- enforcement
- contaminants management
- contaminant reductions
- significant incident reporting
- outreach
- partnerships initiatives
- data management
- revenue and expenditures
- planning and development
- performance measures

3.1 Industrial, Commercial and Institutional Liquid Waste Regulation

3.1.1 Regulatory Background

The Sewer Use Bylaw serves as the main regulatory instrument for source control within CRD sanitary sewer systems. The bylaw specifies the various regulatory conditions under which facilities must operate if they discharge non-domestic waste into a sanitary sewer. The regulatory conditions for businesses include operation under waste discharge permits, authorizations or sector-specific COP.

Following adoption of the Sewer Use Bylaw in August 1994, the RSCP focused primarily on identifying, inspecting, assessing and permitting larger industrial facilities and preparing authorizations for smaller commercial and institutional dischargers operating within the district. This process was largely completed over the period 1995-1998. Waste discharge permits require ongoing management, inspection and periodic amendment to accommodate changes in site-specific processes, practices and discharge conditions. New businesses continue to be assessed for operation under permits or authorizations each year.

In 1998, the focus of the program shifted toward development, adoption and implementation of COP to regulate discharges from larger numbers of smaller commercial and institutional facilities operating in the district. The first regulatory COP, considered to be unique in North America, were adopted in 1999 and inspections and enforcement for these codes commenced the following year. By the end of 2003, 11 COP had been adopted under the Sewer Use Bylaw. All codes were developed using extensive stakeholder involvement to help ensure their practicality and acceptance within each sector. For further information on COP, see Section 3.1.4.

The Sewer Use Bylaw and its associated policies and procedures have been amended periodically during the first 12 years of the program–largely to accommodate adoption of COP, but also to add new restricted waste limits and a structure for cost recovery.

3.1.2 Waste Discharge Permits

Waste discharge permits are site-specific regulatory documents, issued to businesses or institutions under the CRD Sewer Use Bylaw, that outline requirements for wastewater pre-treatment, effluent quality, monitoring and reporting. Waste discharge permits are issued to facilities or operations that discharge significant non-domestic wastewater flows (greater than 10 m^3/day) or wastewater containing high loads of restricted wastes or specified chemical contaminants into the sanitary sewer. Table 3 provides a summary of waste discharge permit activity in 2010.

Table 3 Summary of Waste Discharge Permit Activity in 2010

Waste Discharge Permit Activity	2010
Permits active (at year end)	36
New permits issued	4
Permits closed	3
Permits amended	17
Permit site inspections (including evaluations for new permits)	99
Permit meetings	12
Self-monitoring events reviewed	375
CRD audit monitoring events reviewed	70
Permit compliance and enforcement letters written	138

At the end of 2010, there were 36 active waste discharge permits being managed by RSCP staff. The majority of these permits were ongoing, with no expiry date. Four new permits were issued, 17 permit amendments were made and three permits were closed. Some permits issued for short-term discharges have set expiry dates. This accounts for a variable portion of permit activity each year. In 2010, two permits were issued for a short-term ship and boat discharges from U.S. naval vessels and one permit was open for 60 days to allow the discharge of excavation water from a building site.

Permit management activity includes reviewing discharger self-monitoring reports on a monthly or quarterly basis, preparation of compliance letters, meetings and regular phone contact with permittees and site inspections. Permit managers are also responsible for comparing CRD audit sampling data to permittee self-monitoring data and submitting permit fee billing information to CRD Corporate Services department, Finance division.

All permit inspections scheduled at the beginning of 2010 were completed within the year. Permits discharging priority contaminants received at least one or two additional inspections and on one occasion a permittee was inspected six times before they were deemed compliant. Permit management staff will continue to conduct investigations into new non-domestic waste dischargers in 2011 to assess the need for regulation of dischargers under permits or authorizations.

3.1.3 Authorizations

Letters of authorization are issued under the Sewer Use Bylaw in cases where overall contaminant loads to sanitary sewer are low or where discharges are predicted to have a minimal impact on collection and treatment systems and/or the receiving environment. Authorizations contain site-specific discharge requirements and best management practices (BMP) designed to decrease the impact of the discharge or limit the potential for illegal discharges. They are normally issued without expiry dates and generally have no sampling or reporting requirements.

Authorizations are commonly issued to regulate unusual discharges or discharges from small groups of similar operations, such as ship and boat waste facilities, laundromats and sani-dumps. They can also be issued to businesses where a COP is either planned or under development or where requirements differ from those specified in a code.

Inspections are carried out on a periodic basis by source control staff with an emphasis on those authorizations which had previously been regulated under permits or those which include operations discharging priority contaminants. Table 4 summarizes authorization activity in 2010.

Table 4 Summary of Authorization Activity in 2010

Authorization Activity	2010
Authorizations active (at year end)	101
New authorizations issued	4
Authorizations closed or transferred to codes or permits	2
Authorizations amended	3
Authorization site inspections (including evaluations for new authorizations)	40

Regular inspections were originally scheduled for 30 existing high priority authorizations in 2010. Thirty-two of these were completed by December 2010. In addition, there were a further eight inspections undertaken within the year to follow up on issues at high priority sites or evaluate the need for, and issue, new authorizations.

3.1.4 Codes of Practice

BACKGROUND

The CRD has made commitments in the Core Area and Saanich Peninsula LWMPs to the development and implementation of COP to regulate non-domestic waste discharges from commercial and institutional sectors to the district's sanitary sewers. The RSCP defines COP as "regulatory documents containing mandatory sanitary sewer discharge standards for specific industrial, institutional or commercial sectors".

RSCP staff began developing COP in 1996, following consultants' recommendations that this approach would be well-suited to the CRD's existing blend of small industrial facilities, commercial businesses and institutions. COP development and adoption became one of the main focal points of program activities over the period 1998-2003. Stakeholder task forces were formed for each code sector to guide the development process and to help ensure the practicality and effectiveness of the final product. By December 2003, the development and adoption process for COP had been completed on schedule. All codes had been fully implemented by January 2005. The adoption, amendment and effective dates of the 11 codes are summarized in Table 5.

Table 5 Summary of RSCP Codes of Practice Adoption and Effective Dates (Bylaw 2922)

Code of Practice	Adoption Date	Initial Effective Date (New Operations[1])	Final Effective Date (Existing Operations[2])
Food Services Operations	24 November 1999[3]	1 January 2000	1 January 2003
Dry Cleaning Operations	24 November 1999[4]	1 January 2000	1 July 2004[4,6]
Photographic Imaging Operations	24 November 1999	1 June 2000	1 June 2000
Dental Operations	22 November 2000	1 January 2001	1 July 2001
Automotive Repair Operations	12 December 2001[4]	1 January 2002	1 January 2004
Vehicle Wash Operations	12 December 2001[4]	1 January 2002	1 January 2005
Carpet Cleaning Operations	11 December 2002	1 July 2003	1 July 2003
Fermentation Operations	11 December 2002	1 January 2003	1 July 2003[5]
Printing Operations	11 December 2002	1 January 2003	1 January 2005
Laboratory Operations	10 December 2003	1 January 2004	1 July 2004[6]
Recreation Facility Operations	10 December 2003	1 January 2004	1 January 2005[7]

Notes:
[1] Businesses or institutions that commence operation within a specific code sector on or after the code's initial effective date.
[2] Businesses or institutions that were operating within a specific code sector before the code's initial effective date.

Notes Table 5 continued

[3] Code amended December 2001 and March 2003.
[4] Code amended December 2003.
[5] For fermentation operations producing waste containing yeast.
[6] Spill response plans required.
[7] Monitoring point installation required.

In general, COP include mandatory requirements for waste treatment, inspection, maintenance and record keeping for businesses and institutions discharging non-domestic wastes to sanitary sewer. They are believed to be among the first of their type to be adopted in North America. RSCP staff have prepared plain language guidebooks for each code sector explaining the applicable regulations and providing BMP to help businesses achieve compliance and improve environmental performance.

CODE OF PRACTICE INSPECTION SUMMARY–2010

Table 6 provides a summary of COP inspection activity. The sector estimates shown in the table are the numbers of active operations estimated within each sector at the beginning of each year. The total number of site inspections includes first (or primary) inspections within an inspection cycle and repeat (or follow-up) inspections to confirm compliance status.

Table 6 Summary of Code of Practice Activity in 2010

Code of Practice	Est. Sector Size (2010)	# Site Inspections* (2010)
Automotive Repair	165	47
Carpet Cleaning	28	2
Dental	141	105
Dry Cleaning	13	4
Fermentation	28	3
Food Services	1,092	339
Laboratory	42	9
Photographic Imaging	167	106
Printing	24	8
Recreation Facility	9	1
Vehicle Wash	28	32
Total COP Operations	**1,737**	
Total COP Site Inspections*		**657**

Note:
* Includes both primary and repeat inspections.

Primary Inspections

A review of inspection frequencies for COP was included in the 2008 internal program review. A new plan for inspection frequencies was tested in 2009. This plan included classification of each of the 11 COP sectors as high, medium or low priority regarding the potential for discharge of priority contaminants to sewer. Dischargers within the following six sectors were identified for a higher frequency of inspection: auto repair, vehicle wash, dental, food services, photo imaging and printing. Based on priority rating and estimated number of businesses at the end of 2008, each of these sectors was given a proposed inspection cycle (either an annual, two-, three- or five-year cycle) and inspection targets were set for 2009. The fermentation, carpet cleaning, dry cleaning and recreation sectors, all rated low priority, were given a five-year inspection cycle.

The 2010 inspection targets and the number of primary inspections completed for operations with required treatment works are outlined in Table 7. A primary inspection, under the new approach, is defined as the first inspection carried out at a business within the inspection cycle set for the respective business sector.

Table 7 Code of Practice Primary Inspection Summary for Operations with Required Treatment Works (2010)

Code of Practice	Inspection Cycle	Sector Size[1]	Annual Inspection Target	# Primary Inspections (2010)[2]	% of Annual Target
Automotive Repair	1-year	27	27	30	111
Carpet Cleaning	5-year	24	5	2	40
Dental	2-year	122	61	85	139
Dry Cleaning	5-year	10	2	2	100
Fermentation	5-year	27	5	2	40
Food Services	3-year	1,047	349	317	91
Photographic Imaging	1-year	23	23	17	74
Printing	1-year	8	8	3	38
Recreation Facility	5-year	9	2	1	50
Vehicle Wash	3-year	27	9	18	200
TOTAL		**1,324**	**491**	**477**	

Notes:
1 Based on the estimated number of operations within each sector with required treatment works (at the end of 2009).
2 Number of primary inspections of operations with required treatment works in 2010.

Within three of the above sectors (automotive repair, photographic imaging and printing), a number of businesses use only offsite waste management to control contaminant discharges. These sub-groups were set at a lower level of inspection frequency than those having requirements for onsite treatment works.

There are no specific requirements for installation of treatment works in the laboratory COP. All laboratory operations are required to use offsite waste management to control waste discharges to sewer. This sector, consisting of three sub-groups with high (analytical laboratories), medium (institutional laboratories) or low (veterinary and school laboratories) inspection priorities, was split into one-, three- and five-year inspection cycles, respectively.

The 2010 inspection targets and the number of primary inspections completed for operations using only offsite waste management are outlined in Table 8.

Table 8 Code of Practice Primary Inspection Summary for Operations Using Offsite Waste Management (2010)

Code of Practice	Inspection Cycle	Sector Size[1]	Annual Inspection Target	# Primary Inspections (2010)[2]	% of Annual Target
Automotive Repair	3-year	138	46	17	37
Photographic Imaging	5-year	140	28	57	204
Printing	3-year	15	5	1	20
Laboratory (analytical)	1-year	7	7	2	29
Laboratory (institutional)	3-year	12	4	4	100
Laboratory (veterinary and school)	5-year	24	5	3	60
TOTAL		**336**	**95**	**84**	

Notes:
1 Based on the estimated number of operations within each sector using only offsite waste management (at the end of 2009).
2 Number of primary inspections of operations using only offsite waste management in 2010.

The overall primary inspection levels in 2010 were lower than those in 2009 due to an interruption in staffing levels during the year. Despite this interruption, most inspection targets were met or exceeded. The main exceptions for operations with required treatment works were in the carpet cleaning, recreation facility and fermentation sectors which were under review in 2010. Recommended changes to the regulatory approach used for these sectors will be investigated in 2011. Vehicle wash inspections were a special focus for 2010 and were double the normal target for the year.

Repeat Inspections

In addition to primary inspections, there were 39 repeat inspections carried out by RSCP and bylaw enforcement staff in 2010 to confirm compliance status following initial inspections. These repeat inspections are summarized in Table 9.

The majority of RSCP repeat inspections (23) were carried out within the food services sector, since it is the largest sector regulated under a code. The total number of repeat inspections in 2010 was substantially lower than in previous years due to the high levels of compliance achieved regarding installation of properly-sized treatment works across all sectors.

Table 9 Code of Practice Repeat Inspection Summary–2010

Code of Practice	# Repeat Inspections (2010)*
Automotive Repair	8
Carpet Cleaning	0
Dental	5
Dry Cleaning	0
Fermentation	0
Food Services	23
Laboratory	0
Photographic Imaging	0
Printing	1
Recreation Facility	0
Vehicle Wash	2
TOTAL	**39**

Note:

* Number of repeat inspections by RSCP and bylaw enforcement staff carried out to follow up on non-compliance issues recorded during primary inspections.

3.1.5 Monitoring

RSCP staff carried out the following types of monitoring in 2010: permit compliance, authorization compliance, COP, key manhole and treatment plant influent/mixed liquor monitoring. All wastewater samples collected in 2010 were analysed by a contract laboratory using standard analytical procedures specified in the *RSCP Sampling and Analysis Procedure Manual*. The RSCP monitoring program was reviewed in 2008 as part of the internal program review. The new RSCP work plan developed for 2009-2010 included a general refocusing of monitoring efforts on the identified priority contaminants and their sources. All monitoring targets set for 2010 were achieved. Table 10 provides a summary of RSCP monitoring activity in 2010.

Table 10 Summary of RSCP Monitoring Activity in 2010

Monitoring Events	2010
Permit compliance	63
Authorization compliance	6
Code of practice	48
Key manhole	19
SPWWTP influent	12
Ganges influent and mixed liquor	14

PERMIT COMPLIANCE MONITORING

Businesses operating under waste discharge permits are required to carry out self-monitoring of their wastewater for a range of parameters on a specified regular basis. This data is normally submitted to RSCP staff on a monthly or quarterly basis for compliance assessment. An important component of the RSCP is the collection and analysis of audit samples from each permitted site twice per year. This is done to verify compliance and confirm that the self-monitoring data being submitted are representative of discharges from each permitted site. RSCP staff normally collect these samples throughout the year following a pre-arranged schedule. Additional sampling events are carried out, as necessary, on suspected problem discharges from permitted sites.

The average number of scheduled audit events completed per permit in 2010, was slightly over two. This was a slightly higher level of audit sampling than that carried out in 2009. The goal of collecting audit samples from each permitted site twice per year was achieved.

The environmental science officer responsible for managing a specific permit checks the data and compares contaminant loads calculated using the two most recent audit sampling results with the corresponding loads calculated using the previous 12 self-monitoring results from that site. This comparison is carried out using a non-parametric statistical test to determine if a significant difference exists between the two data sets at the 95% confidence level. If a significant difference is detected, the permittee is contacted and an investigation into the discrepancy is initiated. A computerized method of performing this statistical test has been developed to facilitate and standardize this procedure.

The majority of all audit results obtained in 2010 were not significantly different from self-monitoring results reported from the same site. This indicated that most of the self-monitoring results being submitted by permittees had been collected and analysed in an appropriate manner, as required by each permit. The sites with discrepancies are being investigated with further comparative sampling that will continue into 2011.

Since RSCP audit monitoring is carried out in accordance with strict quality assurance procedures, it provides reliable information when calculating characteristic contaminant levels or loads for a particular industry or business type. This information is useful for planning purposes in specified collection areas.

AUTHORIZATION COMPLIANCE MONITORING

Monitoring was also carried out in 2010 at a small number of businesses operating under authorizations with self-monitoring requirements. The RSCP monitoring provides, at minimum, an annual check on the quality of effluent being discharged by businesses known to have reported restricted waste generation or handling on site.

In 2010, sampling was completed at all six sites originally scheduled for monitoring. The results of this monitoring indicated that discharges from authorizations were generally in compliance with Sewer Use Bylaw restricted waste limits.

CODE OF PRACTICE MONITORING

In 2010, COP monitoring was carried out within three of the 11 regulated sectors (vehicle wash, automotive repair and food services) with a total of 48 samples collected.

RSCP staff conducts COP monitoring for a limited number of parameters at a small number of discharging operations per year. Grab samples are generally collected from discharging operations that have properly-sized treatment works. Exceedence of contaminant limits specified in a code can indicate failure of a treatment works or lack of proper maintenance. Site-specific investigations or outreach may follow receipt of results that are above specified contaminant limits.

Businesses operating under codes are not required to sample their own wastewater and report results to the RSCP. Compliance with a code is usually achieved by installing required treatment works, carrying out regular maintenance and keeping records.

COP monitoring results are useful in characterizing the typical waste stream of an operation within a code sector. This information can be used for planning purposes and also for identifying contaminants of concern in some sectors.

In 2011, 10 food services operations, five dental operations and the entire carpet cleaning and dry cleaning (discharging operations only) sectors are scheduled for sampling.

Vehicle Wash

Eighteen vehicle wash operations (approximately 60% of the sector) were sampled in 2010. No sites had any results that exceeded the specified contaminant limits. This sector will be sampled again in 2015.

Automotive Repair

Twenty automotive repair operations (approximately 65% of dischargers within the sector) were sampled in 2010. Thirteen of the sites had exceedences for one or several of chemical oxygen demand (COD); total suspended solids (TSS); pH; polynuclear aromatic hydrocarbons (PAH) and total metals (specifically copper, zinc and iron). Site-specific inspections and outreach will be used to follow up at the operations with exceedences. This sector will be re-sampled within the next three years.

Food Services

Ten food services operations were sampled in 2010. Samples were obtained from grease interceptors at these operations using an improved two-stage cleaning and sampling procedure. Results from seven sites exceeded the discharge regulations specified in the COP [exceedences of limits for one or several of biochemical oxygen demand (BOD), COD, total oil and grease (TOG), pH and TSS]. The range of results was consistent with those from previous years.

The target parameter for this sector is TOG, although there is no TOG limit specified in the COP, four of 10 results exceeded the Sewer Use Bylaw limit for this parameter. This is a higher percentage than found in the previous three years. The mean TOG concentration for 2010, however, was similar to the mean concentration for the three previous years. Site-specific outreach will be used at the operations with the highest TOG results in 2011.

KEY MANHOLE MONITORING

Key manhole monitoring is carried out to monitor for contaminants originating from sources within wide sanitary sewer collection areas. This includes monitoring at three residential sites and two Department of National Defence (DND) sites within the Macaulay Point and Clover Point collection areas and at one residential site and Victoria International Airport within the SPWWTP collection area.

Following recommendations made in Golder Associates Ltd., (2009b), sampling frequency was increased to quarterly at residential sites and one new site (Lang Cove PS) was added to collect data from a residential with a high proportion of high density housing (e.g., apartment buildings, etc.).

Residential Sites

Residential (or domestic) key manhole monitoring has been carried out by RSCP staff since 1996. This sampling has provided information on background levels of typical contaminants found in residential wastewater and the data have been used to predict contaminant loads from domestic sources for planning purposes.

The 2010 residential sampling program included sampling events at Dean Park (North Saanich), Harling Point PS (Saanich), Vantreight PS (Saanich) and Lang Cove PS (Esquimalt) in April, July and October. All events included sampling and analysis for a wide range of parameters, including priority contaminants.

No results were in exceedence of sewer use bylaw restricted waste limits at any of the sites.

DND Sites

In 2010, key manhole sampling was carried out at the Esquimalt PS, serving the DND Dockyard area, in February and August and at the DND Colwood PS in February, April and August.

The 2010 sampling showed an exceedence of the restricted waste limit for chloride at the DND Colwood site in July and an exceedence for chloride at the DND Dockyard site in February.

SPWWTP Collection Area Sites

Following the recommendations in the Golder report, monitoring at two of the SPWWTP collection area sites (Keating PS and Sidney PS) was discontinued in 2010. Monitoring at the Airport #5 site was continued and samples were collected in August and December.

There were no exceedences of restricted waste limits at Airport #5 in 2010.

TREATMENT PLANT INFLUENT MONITORING

Monthly grab samples (for metals analysis) and four composites (for metals and priority pollutant analysis) of SPWWTP influent have been collected annually by RSCP staff in past years. Monthly grab sampling was discontinued in June 2007, following a consultant's review of the plant's influent/effluent sampling program.

The monthly grab samples were replaced by quarterly triplicate composite sampling and analysis beginning in April 2008. This triplicate composite sampling is now referred to as “quarterly plus” sampling. There were four “quarterly plus” sampling events at SPWWTP in 2010. The April and October events included analysis for nonylphenols and their ethoxylates (NPs and NPEs) to provide some background data regarding concentrations of non-ionic detergents and their breakdown products in local wastewater. Four “quarterly plus” sampling events are again scheduled for 2011.

Fourteen mixed liquor (treatment plant wastewater mixed with activated sludge) samples (for metals analysis) were also collected from the GWWTP for analysis in 2010. Samples were collected monthly, with duplicate samples taken in February and September. A single sample of influent was also collected during the year for priority pollutant analysis.

The mixed liquor and influent data are routinely entered into the Environmental Services Information System (ESIS) database and used to identify contaminants of concern, provide ongoing information on contaminant variability, loads and trends at the treatment plants and provide input to planning initiatives.

3.2 Enforcement

The district has adopted a stepwise approach to enforcement of the Sewer Use Bylaw, as outlined in the *Regional Source Control Program Enforcement Policy*. This enforcement policy classifies offences, outlines enforcement steps and includes use of cooperative measures, such as increased communication, education and monitoring, to resolve issues of non-compliance. The policy was originally approved by the CRD Board in February 1997 and was last amended in November 2006.

The CRD Ticket Information Authorization (TIA) Bylaw contains fines (tickets) that have been set for specific offences under the Sewer Use Bylaw and its associated COP. This bylaw was last amended in December 2006.

Enforcement activities are directed at ensuring or restoring discharger compliance with the terms and conditions of the Sewer Use Bylaw, waste discharge permits, authorizations and COP. Enforcement action is applied in an escalating manner that is reasonable, fair, consistent and impartial. Warnings, tickets, orders and fines are issued, as necessary, in cases of continuing non-compliance.

The strategic direction and implementation approach outlined in the 2009 Service Delivery Review specified introduction of a more supportive, proactive and collaborative approach to enforcement within the Environmental Partnerships division, which included the RSCP in 2010.

WASTE DISCHARGE PERMIT HOLDERS

Of the 36 active waste discharge permits in place at the end of 2010, 12 sites were in "full compliance" with their permits and the Sewer Use Bylaw. One site was out of compliance with its permit and was classified as a discharger under review (DUR). The remaining 23 sites were considered to be "in progress", but still in compliance with their permits under the enforcement policy. The enforcement levels and numbers of permits at each level are summarized in Table 11.

Table 11 Summary of Waste Discharge Permit Compliance (2010)

Enforcement Level	Number of Permits
Full Compliance	12
Step 1	9
Step 2	5
Step 3 (staff assessment)	9
Discharger Under Review (non-compliant)	1

All nine permit sites at Step 3 underwent assessment by RSCP staff in 2010. At Step 3, a significant escalation of enforcement action occurs, including notification of compliance status by letter, increased inspection or monitoring frequency, staff assessment of treatment works or procedures and scheduling of meetings to discuss remedial actions. Commitments and requirements agreed to at these meetings are confirmed in a follow-up letter to the permittee. Further non-compliance incidents can result in elevation of Step 3 sites to DUR status. Dischargers at the DUR level or above are considered to be non-compliant with their permits.

Operations having DUR status must prepare and submit a detailed compliance plan for approval by the deputy sewage control manager (DSCM). A 90-day period is allowed for the preparation of this plan. This period of time allows for a discharger to hire a consultant to help determine appropriate actions to achieve compliance. Progress meetings are held with the discharger after 30 and 60 days to measure progress, fully communicate the intent of any requirements and clarify any outstanding issues. A compliance plan, once approved by the DSCM, becomes a compliance program that usually forms part of the discharger's waste discharge permit through an amendment.

If no acceptable compliance plan is received within the 90-day period, an order may be issued under the *Environmental Management Act* to set conditions for discharge, or a lawyer's letter is issued. Failure to comply with an order or a lawyer's letter will result in consideration of legal action.

One permit holder, a large hospital facility, was classified as a DUR at the end of 2010. This site submitted the required compliance plan within the year and is currently working at implementing these plans.

Another site, an industrial laundry facility, was considered a DUR on July 23, 2009, due to BOD, COD, TSS and TOG exceedences. After submission of a written compliance plan on October 27, 2009, progress was made in 2009 in optimizing the system, changing chemicals and soaps, and using automated dosing of chemicals. A site inspection in 2009 identified incorrect sampling procedures which may have affected the site's reported results. Additional sampling was performed from December 2009 until March 2010 to assess the effectiveness of the compliance plan and corrected sampling procedures. Additional exceedences in November 2010 prompted the submission of a second more substantial written compliance plan on December 20, 2010. The plan included actions such as increased maintenance of treatment works and the addition of oil absorbent booms to increase the efficiency of the system without having to install additional works. Full permit compliance was achieved and a permit amendment was issued by the end of December 2010.

No charges were laid against waste discharge permit holders under the Sewer Use Bylaw during 2010. The overall waste discharge permit compliance level for 2010 was 97% ("full compliance" or "in progress") slightly higher than that for 2009 (94%).

OPERATIONS REGULATED BY AUTHORIZATION

A small group of the total number of authorizations (101) is scheduled for inspection each year based on the types of contaminants regulated, the contaminant levels, discharge volumes and the overall impact of discharges from these operations. Discharges from authorizations are considered to have a relatively minor impact in comparison to discharges from permitted facilities.

Thirty-eight inspections were carried out at sites operating under authorizations in 2010. At the end of 2010, all but one of the inspected businesses were in compliance with their authorizations.

One operation moved location and their authorization was cancelled and a new one issued for their new location. One newly opened operation was issued an authorization but shortly after it was discovered they did not have the required business licence and the authorization was cancelled. Another site was considered in violation following a failure to install treatment works in November 2010. Following increased communication, the business installed the treatment works and their authorization was amended in 2011.

The overall compliance level for authorizations ("full compliance" or "in progress") was 100%, since no businesses operating under authorizations were classified as DUR at the end of 2010.

OPERATIONS REGULATED BY CODES OF PRACTICE

The stepwise approach to achieve compliance is applied to all COP sectors in a similar way to dischargers operating under permits or authorizations, as outlined in the enforcement policy. Dischargers are classified as being in "full compliance" if they have been inspected and no unsatisfactory issues are identified. Dischargers having committed offences up to and including Step 3 are classified as being "in progress" and those at the DUR level and above are classified as being in "non-compliance" with the code. A summary of the COP enforcement results for inspections carried out from the implementation date of each code to 2010 is presented in Table 12.

Table 12 Codes of Practice Enforcement Summary–From Implementation Date to End of 2010

Code of Practice	# Regulated Operations Inspected[1]	% Full Compliance[2]	% In Progress[3]	% Non-Compliance[4] (DUR)
Automotive Repair	166	89	10.5	0.5
Carpet Cleaning	28	100	0	0
Dental	146	95	5	0
Dry Cleaning	13	100	0	0
Fermentation	28	93	7	0
Food Services	1,084	88	11	1
Laboratory	43	88	12	0
Photographic Imaging	167	95	5	0
Printing	24	79	21	0
Recreation Facility	9	100	0	0
Vehicle Wash	27	57	41	2

Notes:

1 Number of distinct regulated COP operations inspected since the implementation date where there was an enforcement finding at the end of 2010.

2 Percentage of operations in compliance with all requirements of the code at the last inspection–including sites with required treatment works and those using offsite waste management.

3 Percentage of operations classified at Step 1, 2 or 3 of the enforcement policy at the last inspection date.

4 Percentage of operations classified as DUR at the last inspection date.

Most COP enforcement actions to date have been associated with implementation of the food services code, which regulates one of the largest business sectors in the district. There has been good cooperation from this sector during application of the escalating approach to enforcement and approximately 11% of food services operations inspected were considered to be “in progress” and 1% were classified as DUR (the same as 2009). The percentage of food services operations in full compliance (88%) was the highest recorded to date for the sector. The main non-compliance issues continued to be failure to install properly-sized grease interceptors and failure to maintain grease interceptors.

For most of the remaining sectors, full compliance rates also remain high. One exception was the vehicle wash sector where 41% of operations were classified as “in progress” due to undersized vehicle wash interceptors or record keeping infractions. A high number of inspections were carried out in this sector in 2010 and early 2011. As a result of these inspections, many of the non-compliance issues have now been resolved. Compliance statistics for 2011 should show considerable improvement for this sector.

Another sector where full compliance rates were lower in 2010 was the printing sector. Twenty-one percent of printing operations were classified as “in progress”. One of the problems identified within this sector was the lack of local qualified private sector expertise to assist with the installation of compliant treatment works. An investigation into the reasons for the lower compliance rates within this sector will be carried out in 2011.

No tickets were issued under the CRD TIA Bylaw and no charges were laid under the Sewer Use Bylaw in 2010.

PROGRESS ON PROPER WASTE TREATMENT AS SPECIFIED IN CODES OF PRACTICE

Another measure of overall compliance levels can be obtained through the analysis of data related to proper waste treatment within each sector. This measure is based on the assumption that once properly-sized treatment works are proven, by inspection, to be installed at a site, they are unlikely to be removed by an operator at a later date. In addition, operations proven to be using offsite waste management on inspection can be assumed to be continuing to use this method of complying with the code. Data related to progress on waste treatment since full implementation of COP are presented in Table 13.

Table 13 Progress on Proper Waste Treatment since Full Code of Practice Implementation

Code of Practice	Date of Full Implementation	Percentage of Operations Properly Treating Waste[1]
Automotive Repair	1 January 2004	93
Carpet Cleaning	1 July 2003	100
Dental	1 July 2001	100
Dry Cleaning	1 July 2004	100
Fermentation	1 July 2003	100
Food Services	1 January 2003	95
Laboratory	1 July 2004	100
Photographic Imaging	1 June 2000	100
Printing	1 January 2005	79
Recreation Facility	1 January 2005	100
Vehicle Wash	1 January 2005	89

Notes:
[1] Percentage of distinct regulated COP operations inspected since full implementation that had properly-sized treatment works in place, or were using offsite waste management, at the end of 2010.

For most code sectors, the percentages of operations properly treating waste remained approximately the same in comparison to those reported in 2009. The largest increase in proper waste treatment was demonstrated in the vehicle wash sector which rose from 74% to 89% in 2010. This was likely a result of increased inspection levels within that sector in 2010.

Proper waste treatment levels within the food services sector have been steadily increasing over the past eight years. The level of 95% recorded in 2010 is the highest recorded to date.

Two sectors showing a significant decrease in comparison to 2009 results were printing operations (dropping from 93% to 79%) and automotive repair operations (dropping from 98% to 93%). The majority of the printing sector non-compliance issues were not related to treatment works, but rather issues around hazardous waste containment and spill response readiness. Only two printing businesses are operating with insufficient treatment, both of which are receiving ongoing direction from CRD RSCP staff to gain compliance. RSCP staff will continue working with the printing operations in 2011 to assist with proper treatment design, installation and maintenance.

3.3 Contaminants Management

Contaminants management represents a new phase for the RSCP, building on the program's successful regulatory approach, but involving a shift in focus towards avoidance, elimination or substitution of polluting products, processes or materials, in order to make reductions in specific priority contaminants that have proven difficult to control or treat.

Following the preparation of a list of priority contaminants in February (see Appendix 2), and approval of additional funding for contaminants management in March 2008, an important step toward the development of a contaminants management plan was initiated. A consultant was selected to prepare an inventory of priority contaminant discharges to the Core Area and Saanich Peninsula sewage collection systems. The main objective of this project was to develop a mass balance of priority contaminant discharges to the sanitary sewer, research likely sources and develop recommendations for reduction measures. A secondary objective was to analyse all residential key manhole data collected to date (see section 3.1.5) to identify trends and develop recommendations for future monitoring. The inventory project was completed in November 2009.

Recommendations from this study included:

- Research into specific household activities or products that result in release of priority pollutants to sewer.
- Addition of a residential key manhole site in the Macaulay Point collection area and increased frequency and consistency of sampling at all sites.
- Additional sampling of permitted and COP discharges to reduce uncertainty and characterize variability in discharge quality and flow.
- Research into potential sources of contaminants for which outputs greatly exceed total known inputs.

The following contaminants management actions were carried out in 2010 as a result of the above recommendations:

- Investigations into residential sources of mercury and PAHs were carried out by consultants in early 2010.
- An additional residential key manhole site within the Macaulay Point collection area was added in 2010 and monitoring frequency was increased.
- Analyses for nonylphenols and their ethoxylates were added to treatment facility influent testing to provide some background data regarding concentrations of non-ionic detergents and their breakdown products in local wastewater.
- Analyses for phthalates were added to a range of sites operating under permits and authorizations to investigate potential sources of these priority contaminants.
- A consultant was hired in November 2010 to: review the existing priority contaminants list and make recommendations for possible modifications; identify potential priority contaminant sources; develop reduction strategies and targets. Recommendations from this study, completed in June 2011, will be considered for further action during the development of the RSCP implementation plan.

3.4 Contaminant Reductions

3.4.1 Reduction Targets

The Core Area LWMP contains a commitment to develop “contaminant reduction targets” for existing and future waste discharge permit holders and COP sectors. Since the RSCP's jurisdiction extends beyond the core area, staff were requested to develop contaminant reduction targets that would be applicable in all participating sewage collection areas within the CRD.

WASTE DISCHARGE PERMIT TARGETS

The contaminant reduction targets established for waste discharge permit holders are generally considered to be the individual permit discharge concentration limits that are established either during the initial permitting process or during permit re-assessment.

Many permit holders have consistently met their permit discharge concentration limits since their permit was issued through application of good operating procedures. Other sites have met their target concentration limits following installation of treatment works and/or adoption of good operating procedures or pollution prevention measures. At the end of 2010, 33% of permitted sites were meeting their target concentration limits and a further 64% were in progress toward meeting their targets. These estimates are based on the number of outstanding non-compliance issues due to permit limit exceedences for all permits in place at the end of 2010.

There have been significant contaminant load reductions over the years as a result of permitted sites implementing changes to meet their concentration limit targets (see Appendix 1).

CODES OF PRACTICE TARGETS

Contaminant reduction targets have been prepared for each of the 11 existing COP. The general procedure for setting the targets has been documented in previous annual reports. The degree of achievement of each COP target is assessed following the completion of the five-year inspection cycle following full implementation of each code. The five-year contaminant reduction targets for each COP sector are summarized in Table 14, along with estimates of reductions up to the end of 2009.

Table 14 Contaminant Reduction Targets for Sectors Operating Under CRD Codes of Practice

Code Sector	Baseline Year	Target Year	Contaminant(s)	Target % Reduction	2010 Reduction Estimates (%)
Photographic Imaging	2000	2005	Silver	86	99
Dental	2001	2006	Mercury, Copper, Zinc, Silver	86	96
Food Services	2002	2007	Oil and Grease	77	86
Carpet Cleaning	2002	2007	Suspended Solids	57	66
Fermentation	2002	2007	Suspended Solids	84	88
Automotive Repair	2003	2008	Mineral Oil and Grease Copper, Lead, Nickel, Zinc	90 60	94 87
Laboratory	2003	2008	Wide range of restricted and prohibited wastes	95	>95
Dry Cleaning	2003	2008	Tetrachloroethene (PERC)	>99	99
Vehicle Wash	2004	2009	Mineral Oil and Grease Copper, Lead, Nickel, Zinc	90 30	80 27
Printing	2004	2009	Mineral Oil and Grease BETX	88	77
Recreation Facility	2004	2009	Suspended Solids	81	85

In 2009, the end of the five-year inspection cycle was reached for the final three COP that were fully implemented in January 2005. All five-year reduction targets have now been successfully achieved with the exception of those for the vehicle wash and printing sectors. Compliance levels within these sectors will be the focus of further investigations in 2011.

3.4.2 Marine Outfall Contaminant Reductions

One of the main objectives of the RSCP is protection of the marine receiving environment. A specific goal associated with this objective, included in both the Core Area and Saanich Peninsula LWMPs, is “to maintain or reduce effluent contaminant loadings to the receiving environment”.

CORE AREA OUTFALL EFFLUENT

CRD marine programs staff regularly monitor effluent quality at the Macaulay and Clover point outfalls for a wide range of substances. Several trend analyses of the data collected through core area effluent monitoring have been carried out in the past (PLA, 2002; PLA, 2004; Golder Associates Ltd., 2006) and results have been summarized in previous RSCP annual reports.

The most recent effluent trend analysis was undertaken in 2009 (Golder Associates Ltd., 2009a). This report provided a statistical assessment of wastewater trends at Clover and Macaulay point outfalls over the period 1990-2008 and wastewater and biosolids trends at the SPWWTP from 2000 to 2008. The findings of this report for Clover and Macaulay points over the 18-year period of record included the following:

- The broad temporal trends for key parameters were similar at both outfalls.
- Significant reductions in detection frequency for several parameters were noted in recent years [the pesticide lindane, di-n-octyl phthalate, mercury, xylenes, tetrachloroethene (perchloroethene or PCE) and mineral oil and grease are now infrequently detected].
- Priority metals such as chromium, mercury, cadmium, lead, nickel, silver and zinc have shown significant decreases in loads, ranging up to a 26% decrease per year (some of these were new trends). There were, however, significant increases in loads of arsenic, molybdenum, dissolved cobalt and selenium (at either one or both outfalls) ranging from 2 to 10% per year.
- Organic compounds, including 1,4-dichlorobenzene, PCE, toluene and xylenes, have shown significant decreases in loads, ranging from 6 to 18% per year.
- Significant decreases of 3% and 9% per year were also observed for oil and grease and cyanide (reversing an increasing trend for cyanide reported in PLA, 2004).
- Some individual PAHs (e.g., fluorene, phenanthrene, 2-methylnapthalene) have displayed significant decreases in loads over time (3 to 8% increase per year). These trends were not evident in previous assessments.
- Other individual PAHs (e.g., acenapthene, fluoranthene), two phthalates, total high molecular weight PAHs and total PAHs exhibited apparent increasing trends in loads, some of which may be artifacts of elevated analytical detection limits in recent years.
- Non-priority substances showing increasing trends in loads included dimethyl ketone and trichloromethane.
- General trend results from previous years' analyses were confirmed; any differences were likely attributable to the higher statistical power in the recent study resulting from the inclusion of three additional years of sampling data.

These continuing decreasing trends and recent changes in loads are thought to be largely due to a combination of the success of source control efforts at regulating contaminants, increasing public and industry awareness regarding product selection and use of proper waste treatment practices. For example, the reported load reductions for tetrachloroethene (PCE), a solvent commonly used in the dry cleaning industry, is probably linked to the adoption of an amended COP for dry cleaning operations in 2003. This code, amended following introduction of new federal regulations regarding the use of PCE, requires installation of new treatment works that virtually eliminate the discharge of PCE to the sanitary sewer.

The reported significant decreases in loads of mercury and silver are likely attributable to the implementation of the dental and photo imaging codes in the core area over the past few years. Significant decreases in loads of oil and grease at both outfalls are probably associated with the continued implementation of the food services COP and increasing compliance levels.

The continuing decreases in a range of metals, new significant decreases in certain PAHs, xylenes and toluene, and the lower frequency of detection of mineral oil and grease in recent years are likely partly attributable to the full implementation of the automotive repair COP and vehicle wash COP in recent years.

The significant reductions in 1,4-dichlorobenzene may, in part, be due to the success of ongoing business and institutional outreach regarding the use of less harmful alternatives to urinal deodorizers which contain this chemical.

The apparent increases for some individual PAHs (e.g., acenapthene, fluoranthene) and some phthalates appear to be linked, in part, to elevated analytical method detection limits in recent years. The trend report has recommended the use of lower detection limits for selected organic substances in future monitoring at both outfalls.

Preliminary results of Macaulay and Clover point effluent monitoring in 2010 generally indicate similar concentrations and loads of contaminants to those reported in Golder Associates Ltd, (2009a). This suggests that previously reported trends are either continuing or leveling off. For example, TOG and SAD cyanide loads appear to show continuing decreases in the core area over the past two years in comparison to mean values for the period 2003-2008. Statistical confirmation of these preliminary results will be undertaken as part of the next long-term analysis of effluent trends scheduled for the core area outfalls in 2012.

Further information about core area effluent quality in 2010 can be found in the upcoming Macaulay and Clover Point Wastewater and Marine Environment Program (WMEP) annual report for 2010, to be completed towards the end of 2011.

SAANICH PENINSULA WASTEWATER TREATMENT PLANT INFLUENT AND EFFLUENT

Influent and effluent data has been collected at the SPWWTP since the plant commenced operation in 2000. The first summary of trends in these data was reported in Hatfield Consultants Ltd, 2005. This report identified a significant reducing trend in influent loads of TOG over the five-year period, which is probably linked to the full implementation of the food services COP in 2003. There were few meaningful trends in influent loads of other contaminants; however, there was an increasing trend reported for loads of high molecular weight PAHs over the same period.

As mentioned above, Golder Associates Ltd., (2009a) included a statistical assessment of wastewater influent and effluent trends at the SPWWTP over the period 2000-2008. The main findings of this report for the SPWWTP included the following:

- Trends in influent and effluent contaminants were similar in terms of direction and significance.
- Significant reductions in detection frequency for several parameters were noted in recent years (the pesticide lindane, several PAHs and tetrachloroethene (PCE) are now less frequently detected in influent).
- Priority metals generally showed significant decreases in influent loads; the greatest decreases were observed for chromium VI, mercury, lead and silver (ranging from 7 to 31% per year). The lead and mercury decreases had not been previously identified.
- There was a significant increase in manganese and molybdenum reported in influent (3% and 12% per year respectively).
- Other priority contaminants such as 1,4-dichlorobenzene and cyanide showed decreases in influent loads that had not been previously identified.
- Total PAHs and total low molecular weight PAHs exhibited apparent increasing trends in influent loads, which may be artifacts of elevated detection limits in recent years.
- One phthalate (butyl benzyl phthalate) also demonstrated a significant increase in influent loads over the study period.
- A higher number of significant trends were observed than in the study by Hatfield Consultants Ltd, 2005, likely due to an increase in statistical power through the addition of four years of sampling data.

Source control initiatives appear to have yielded benefits in terms of concentrations and loadings of priority contaminants in both influent and effluent at the SPWWTP. Concentrations of several of the key metals of interest (cadmium, chromium VI, mercury, silver and lead) exhibited significant decreasing trends over the study period. The large decreases in total mercury and silver loads in influent are likely associated with the implementation of the dental and photo imaging COP.

Observed increases in molybdenum loads could be associated with the wide use of molybdate corrosion inhibitors in heating and cooling systems, as identified in the 2008 annual report. Further work on educating businesses and institutions about the use and effectiveness of alternative, metal-free, corrosion inhibition products is being considered during the development of the next five-year plan in 2011.

The specific cause for the increasing trend for butyl benzyl phthalate in SPWWTP wastewater is unknown. Phthalates are ubiquitous contaminants associated with a variety of plastics and are not specific to any industry or business sector.

Preliminary results of the SPWWTP influent and effluent monitoring in 2010 indicate very similar concentrations and loads of contaminants to those reported in Golder Associates Ltd., (2009a). This suggests that previously reported trends are either continuing or leveling off. Statistical confirmation of these results will be undertaken as part of the next long-term analysis of wastewater trends for the SPWWTP tentatively scheduled for 2012.

Further information about the trend analysis and SPWWTP influent and effluent quality in 2010 can be found in the SPWWTP Wastewater and Marine Environment Program annual report for 2010, to be completed toward the end of 2011.

3.4.3 Biosolids and Mixed Liquor Contaminant Reductions

Another important objective of the RSCP is the protection of sewage treatment plant biosolids and mixed liquor quality. Biosolids are stabilized sludge from wastewater treatment processes that have been treated to allow beneficial recycling in accordance with the requirements of the *Organic Matter Recycling Regulation of British Columbia* (OMRR). Mixed liquor is the term used for a mixture of wastewater and activated sludge produced at a sewage treatment plant. The specific goal associated with this objective, included in both the Core Area and Saanich Peninsula LWMPs, is "to meet BC standards for Class A biosolids as outlined in the OMRR". More specifically, these are the standards established for Class A compost set out in Schedule 4 of the OMRR and the Class A Biosolids Standards for maximum Acceptable Metal Concentrations specified in Table II of Canadian Food Inspection Agency Trade memorandum T-4-93 (CFIA, 1997).

Lime and heat-treated biosolids produced at the SPWWTP have been monitored for a range of metals and other contaminants on a regular basis since the plant was commissioned in 2000. Similar monitoring has been carried out on the mixed liquor produced at the smaller GWWTP since 1994.

SAANICH PENINSULA WASTEWATER TREATMENT PLANT BIOSOLIDS

The quality of SPWWTP biosolids has consistently met the most stringent (Class A) criteria for all parameters since 2000. Biosolids trend analyses at SPWWTP (reported in Hatfield Consultants Ltd, 2005) confirmed that there were significant downward trends in mercury, chromium, barium and manganese concentrations over the period 2000-2004.

The Golder Associates Ltd., (2009a) report included a re-assessment of biosolids trends at the SPWWTP over the period 2000-2008. The main findings of this report included the following:

- Significant decreases in the detection frequency of nickel and silver were observed.
- Significant decreases ranging from 4 to 30% per year were observed for concentrations of a range of metals including chromium, mercury, cadmium, zinc and copper. Most of these trends have become apparent since 2004.
- There was an apparent increase in arsenic since 2004; however, the true trend was uncertain due to use of elevated detection limits over the period 2006-2008.
- Many parameters which did not show significant trends in the previous assessment showed significant trends in this study (over 70% of these trends were decreases) due to an increase in statistical power and the inclusion of four additional years of sampling data.

Many of the observed decreases are likely linked to the application of source control regulations within the SPWWTP sewage catchment area, as previously noted above for SPWWTP influent and effluent.

Mercury levels in SPWWTP biosolids have met the Class A criterion of 5 mg/kg since 2000 showing a decline to the current low levels over the period 2000-2006 (see Figure 1). Mercury levels in SPWWTP biosolids have been less than 0.5 mg/kg since April 2005. These very low, and relatively stable, results confirm the continuing success of the implementation of the dental COP in July 2001 (requiring installation of amalgam separators at all dental offices) in reducing and controlling mercury levels in SPWWTP biosolids.

As was the case in 2009, there was a reduced volume of biosolids production in 2010. Consequently, only batches produced in February, March, May, August and September of 2010 were sampled and analysed. All analytical results again met the Class A criteria for metals.

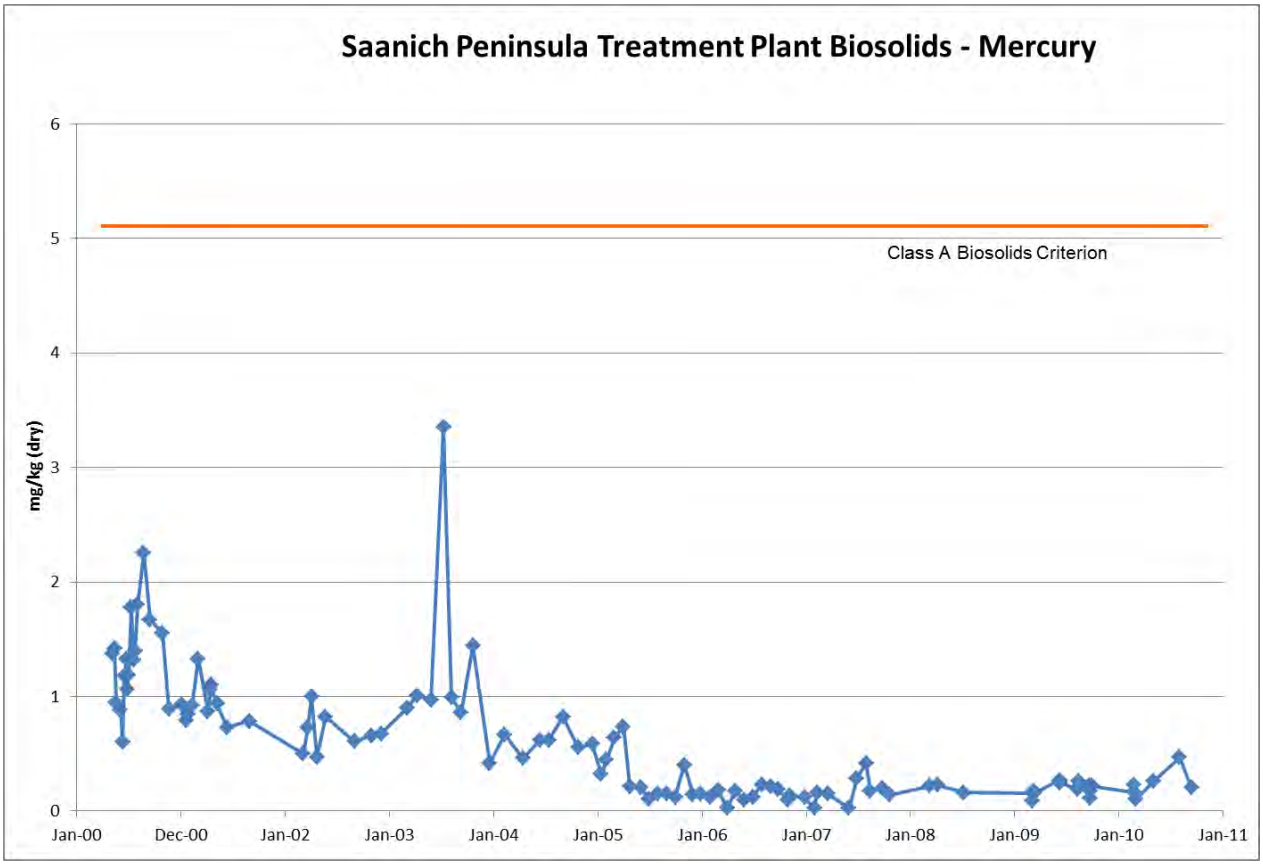

Figure 1 Mercury in Saanich Peninsula Wastewater Treatment Plant Biosolids (2000-2010)

GANGES WASTEWATER TREATMENT PLANT MIXED LIQUOR

The GWWTP process produces a mixed liquor product and not a biosolids product as defined by the OMRR. The mixed liquor is sampled and is assessed using the Class A biosolids quality criteria for comparison purposes to evaluate overall metal concentrations. The GWWTP mixed liquor has met Class A quality criteria for all parameters except mercury (and occasionally molybdenum, once for cadmium) since monitoring began in 1994.

Mercury levels in Ganges mixed liquor show a different temporal pattern than that for SPWWTP biosolids; however, the overall trend is toward lower levels (see Figure 2). Historic trends for Ganges mixed liquor levels have been summarized in previous RSCP annual reports. Implementation of the dental COP is also thought to be the main reason for the reductions in mercury concentrations at the GWWTP.

For the second consecutive calendar year, the 2010 GWWTP mixed liquor results met the Class A criteria for all metals, including mercury. This finding may be related to an increased level of business inspection in the Ganges collection area in 2009 and 2010. Of 18 businesses inspected in 2010, all operations connected to sewer were found to be fully compliant with the respective COP. The only exception was two food services operations that were classified as "in progress" toward compliance.

The historically low levels of mercury in Ganges mixed liquor in 2009 and 2010 may be directly related to improved maintenance of dental amalgam separators resulting from the increase in RSCP inspection activity.

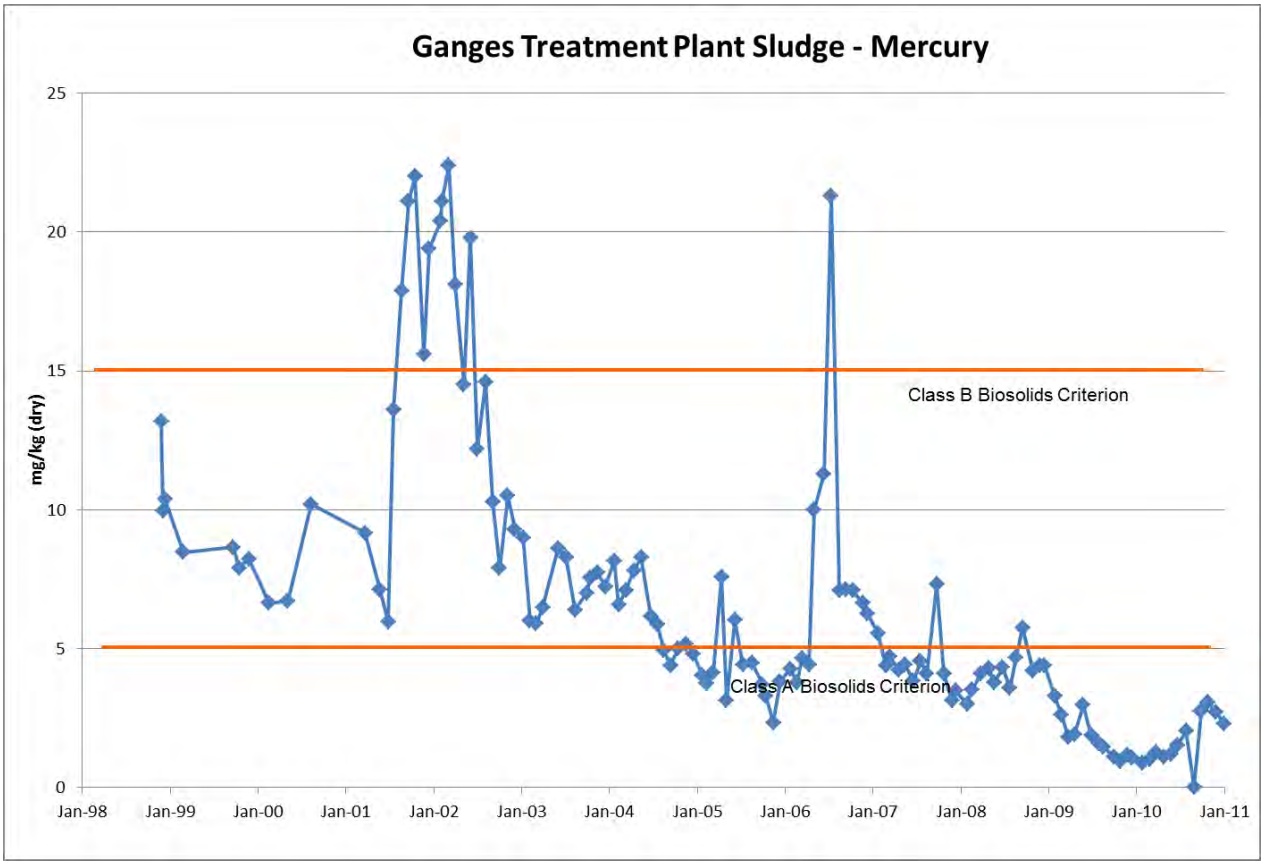

Figure 2 Mercury in Ganges Wastewater Treatment Plant Mixed Liquor (1999-2010)

3.5 Significant Incident Reporting

CRD operations and municipal engineering department staff communicate regularly with RSCP staff regarding sanitary sewer wastewater quality problems, suspicious discharges or significant incidents leading to contamination of the district's collection and treatment systems. Completed copies of the CRD's significant incident report form, outlining the nature of the incident and a description of the response, are sent to engineering contacts within the municipality where the incident occurred. This form was developed in 2000 to record operational problems within all trunk sewers and treatment plants operated by the CRD.

Table 15 provides a summary of incidents reported in 2010 that impacted, or had the potential to impact, the environment, sewerage works, sewage treatment facilities or public health and safety. Notes on incident follow-up were summarized from CRD significant incident reports; municipal grease reports; complaint forms; memos; e-mails; conversation records and other notes on file. There was one incident reported at a CRD sewage treatment plant in 2010. There were an additional two incidents reported within the CRD's sewage collection systems and one incident reported in the District of Saanich's collection systems. The CRD incidents underscored the need for sampling equipment to be located at key CRD PS and for operations staff to be trained to obtain samples during incidents. This equipment and training was provided to operations staff in 2011.

Table 15 Summary of Reported Sewer System Incidents (2010)

Contaminant	Nature of Incident	Potential Impact	Incident Follow-up
Fats, Oils and Grease (FOG)	CRD operations staff report excess FOG at Craigflower PS; City of Colwood reports periodic grease build-up problems at Wilfert PS–upstream of Craigflower. (September)	Sewer back-ups (health risk), increased maintenance of municipal sewer lines.	Multiple food services inspections by RSCP–findings included: grease interceptors not installed, undersized or not properly maintained.
Unknown Substance	CRD operations staff report milky coloration of wastewater influent to Lang Cove PS. (April)	Unknown	No samples collected by operations staff to identify the substance. Sampling equipment and procedures were provided to operations staff.
Volatile Organic Compounds (VOCs)	CRD operations staff reported a strong solvent odour at the Clover Point PS. (October)	Worker health and safety	No samples taken by operations staff. RSCP staff investigated, no source was identified. Sampling equipment and procedures were provided to operations staff.
FOG	District of Saanich report excess FOG in manhole during flushing operation off West Saanich Road (Royal Oak). (January)	Sewer back-ups (health risk), increased maintenance of municipal sewer lines.	Multiple food services inspections by RSCP. One grease interceptor found not properly maintained. Advised an increase in pump-out frequency.

3.6 Outreach

RSCP staff continued to develop and maintain an outreach and education presence throughout 2010, building on the residential outreach components launched in 2007 and 2008 under the catchphrase "Clean Water Begins at Home". This initiative has overall goals of linking common household practices with their potential impacts, promoting personal action to improve those practices and reducing the amount of contaminants discharged to sewer by the residential sector. Community-based social marketing techniques that help people make positive changes by providing them with clear, desirable practices that can be easily accomplished are built into this new approach.

Following the service delivery review, and subsequent re-organization, RSCP messaging has now been made available at more outreach events than previously because Partnerships staff have been cross-trained to deliver information about multiple programs.

Key initiatives for 2010 are summarized below under separate sections for residential and business outreach.

RESIDENTIAL OUTREACH

RSCP staff continued the promotion of the three "Clean Water Begins at Home" campaigns (Fats, Oils and Grease reduction, Surfactant reduction and Medications return) through print, radio and web-based advertisements and outreach events held between January and December 2010.

Key residential outreach initiatives and events in 2010 included:

- Sustainable U: Source Control 101 (September 2009-April 2010): Acting on some of the findings of the 2009 telephone survey, a social media campaign was developed and implemented to make source control messaging available to males 18-34 years of age throughout the CRD. The outreach media utilized in this campaign included: web-based tools (i.e., Facebook, YouTube and Twitter); print; outdoor LED screen (at Save-On-Foods Memorial Arena); booths at sporting and recreational events (e.g., outdoor show, Victoria Highlanders soccer, University of Victoria basketball, Salmon Kings hockey). This was the first corporately-supported social media campaign developed and launched as a pilot by the CRD. A number of external business and institutional partners helped support the campaign with prizes and co-promotions. The campaign reached over 41,000 residents. 2,200 "students" participated in the on-line "course" on source control practices. Of the 2,200 students 50% were in our target age group and 30% were males 18-34 years of age. We also received 49 response videos promoting sustainable practices. An informal survey indicated that 50% of those who were receiving the message via Sustainable U adopted source control practices.

  Based on the success of Sustainable U: Source Control 101, other social media campaigns were developed for other divisions and departments including Source Control 201, which is expected to be launched in 2011.

- "The Ocean is Our Home" exhibit at Shaw Ocean Discovery Centre in Sidney: This initiative was launched in June and ran until October 2010 under a partnership that was developed in 2009 with the Centre. The exhibit consisted of a hands-on display linking common household activities with potential impacts on the marine receiving environment–highlighting the protective role of source control and other CRD programs. The combined program messaging was a key initiative supporting the department's goal of a one-window approach to reaching out to the public. The target audience for the exhibit was school age students and the general public.

- Home care professionals from the Vancouver Island Health Authority (VIHA) were engaged to help promote proper waste medication disposal to their home care patients. Initial discussions have included providing training for home care professionals on the Medications Return Program and identifying tools to help them promote the program. Furthermore, RSCP staff are acting as a liaison between VIHA and the Post Consumer Pharmaceutical Stewardship Association to help support VIHA consumer medication disposal initiatives.

Update on the Medications Return Campaign

- Based on the feedback from internal partners and the telephone survey completed in 2009 (see 2009 RSCP annual report), the medication return campaign messaging was modified. Although the survey indicated that residents were reducing medication disposal into the sewer, there was an increase in disposal into household refuse. This was also observed through waste analysis performed by landfill staff. Campaign messaging was modified to emphasize that waste medication should not be disposed into household refuse as well as not into the sewer.
- In 2010, the CRD continued to record a higher medication return rate per capita than most other regional districts in the province (second only to the Sunshine Coast). Over eight tonnes of medications were collected–representing a 164% increase over the amount collected in 2007, the year before the CRD Medications Return campaign was launched and a 15% increase over the amount collected in 2009.

BUSINESS OUTREACH

In 2010, RSCP staff continued to maintain outreach to local businesses through the following activities:

- Two stakeholder groups, representing the automotive repair and food services sectors, were invited to participate in developing outreach tools to promote compliance and commitment to source control practices. Stakeholders included owners and operators of small and large operations and their respective service providers. Each of the two sectors participated in an open dialog session regarding source control, demand management (water conservation) and cross connection control (backflow prevention) inspections, audits, outreach and other issues. Combining these messages further fostered the "one-window" Partnerships approach to working with business.
- In October 2010, RSCP staff participated in a display booth at a business services show hosted by the Victoria Chamber of Commerce. The display, staffed in partnership with CRD DM and CCC and other services offered by the CRD. Approximately 500 business representatives attended the show.
- The 2010 CRD EcoStar award event was co-sponsored by RSCP and staff participated in the evaluation committee for the Water Stewardship, Community Environmental Leader and Youth Leader categories. The EcoStar awards have, since 2000, highlighted businesses, organizations and individuals who have incorporated positive environmental practices into their operations or activities. The 2010 Water Stewardship category was awarded to Mary Cooper of the Mayne Island Integrated Water Systems Society as an active educator in water management.

REGIONAL SOURCE CONTROL PROGRAM WEBSITE

RSCP staff continued to work, in cooperation with CRD Corporate Communications and Information Technology staff, to update residential and business web pages in 2010. Updates to the pages focused on consistency of messaging between outreach tools used by source control and other CRD programs. Additional work focused on developing the social media platforms and Sustainable U.

3.7 Partnerships Initiatives

Since its inception, the RSCP has worked with many agencies to develop bylaws, COP, policies and procedures or to resolve problems of mutual concern. These agencies have included MOE, DND, regional districts, municipalities, VIHA and local academic institutions.

In early 2010, the CRD's Service Delivery Review and re-structuring of the RSCP into the new Environmental Partnerships division was implemented. As one of five divisions within the Environmental Sustainability (ES) department, Environmental Partnerships delivers collaborative and responsible environmental services that engage and inspire changes in behaviour for the stewardship, protection and well-being of our region.

As a result of this new direction and re-structuring between the ES and Integrated Water Services departments, RSCP has worked closely with DM to expand inspection services offered to include water audits for local businesses. This past year, RSCP staff participated in water audits for the University of Victoria and Thrifty Foods and helped local restaurants reduce their water consumption through assessing their eligibility for a $5,000 once-through cooling water rebate.

In 2010, RSCP staff commenced coordinated inspections with two other Partnerships programs, (CCC and DM) and formalized inspection-notification agreements with external jurisdictions (municipal plumbing inspectors and VIHA health inspectors). In expanding the number of programs and jurisdictions covered in a single inspection, local businesses spend less time dealing with regulators, and are able to better understand how the various programs fit with one another; conversely regulators are better able to create positive relationships with their clientele, improve internal and multi-jurisdictional information sharing, and offer efficient, thorough and flexible services to the ICI sector.

In an effort to expand and improve the quality of service to both residents and the ICI sector, RSCP staff regularly participated in Partnerships cross training sessions in 2010, an initiative coordinated by DM staff. Through this training, staff from various programs within ES coach, inform and update other staff about their particular initiatives. The training provides RSCP staff with knowledge to support residents and businesses in accessing relevant information and resources. Training of RSCP staff in CCC operations has been particularly useful in helping facilities such as automotive repair businesses, schools and restaurants prepare and transition into compliance with the new CCC bylaw.

In 2010, RSCP staff extended their knowledge and experience to third-year plumbing apprentices at Camosun College's Interurban campus through a scenario-based presentation on the subjects of effluent treatment, source control and emerging contaminants of concern. This outreach was well received by the college, resulting in a return invitation for 2011.

This past year, the RSCP sponsored a project through the Royal Roads Environmental Science Undergraduate program, to evaluate measures for addressing "emerging contaminants of concern". Staff from the CRD Wastewater and Marine Environment program contributed in-kind consultation in developing the scope as well as providing technical expertise to the students. The research findings and deliverables will be presented in August 2011

RSCP and Metro Vancouver both hosted one on-site meeting each during 2010 to share experience and knowledge gained through implementation of their respective source control programs and to discuss and resolve common source control issues. Metro Vancouver is planning a return visit to the CRD in 2011.

It is anticipated that there will be increased collaboration with municipalities, business groups, institutions and other agencies in 2011 and beyond.

Some of the longer term RSCP partnerships that were continued in 2010 are outlined below.

Municipalities

Since 1999, municipal staff have been encouraged to issue waste discharge assessment forms (WDAFs) to persons applying for new building licences or new sewer connections for businesses that have the potential to discharge non-domestic waste to sewer. Completed forms are forwarded by the municipality to the CRD for evaluation. A total of 12 WDAFs were submitted in 2010 for evaluation by RSCP staff (mostly from City of Victoria). This represented a significant decrease compared to the number of forms submitted in 2008 (79). The main reason for this was that a new procedure was tested in 2009, whereby businesses or plumbers contracted to perform upgrades at COP operations, directly contacted RSCP staff regarding COP requirements. Staff were alerted to a further 43 businesses (mostly food services operations in Victoria) which required assistance in this way. Letters, copied to municipal plumbing or licensing contacts, were sent directly to the COP operations outlining specific requirements and providing information.

Municipal staff continued to provide plumbing and building information, flow data and other information to RSCP staff to assist in the preparation of permits, authorizations and COP equipment installations in 2010.

Department of National Defence (DND)

In 2000, a working group on liquid waste pollution prevention was established between the CRD and DND. The objective of this group was to facilitate the sharing of information on wastewater quality, stormwater quality and pollution prevention measures at DND facilities that discharge into municipal and CRD wastewater collection and treatment systems.

RSCP staff have participated in quarterly working group meetings from 2000 to 2008. Meetings have also included representatives from Public Works and Government Services Canada and, more recently, CRD Stormwater, Harbours and Watersheds and CRD Water Services. The terms of reference for this group were reviewed in 2007 and the agreement was re-signed by CRD and DND representatives in early 2008. Regular meetings were re-scheduled to a bi-annual frequency in 2009; however, no meetings were held in 2010 due to scheduling difficulties. RSCP staff continue to receive information on batch discharges of wastewater from CFB Esquimalt. It is hoped that regular working group meetings will recommence in 2011.

3.8 Data Management

RSCP staff facilitated the full migration of data to the new Cross Connection and Regional Source Control Information Management System (CRIMS) which had been under development by the CRD's Information Technology department since 2008. CRIMS provides users with a more flexible interface, better data security and error tracking. RSCP staff are working with CCC staff (formerly with CRD Water Services) to ensure there is consistency between the programs.

Some of the work in 2010 focused on developing tools for clear and consistent reporting using the corporate software Crystal Report Enterprise. Additional work involves the development of standard operating procedures, where program staff will work closely with CCC staff to ensure consistency between the programs.

3.9 Revenue and Expenditures

A summary of revenue and expenditures for the RSCP in 2010 is provided in Table 16.

A portion of program revenue is provided through the imposition of fees and charges on businesses and institutions under the Source Control Local Service Establishment Bylaw. The total waste discharge permit fees and fines (tickets) collected in 2010 amounted to approximately $86,713.

Table 16 Regional Source Control Program Revenue and Expenditures–2010

Description	Revenue ($)	Expenditure ($)	
Fees, fines, grants, surplus, other	229,211		
Requisition	1,088,898		
Total Program Revenue	**1,318,109**		
Program Expenditures		1,281,978	
Administration Expenditures		19,093	
Total Program Expenditure		**1,301,071**	
Carry Forward to 2011			**17,038**

WASTE DISCHARGE PERMIT FEES

The RSCP waste discharge permit fee structure was developed in 1997 in consultation with stakeholders to reflect the size and impact of the discharge from each business type. The fee structure is outlined in the Sewer Use Bylaw and the RSCP fees and charges policy governs the administration of the fees. In addition to a fixed annual administration fee, permittees pay discharge fees in proportion to the loads of specific contaminants discharged, based on their own self-monitoring results. Permit application and amendment fees are also charged in order to offset administrative costs.

3.10 Planning and Development

The following is a summary of the main activities and achievements related to the management, planning and administration of the RSCP in 2010.

- The final report for the third five-year independent review of the program for the period 2004-2008 was delivered in March 2010 (Morrison Hershfield, 2010). The findings of this report will be used to assist in the development of the next RSCP five-year plan–for the period 2011-2015. The five-year plan for 2006-2010 is summarized in Table 17.
- The RSCP annual report for 2009 and the five-year review report were presented to the Core Area Liquid Waste Management committee (CALWMC); the Environment committee; the Saanich Peninsula Wastewater committee and the CRD Board over the period September to November 2010. Copies of both reports were sent to MOE in September 2010.
- A consultant was selected in November 2010 to undertake a review of the current RSCP permit fee structure. The purpose of this review was to determine whether the original objectives of the fee structure were being met, to examine the applicability of approaches used in other jurisdictions and to investigate a range of fee structure options for future consideration. The final report was to be delivered in 2011.
- The RSCP continued to meet the commitments outlined in the Core Area and Saanich Peninsula LWMPs in 2010.

Table 17 Regional Source Control Program–Five-Year Plan (2006 to 2010)

Program Component	Sub-component	Main Activities	2006	2007	2008	2009	2010
Planning and Development		Review objectives and goals					
		Review and amend bylaw and policies					
		Annual budget preparation					
		Annual report and program performance assessment					
		Five-year Review (2004-2008)					
Inspections	Permits	Inspect all permits 2x/year (3x/year for priority contaminant dischargers) prepare compliance letters, undertake follow-up inspections, investigate and assess new dischargers					
	Codes	Inspect between 20% and 100% of each sector/year (based on priority contaminant dischargers), prepare compliance letters, undertake follow-up inspections, investigate new dischargers					
Monitoring	Permits	Audit all permits 2x/year					
	Other Monitoring	Review, schedule and complete monitoring annually for codes, key manholes and treatment plant influent					
Enforcement	Permits and Codes	Enforce bylaw requirements, follow policies, referrals to Bylaw Enforcement, gather and present evidence, obtain legal counsel					
		Review, amend Ticket Information Authorization Bylaw					
Outreach	Business	Continue annual plan implementation, including stakeholder updates, outreach materials and EcoStar awards					
		Evaluate/revise plan (annually)					
	Residential	Implement expanded plan, including priority contaminant reduction strategy, outreach materials and special events					
		Evaluate/revise plan (annually)					
Contaminants Management		Develop plan					
		Implement plan and strategies					
		Evaluate/revise plan (annually)					
Data Management		RSCP database maintenance, quality control and custom data report preparation					
		ESIS management for RSCP data					
		GIS integration with RSCP dbase					
Special Projects		Municipal information meetings					
		Review restricted waste limits					
		Mercury reduction study					

3.11 Performance Measures

Three program performance measures were developed over the period 2004-2006. These measures have been incorporated in RSCP "program budgets" since 2007 and have been included in the scope of the five-year review undertaken in 2009. The performance measures are as follows:

- *"Percentage of regulated businesses with proper waste treatment installed".* This measure is associated with the RSCP objective of consistent application of the program for all users of CRD sewage facilities.
- *"Percentage of priority contaminants showing no increase in loads to the core area environment".* This measure is associated with the RSCP objective of protecting the marine environment adjacent to the CRD's sewage outfalls.
- *"Percentage of biosolids and sludge samples that meet Class A standards for metals".* This measure is associated with the RSCP objective of protecting the quality of sewage sludge and biosolids.

The method of calculating each performance measure is described in Appendix 3, using 2010 data as an example, where available. The results of performance measure calculations for the period 2005-2010 are summarized in Table 18.

Table 18 Results of RSCP Performance Measures (2005-2010)

Performance Measure	2005	2006	2007	2008	2009	2010
1. *"Percentage of regulated businesses with proper waste treatment installed".*	80	85	87	93	95	96
2. *"Percentage of priority contaminants showing no increase in loads to the core area environment".*	92	N/M	N/M	79	N/M	N/M
3. *"Percentage of biosolids and sludge samples that meet Class A standards for metals".*	92	67	88	93	100	100

Note:
N/M = Not measured

Performance measure #1 was not able to be calculated in 2004 due to the lack of data on the installation of proper waste treatment for COP in that year. Steady progress has been recorded for this measure over the period 2005-2010 with the highest overall percentage (96%) being recorded in 2010.

Performance measure #2 is based on the "yearly trend" in loadings at both Macaulay and Clover point outfalls for 38 priority contaminants, as documented in the most recent trend analysis report. Long-term analysis of effluent trends for the core area outfalls is only undertaken every three years. This measure cannot be calculated for the two years in between. The next analysis, including data from 1990 to 2011, is scheduled for 2012. Despite these limitations, this measure indicates that loadings of the majority of priority pollutants to the core area environment have remained stable or decreased regardless of the fact that core area population and sewage flows have increased by more than 10% during the same period.

The final performance measure has shown some variability over the years–largely due to the mixed liquor metals results from the GWWTP exceeding Class A criteria for biosolids. However, for the second consecutive year, the 2010 GWWTP mixed liquor results met the Class A criteria for all metals, including mercury–resulting in an overall 100% rating for this performance measure.

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APPENDIX 1

Summary of Contaminant Load Reductions Achieved by Waste Discharge Permit Holders

Permit Holder	Baseline Year	Comparison Year	Priority Contaminants	Load Reduction (%)	Comments
Seafood Processor #1	1997	2001-2002	COD	93	Screens installed in 2000, improved operating practices. EcoStar award winner in 2002. Composite sampling started in 2006. Business closed in 2008.
			O&G	92	
			TSS	87	
Groundwater Remediation Site			TSS	75	Filtration, neutralization, flocculation, carbon adsorption installed in 1992, additional carbon adsorption in 1996. EcoStar award winner in 2003. Phase II site remediation was completed in 2006. No exceedences in 2009 and 2010.
			O&G	90	
			BETX	>99	
			PAH	>99	
			Metals	30->99	
Metal Plater #1	1998	2000	Copper	69	Improved operating practices in 1999. Compliance plan completed in 2006, following a permit assessment. Permit last amended June 2010. Additional copper and cadmium drag out installed.
			Nickel	47	
Metal Plater #2	1997	2000	Cadmium	43	Improved operating practices in 1998. Water usage reduction of 70% in 2010 by using spray misters and reducing water turnover in final rinsing bath.
			Chromium	76	
			Copper	32	
Metal Plater #3	2000	2007	Cadmium	>99	Oil-water separation, flocculation/filtration installed in 2001. Evaporation equipment installed in 2006. Discharge to sewer virtually eliminated in 2007. No discharge to sewer from plating operation in 2009 and 2010.
			Chromium	>99	
Electronic Component Manufacturer	2000	2001	COD	47	Flocculation/filtration system installed in mid-2000. EcoStar award winner in 2001.
			TSS	89	
			Metals	43->99	
Septage Disposal Facility	1991	2002	BOD	96	De-watering equipment and dissolved air flotation (DAF) installed in 1999. Bio-reactor added in 2001. Business owner changed in 2005, equipment and procedure changes followed. Compliance plan completed in 2006. Following staff assessment, permit limits were amended in 2010.
			TSS	99	
			O&G	>99	
			MOG	>99	
			Metals	85->99	
			Phenols	48	
Regional Bus Transportation Facility	1998	1999	COD	33	DAF unit installed in 1999. Permit amended in 2006 and 2010. Operation under staff assessment for part of 2010 due to exceedences associated with use of soap instead of solvents to clean oily metal parts. Investigation ongoing to reduce use of soap or find an alternative.
			MOG	39	
			Lead	61	
			PAH	58	
Chemical Manufacturer	1997	2010	pH	in control	Installed pH control works in 1998. Permit amended in 2005. Excellent compliance record.

Appendix 1, continued

Permit Holder	Baseline Year	Comparison Year	Priority Contaminants	Load Reduction (%)	Comments
Gasoline Station Remediation on Douglas Street	2002	2002	TSS	98-99	Permit issued 2002 and amended 2009. Major gasoline leak from storage tanks for many years contaminated surrounding properties. Groundwater collection and treatment with silt and activated carbon filters. Treatment and discharge to sewer discontinued in 2010.
			BETX	32-97	
			MOG	75	
			Lead	81-85	
Street Waste Facility #1 in Victoria	2001	2007	TSS	>99	Solids settling and oil-water separator. DUR in 2005 for TSS exceedences. New treatment works installed under compliance plan in 2006. Stormwater inflow reduced by installation of a roof in 2008. Operation under staff assessment in 2010 for excess COD.
			MOG	>99	
			Metals	>99	
Street Waste Facility #2 in Saanich	2001	2002	TSS	98	Filtration and oil-water separator. Permit amended in 2005 to include modifications to treatment works. EcoStar award winner in 2005. Permit amended in 2010 to add new monitoring point for equipment wash pad.
			MOG	97	
			Metals	61-96	
			MOG	89	
Chocolate Manufacturer	2006	2010	COD	8	Grease interceptor installed in 2001, pH control works installed 2003. Permit amended in November 2003. Modifications to pH control works in 2007. Improved operating practices to reduce product going to sewer. Permit amended in 2009.
			TSS	68	
			O&G	86	
Industrial Laundry #1	2008	2010	COD	35	Shaker screen and oil skimmer installed in 1999. DUR in 2009 for MOG exceedences. In compliance by December 2010 following adoption of improved operating practices. Reductions in priority contaminants concurrent with a 41% reduction in water usage.
			TSS	29	
			O&G	35	
			MOG	3	
Industrial Laundry #2	1997	2003	BOD/COD	64/46	Shaker screen installed in 1999. Met permit limits. Business closed in 2004.
			TSS	49	
			O&G	69	
			MOG	98	
Dairy Product Manufacturer	2007	2010	COD	68	DAF treatment works installed in November 2008. Permit amended in March 2010. Source capture of re-workable product completed in July 2010.
			TSS	91	
			O&G	93	
			pH	in control	
Industrial Laundry #3	2005	2010	COD	24	Permit issued in 2005. DUR in 2005 due to exceedences. Eliminated high strength feed stock and adjusted operating procedures. Currently in the process of voluntarily installing a shaker screen.
			TSS	14	
			O&G	17	
			MOG	70	

Appendix 1, continued

Permit Holder	Baseline Year	Comparison Year	Priority Contaminants	Load Reduction (%)	Comments
Brewery #1	1998-1999	2004	BOD/COD	61/61	Permit issued 1995, amended 2003, 2006 and 2007. No treatment installed. Solids removal plan and improved waste reduction practices implemented. Under staff assessment for COD, BOD and TSS in 2010.
			TSS	68	
Oily Wastewater Treatment Facility	2002	2002	MOG	>99	Permit issued 1999 and last amended 2009. Filtration, primary separation, neutralization, oxidation and activated carbon adsorption. Bioxide addition for odours in 2005. Increased activated carbon adsorption in 2006 and 2010. Good operation in 2010 but high total sulphide results elevated operation to staff assessment.
Meat Processor	1996-1997	2003	BOD/COD	91/89	Grease interceptor installed, operating practices changed, permit amended in 2003.
			TSS	94	
			O&G	97	
Food Commissary	2006	2010	COD	48	DAF treatment works installed in August 2007. System optimization completed by mid-2009. Permit amended in December 2009. pH control works installed in 2010.
			TSS	66	
			O&G	91	

Note:
BOD = biochemical oxygen demand; COD = chemical oxygen demand; DUR =discharger under review; O&G = oil and grease; TSS = total suspended solids; BETX = benzene, ethylbenzene, toluene, xylene; PAH = polycyclic aromatic hydrocarbons; MOG = mineral oil and grease; pH = acidity or basicity

APPENDIX 2

RSCP Priority Contaminant List (2010)

TOTAL METALS
arsenic (As)
cadmium (Cd)
cobalt (Co)
chromium (Cr)
copper (Cu)
lead (Pb)
molybdenum (Mo)
manganese (Mn)
mercury (Hg)
nickel (Ni)
selenium (Se)
silver (Ag)
zinc (Zn)
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)
Low molecular weight PAHs
naphthalene
acenaphthylene
acenaphthene
fluorene
phenanthrene
anthracene
fluoranthene
High molecular weight PAHs
pyrene
benzo(a)anthracene
chrysene
benzo(b)fluoranthene
benzo(k)fluoranthene
benzo(a)pyrene
dibenzo(a,h)anthracene
indeno(1,2,3-cd)pyrene
benzo(g,h,i)perylene
Phthalates
bis(2 ethylhexl)phthalate
di-n-butyl phthalate
Miscellaneous
1,4-dichlorobenzene
phenol
total oil and grease
cyanide

APPENDIX 3

Calculation Methods for RSCP Performance Measures

The following methods are used to calculate the three RSCP performance measures referred to in Section 3.10.

RSCP PERFORMANCE MEASURE #1:

"Percentage of regulated businesses with proper waste treatment installed"

This measure is associated with the RSCP objective of consistent application of the program for all users of CRD sewage facilities.

In 2005, a new method of reporting ongoing, overall compliance levels for COP operations was developed. Proper waste treatment was defined as: use of properly-sized treatment works, or offsite waste management, at a regulated operation to comply with a COP–as confirmed through an RSCP inspection.

This measure is based on the assumption that once properly-sized treatment works are proven by inspection to be installed at a site, they are unlikely to be removed by an operator at a later date. In addition, operations proven to be using offsite management on inspection can be assumed to be continuing to use this method of complying with the code. It should be noted that this performance measure is not influenced by other "variable" compliance issues, such as poor maintenance of treatment works or lack of record keeping, which may be noted during inspections.

The measure uses current inspection information stored in the RSCP database. For COP, the key data are the total number of discrete operations inspected in each sector since implementation of the COP, and the number of those operations using proper waste treatment.

The data for COP operations can be combined with similar information for permits and authorizations to provide a single measure of overall compliance for all RSCP regulated businesses.

Performance Measure Calculation–2010

The 2010 data related to progress on waste treatment since full implementation of COP are presented below (Table 13 of this report).

"Progress on Proper Waste Treatment since Full Code of Practice Implementation"

Code of Practice	Date of Full Implementation	Percentage of Operations Properly Treating Waste[1]
Automotive Repair	1 January 2004	93
Carpet Cleaning	1 July 2003	100
Dental	1 July 2001	100
Dry Cleaning	1 July 2004	100
Fermentation	1 July 2003	100
Food Services	1 January 2003	95
Laboratory	1 July 2004	100
Photographic Imaging	1 June 2000	100
Printing	1 January 2005	79
Recreation Facility	1 January 2005	100
Vehicle Wash	1 January 2005	89

Notes:

[1] Percentage of distinct regulated COP operations inspected since full implementation that had properly-sized treatment works in place, or were using offsite waste management, at the end of 2010.

The percentage of COP operations properly treating waste is calculated from the database using total number of discrete operations inspected in each sector since implementation of the COP and the number of those operations which have been confirmed, through inspection, to be using proper waste treatment. The 2010 information is shown in the following table:

Code of Practice	% Operations Properly Treating Waste	Total # Operations Inspected[1]	# Operations Properly Treating Waste
Automotive Repair	93	166	154
Carpet Cleaning	100	28	28
Dental	100	146	146
Dry Cleaning	100	13	13
Fermentation	100	28	28
Food Services	95	1,084	1,030
Laboratory	100	43	43
Photographic Imaging	100	167	167
Printing	79	24	19
Recreation Facility	100	9	9
Vehicle Wash	89	27	24
Total COP Operations		**1,735**	**1,661**

Notes:

[1] Number of distinct regulated COP operations inspected since the implementation date where there was an enforcement finding at the end of 2010.

Information from the database for businesses operating under waste discharge permits and authorizations can be combined with the COP data to provide an overall measure of regulated business compliance. For permits and authorizations, any operation classified under the RSCP Enforcement Policy as a "discharger under review" for "exceeding permit limits" is, for the purposes of this calculation, assumed to be not properly treating waste. The data for 2010 is as follows:

Regulatory Tool	Total # Operations Inspected (to end of 2010)	# Operations Properly Treating Waste	% Overall Operations Properly Treating Waste
Code of Practice	1,735	1,661	
Waste Discharge Permit	36	35	
Authorization	101	101	
Overall Total Operations	**1,872**	**1,797**	**96%**

As a result, the "Percentage of regulated businesses with proper waste treatment installed" in 2010 is **96%**.

RSCP PERFORMANCE MEASURE #2

"Percentage of priority contaminants showing no increase in loads to the core area environment"

This measure is associated with the RSCP objective of protecting the marine environment adjacent to the CRD's sewage outfalls.

CRD Environmental Protection division's Marine Programs group has collected samples of wastewater from the Macaulay and Clover point outfalls since 1988. Wastewater samples have been analysed for over 200 parameters, including priority substances and conventional parameters. Statistical analyses have been conducted periodically in the past to evaluate long-term trends in concentrations and loads of these substances in wastewater. The most recent trend analysis (Golder, 2009), utilizing data from the period 1990-2008, updates the previous analysis (Golder, 2006), which included data from 1990 to 2005.

In 2008, the RSCP prepared a list of core area priority contaminants based on information provided by Marine Programs and other sources. The following table shows the current list of 38 RSCP priority contaminants (Appendix 2 of this report). Most of these contaminants have been targeted for reduction by RSCP, either through regulation or outreach, or a combination of initiatives.

Performance measure #2 is based on the "yearly trend" in loadings at both Macaulay and Clover point outfalls for the above 38 priority contaminants, as documented in the most recent trend analysis report. All RSCP priority contaminants showing either a decrease or "no significant trend" in loadings at either Macaulay or Clover point outfalls are identified and reported as a percentage of the 38 listed priority contaminants. Note that trends for "total" metals, not "dissolved", are used in the calculation. For PAHs, trends for individual PAHs, LMW, HMW and Total PAHs are used in the calculation.

Performance Measure Calculation

The table on the following page shows how performance measure #2 was calculated for 2005 and 2008–based on information provided in Golder, 2006 and Golder, 2009. Note: Only the contaminants for which a significant increasing trend was reported are shown–all others showed either a "significant decrease" or no "significant trend" (ns).

RSCP Priority Contaminant	Yearly Trend (1990-2005) Core Area Loads	Yearly Trend (1990-2008) Core Area Loads
TOTAL METALS		
arsenic (As)		Increase
cadmium (Cd)		
cobalt (Co)		
chromium (Cr)		
copper (Cu)		
lead (Pb)		
molybdenum (Mo)	Increase (Clover only)	Increase (Macaulay only)
manganese (Mn)		
mercury (Hg)		
nickel (Ni)		
selenium (Se)		Increase
silver (Ag)		
zinc (Zn)		
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)		
Low molecular weight PAHs		
naphthalene		
acenaphthylene		
acenaphthene		Increase
fluorene		
phenanthrene		
anthracene		
fluoranthene		Increase
High molecular weight PAHs	Increase	Increase
pyrene		
benzo(a)anthracene		
chrysene		
benzo(b)fluoranthene		
benzo(k)fluoranthene		
benzo(a)pyrene		
dibenzo(a,h)anthracene		
indeno(1,2,3-cd)pyrene		
benzo(g,h,i)perylene		
Total PAHs		Increase (Macaulay only)
Phthalates		
bis(2 ethylhexl)phthalate	Increase	Increase (Macaulay only)
di-n-butyl phthalate		
Miscellaneous		
1,4-dichlorobenzene		
phenol		
total oil and grease		
cyanide		
Total # Increase	**3**	**8**
Total # Decrease or "ns"	**35**	**30**
% of 38 Priority Contaminants	**92%**	**79%**

Note that for 2008, the trend assessment for PAHs and phthalates were confounded by the reporting of elevated detection limits for some parameters in the years 2006–"potentially masking true decreasing trends and by identifying increasing trends that are likely an artifact of the elevated non-detected values in recent years" (Golder, 2009).

This measure cannot be calculated for 2010 since the next long-term analysis of effluent trends for the core area outfalls is not scheduled until 2012.

RSCP PERFORMANCE MEASURE #3

"Percentage of biosolids and sludge samples that meet Class A standards for metals"

Performance measure #3 is linked to the RSCP objective of protecting the quality of sewage sludge and biosolids.

Composite samples of biosolids produced at the SPWWTP are analysed on a regular basis during periods of production. The samples are analysed for metals, moisture, pH, nutrients and microorganisms. The volume of biosolids produced has been variable over the past three years. Analytical results for metals are assessed using Class A Biosolids Standards as specified in Canadian Food Inspection Agency Trade memorandum T-4-93 Table II (see below).

Maximum Acceptable Metal Concentrations

Metal	Concentration (mg/Kg dry weight)
Arsenic	75
Cadmium	20
Cobalt	150
Mercury	5
Molybdenum	20
Nickel	180
Lead	500
Selenium	14
Zinc	1,850

The GWWTP produces a mixed liquor product, not a biosolids product, and duplicate grab samples of this product are analysed for metals and moisture on a monthly basis. The results are assessed using the Class A Biosolids referred to above.

The performance measure is calculated using the ratio of the annual number of samples of both biosolids and mixed liquor that were compliant with Class A standards and the total annual number of samples collected and analysed–expressed as a percentage.

Performance Measure Calculation–2010

The following table illustrates how performance measure #3 is calculated, using 2010 data as an example.

Treatment Plant	# Samples (2010)[1]	# Compliant (2010)[2]
Ganges WWTP (Mixed Liquor)	12	12
Saanich Peninsula WWTP (Biosolids)	6	6
Totals	**18**	**18**
Percentage Compliant		**100%**

Notes:

[1] the number of dates on which discrete samples were submitted for analysis.

[2] the number of samples with results that were fully compliant with Class A Biosolids standards for metals (nine). Results for any field duplicates taken on the same date are averaged. If the standards are exceeded for one or more of the nine metals, a "failure" is recorded for the entire sample.

The overall percentage of biosolids and sludge samples that met Class A standards for metals in 2009 was **100%**.