

CAPITAL REGIONAL DISTRICT

REGIONAL SOURCE CONTROL PROGRAM

ANNUAL REPORT
2006

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**CAPITAL REGIONAL DISTRICT
REGIONAL SOURCE CONTROL PROGRAM ANNUAL REPORT 2006**

EXECUTIVE SUMMARY

The purpose of the Capital Regional Districts (CRD) Regional Source Control program (RSCP) is to reduce the amounts of contaminants that industries, businesses, institutions and households discharge into the district's sanitary sewer systems in order to protect sewage collection and treatment facilities, biosolids quality, public health and safety and the receiving environment.

The CRD Sewer Use Bylaw, adopted in 1994, serves as the main regulatory instrument for the RSCP. The program works to ensure that the bylaw and its associated policies and procedures are applied consistently within the separate collection areas for all CRD sewage facilities. 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 (COPs) for commercial sectors in 1999. COPs regulating discharges from approximately 2400 businesses within 11 sectors had been developed, adopted and implemented by the end of 2005.

The annual report demonstrates that the RSCP made significant progress in 2006. Sectors operating under COPs have reached record high levels for installation and use of proper waste treatment measures. Compliance levels at permitted industrial facilities and facilities operating under authorizations have also reached their highest points since the program began. Inspection levels for COP and permits again met their respective targets in 2006. A key item in the RSCP five-year plan, preparation of a residential outreach plan, was completed in 2006. The program continued to meet the commitments set out in the Core Area and Saanich Peninsula Liquid Waste Management plans (LWMPs).

Results of sewage effluent data collected in the core area since the last trend analysis (in 2005) suggest that previously reported decreasing trends for key contaminants have continued. Levels of contaminants in sewage treatment plant biosolids have also shown decreasing trends in recent years. These contaminant reductions are thought to be due to the consistent district-wide application of source control regulations, including permits, authorizations, COPs and promotion of best management practices (BMPs) through business outreach by the RSCP since 1994.

The 2006 annual report presents background information, a summary of program activities and accomplishments over the period January to December 2006, and a brief account of initiatives planned for 2007. The main activities and accomplishments of the program in 2006 are outlined below.

Industrial, Commercial and Institutional Liquid Waste Regulation

- Use of proper waste treatment measures (treatment works installed or off-site waste management used) achieved record high levels in the following code sectors in 2006: dental, dry cleaning, printing, fermentation and recreation (100%); carpet cleaning (94%); automotive repair (91%); vehicle wash (90%); food services (78%); laboratory (58%). The highest increase over 2005 data was recorded in the vehicle wash sector (a 23% increase in use of proper waste treatment).
- A high level of proper waste treatment (94%) was also maintained within the photographic imaging sector.
- The overall primary inspection level for COP operations was 22% in 2006, meeting and exceeding the target of 20% inspections per year. A high number of repeat inspections were also required, particularly within the food services sector.
- Waste discharge permit compliance levels increased from 90% in 2005 to 97% in 2006.
- Authorization compliance levels were maintained at 100%.
- The level of waste discharge permit inspection in 2006 met the target of two inspections per permit per year and authorization inspections increased significantly over 2005 levels.

- Four major hospitals within the district were issued unique waste discharge permits that include compliance with applicable COPs in addition to normal permit requirements to regularly monitor and report on waste discharges.

Monitoring

- Two new key manhole sites were sampled within the Saanich Peninsula Wastewater treatment plant (SPWWTP) collection area and the frequency of sampling at existing sites was increased.
- Waste discharge permit audit monitoring levels increased over 2005.
- The number of COP sectors sampled increased over 2005.

Enforcement

- Thirty-one tickets were issued under the CRD Ticket Information Authorization (TIA) Bylaw as a result of 41 COP sector investigations by Bylaw Enforcement staff – mostly within the food services sector.
- Ten dischargers were subject to additional enforcement action in 2006; a conviction under the TIA Bylaw was obtained in one case.

Contaminants Management

- Following conclusion of stakeholder discussions and development of sector outreach, a new regulation for kitchen equipment cleaning operations was adopted in November 2006.
- Investigations into the hair and aesthetics sector were completed and a BMP document was distributed to 259 businesses in the sector.
- An investigation into discharges from radiator repair operations was initiated.

Contaminant Reductions

- Biosolids quality at the SPWWTP continued to meet Class A criteria. In 2006, mercury concentrations showed further reductions to the lowest levels ever recorded at the plant, likely as a result of the implementation of the dental COP in 2001.
- Preliminary assessment of sewage effluent data collected in the Core and Saanich peninsula areas in 2006 suggests that previously reported decreasing trends for key contaminants have likely continued.
- Five-year contaminant reduction targets have been exceeded for the photographic imaging and dental sectors, based on inspections to date and progress on proper waste treatment within these sectors. All other sectors are on track toward meeting their targets; however, their five-year inspection cycles have yet to be completed.
- All waste discharge permit holders have achieved, or are progressing toward achieving, their contaminant reduction targets.

Significant Incident Response

- A plant upset at the SPWWTP was reported in January 2006. This incident resulted in increased inspection and monitoring within the collection system, review of sampling procedures and newspaper advisories regarding the impact of illegal discharges on the treatment plant and receiving environment. Although investigations into sources were inconclusive, no further incidents were reported in 2006.

Outreach

- A residential outreach plan was completed as scheduled in the five-year plan.
- Revised guidebooks for dry cleaning, vehicle wash and laboratory COPs were finalized for distribution in 2007.
- News bulletins were completed and distributed to the dry cleaning and food services sectors.
- A brochure outlining the new regulation for kitchen equipment cleaning operations was distributed to the food services sector, kitchen cleaning businesses and municipal contacts in November 2006.

- RSCP staff participated in a local home show event to promote the success of the RSCP in reducing contaminant loads to sanitary sewer.

Program Planning and Development

- Amendments to the Sewer Use Bylaw and RSCP Policies were adopted in November 2006.
- The CRD TIA Bylaw was amended in December 2006.
- The process for amending the Source Control Local Services Establishing Bylaw was initiated in November 2006.
- The program continued to meet the commitments outlined in the Core Area and Saanich Peninsula LWMPs.

Next Steps – 2007

The main areas of development of the program in 2007 will involve implementation of the key items in the five-year plan. These include:

- Completion of a contaminants management plan to identify priority and emerging contaminants, prepare reduction strategies and targets and report on trends. The plan will build on the program's successful regulatory approach, moving to a focus on avoidance, elimination or substitution of polluting products, processes or materials to achieve reductions in specific priority contaminants that have proven difficult to control or treat.
- Implementation of the residential outreach plan. The plan was successfully launched in February 2007 with an initial emphasis on fats, oils and grease reduction. The next phase of the plan, to be launched later in 2007, includes a surfactant reduction initiative.

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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 to 1992 and commitments 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.

The objectives of the RSCP are documented in the 1996 Saanich Peninsula Liquid Waste Management Plan (LWMP) and the Core Area LWMP (July 2000). The program objectives are to:

- protect the marine receiving environment adjacent to the CRDs sewage outfalls
- protect sewerage facilities belonging to the CRD and its member municipalities against corrosion, blockage and other harmful effects related to the presence of wastewater contaminants
- ensure that the health and safety of sewage workers and the general public is not put at risk due to the presence of wastewater contaminants
- protect the quality of sewage sludge (biosolids) to allow the full range of options for its beneficial use
- protect treatment plants against upset due to inhibition of treatment processes by high contaminant loadings
- ensure fair and balanced use of the district's sewerage facilities through education, regulation, enforcement and the application of the user-pay principle
- promote responsible pollution prevention practices, including reduction, reuse, recycling, recovery and residuals management

The Core Area and Saanich Peninsula LWMPs contain commitments to prepare an annual report on the RSCP for submission to the Board and the Ministry of Environment (MOE). This annual report presents a summary of program activities and accomplishments over the period January to December 2006 and provides a brief account of initiatives planned for 2007.

2.0 BACKGROUND

2.1 Program Components

The main components of the RSCP include:

- Inspections
- Monitoring
- Enforcement
- Outreach
- Contaminants management
- Special projects
- 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 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 2006. Estimated annual sewage flows contributed by each participating area, over the period 1 October 2005 to 30 September 2006, 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 - 2006

| 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 2005/2006

| Participant | Estimated Annual Flow (m ³ /year)* | Percentage of Total Flows |
|--------------------------------|---|---------------------------|
| Saanich | 11,593,319 | 26.54 |
| Oak Bay | 4,202,540 | 9.62 |
| Victoria | 18,254,588 | 41.79 |
| Esquimalt | 2,651,154 | 6.07 |
| View Royal | 885,830 | 2.03 |
| Colwood | 465,475 | 1.07 |
| Langford | 1,646,499 | 3.77 |
| Sidney | 1,281,466 | 2.93 |
| Central Saanich | 1,564,982 | 3.58 |
| North Saanich | 403,825 | 0.92 |
| Esquimalt First Nation | 6,540 | 0.01 |
| Songhees First Nation | 213,111 | 0.49 |
| Pauquachin First Nation | 29,155 | 0.07 |
| Tseycum First Nation | 13,110 | 0.03 |
| Institute of Ocean Sciences | 9,114 | 0.02 |
| Department of National Defence | 143,814 | 0.33 |
| Ganges Sewer | 177,163 | 0.41 |
| Maliview Sewer | 29,227 | 0.07 |
| Magic Lakes Estates Sewer | 90,875 | 0.21 |
| Port Renfrew Sewer | 14,794 | 0.03 |
| Total Flow | 43,676,580 | 100 |

Note:

* Yearly flows cover the period 1 October 2005 to 30 September 2006

3.0 REGIONAL SOURCE CONTROL ACTIVITIES AND ACCOMPLISHMENTS - 2006

Regional source control activities and accomplishments in 2006 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
- Data management
- Special projects
- Program revenue and expenditures
- Program planning and development

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 codes of practice (COPs).

Following adoption of the Sewer Use Bylaw in August 1994, the RSCP focussed 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 to 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 COPs to regulate discharges from larger numbers of smaller commercial and institutional facilities operating in the district. The first regulatory COPs, considered to be unique in North America, were adopted in 1999 and inspections and enforcement for these codes commenced in the following year. By the end of 2003, 11 COPs 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 COPs, see Section 3.1.5.

The Sewer Use Bylaw and its associated policies and procedures have been amended frequently during the first 10 years of the program – largely to accommodate adoption of COPs, but also to add new restricted waste limits and a structure for cost recovery.

3.1.2 Statistics

The activities within each liquid waste regulation component in 2005 and 2006 are summarized in Table 3.

Table 3. Source Control Liquid Waste Regulation Activities in 2005 and 2006

| Source Control Activity | 2005 | 2006 |
|---|-------------|-------------|
| Permits active (at year end) | 30 | 36 |
| New permits issued | 7 | 10 |
| Permits amended | 11 | 15 |
| Permits closed | 12 | 4 |
| Permit site inspections (including evaluations for new permits) | 81 | 69 |
| Permit meetings | 20 | 15 |
| Self-monitoring events reviewed | 388 | 450 |
| Enforcement letters written | 119 | 134 |
| Authorizations in effect (at year end) | 175 | 160 |
| New authorizations issued | 6 | 2 |
| Authorizations amended | 0 | 1 |
| Authorizations cancelled or transferred to codes | 5 | 17 |
| Authorization site inspections (including evaluations for new authorizations) | 17 | 32 |
| Waste Discharge Assessment forms received | 106 | 85 |
| New codes adopted | 0 | 0 |
| Total codes adopted | 11 | 11 |
| Codes amended | 0 | 0 |
| | | |
| Photographic Imaging Operations code (sector estimate) | 411 | 364 |
| Total site inspections | 113 | 91 |
| Dental Operations code (sector estimate) | 184 | 173 |
| Total site inspections | 49 | 48 |
| Food Services Operations code (sector estimate) | 1276 | 1225 |
| Total site inspections | 796 | 745 |
| Carpet Cleaning Operations code (sector estimate) | 66 | 62 |
| Total site inspections | 20 | 12 |
| Fermentation Operations code (sector estimate) | 45 | 43 |
| Total site inspections | 12 | 18 |
| Automotive Repair Operations code (sector estimate) | 335 | 273 |
| Total site inspections | 105 | 71 |
| Laboratory Operations code (sector estimate) | 131 | 109 |
| Total site inspections | 30 | 30 |
| Dry Cleaning Operations code (sector estimate) | 22 | 21 |
| Total site inspections | 9 | 5 |
| Vehicle Wash Operations code (sector estimate) | 156 | 122 |
| Total site inspections | 64 | 36 |
| Printing Operations code (sector estimate) | 103 | 58 |
| Total site inspections | 39 | 24 |
| Recreation Facility Operations code (sector estimate) | 19 | 16 |
| Total site inspections | 3 | 8 |
| Total code inspections (primary and repeat) | 1240 | 1088 |
| Monitoring | | |
| Permit compliance sampling events | 48 | 49 |
| Authorization compliance sampling events | 9 | 11 |
| Code of practice sampling events | 51 | 45 |
| Key manhole sampling events | 9 | 23 |
| Treatment plant influent monitoring events | 29 | 22 |

3.1.3 Waste Discharge Permits

Waste discharge permits are site-specific regulatory documents issued to industries and businesses under the CRD Sewer Use Bylaw that outline requirements for wastewater treatment, effluent quality, monitoring and reporting. Waste discharge permits are issued to industries, businesses or other operations that discharge significant non-domestic wastewater flows (greater than 10 m³/day) or wastewater containing high loads of specified chemical contaminants into the sanitary sewer.

As of December 2006, a total of 114 waste discharge permits had been issued to sanitary sewer users throughout the district. Ten new permits were issued, 15 permit amendments were made and four permits were closed in 2006. Some permits issued for short-term discharges have set expiry dates. This accounts for a variable portion of permit activity each year. In 2006, six of the 10 permits issued were for short-term discharges (site remediations, odour control addition and ship waste disposal). The remaining four new permits were issued to the main hospitals within the district. These long-term permits are considered unique since they contain the requirements of several COPs while including the typical requirements of permits to monitor flows, sample for contaminants and report results on a quarterly basis.

At the end of 2006, there were 36 active waste discharge permits being managed by RSCP staff. Most of these permits were ongoing, with no expiry date.

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 the CRD Finance department.

The target of two scheduled inspections per site per year was met for all permits in 2006. Permit management staff will continue routine investigations into new non-domestic waste dischargers in 2007 to assess the need for regulation under permits or authorizations.

3.1.4 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 (BMPs) 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 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. Regular inspections were scheduled for 15 existing high priority authorizations in 2006 – all of these were completed by December 2006. In addition, there were a further 17 inspections undertaken within the year to evaluate the need for new authorizations.

In December 2006, there were a total of 160 authorizations in effect. New authorizations were issued to two businesses, one authorization was amended and 17 were cancelled in 2006. The cancellations included several beauty salons that were transferred to operate under the new BMP guidance document for the hair and aesthetics sector.

3.1.5 Codes of Practice

Background

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

RSCP staff began developing COPs in 1996 following consultants' recommendations that this approach would be well suited to the CRDs existing blend of small industries, commercial businesses and institutions. COPs development and adoption became one of the main focal points of program activities over the period 1998 to 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 COPs 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 4.

Table 4. Summary of RSCP Code 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
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, COPs 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 guidebooks for each code sector explaining the applicable regulations and including BMPs to help businesses achieve compliance.

Code of Practice Inspection Summary – 2006

The results of 598 COP “primary” site inspections carried out by RSCP staff in 2006 are summarized in Table 5. A primary inspection is the first inspection carried out at a business within a five-year inspection cycle. Total primary inspections in 2006 represented 21.8% of the estimated total number of regulated businesses at the end of 2005 – exceeding the primary inspection target level of 20%. Individual sectors for which this target was not met were: automotive repair (16.4%), carpet cleaning (16.7%), printing (18.4%) and vehicle wash (18.6%). These deficiencies were due to the additional training required for auxiliary staff hired to back fill for regular staff that were on parental or sick leave in 2006.

Table 5. Code of Practice Primary Inspection Summary – 2006

| Code of Practice | # Primary Inspections (2006) ¹ | % Sector Inspected ² |
|----------------------|---|---------------------------------|
| Photographic Imaging | 81 | 19.7 |
| Dental | 46 | 25.0 |
| Food Services | 311 | 24.4 |
| Carpet Cleaning | 11 | 16.7 |
| Fermentation | 9 | 20.0 |
| Automotive Repair | 55 | 16.4 |
| Laboratory | 28 | 21.4 |
| Dry Cleaning | 5 | 22.7 |
| Vehicle Wash | 29 | 18.6 |
| Printing | 19 | 18.4 |
| Recreation Facility | 4 | 21.1 |
| TOTAL | 598 | |

Notes:

1. Number of primary inspections by RSCP staff – includes inspections of discharging and non-discharging operations
2. Based on the number of primary inspections and the estimated number of operations in each sector at the end of 2005 (see Table 3)

In addition to primary inspections, there were 490 repeat inspections carried out by RSCP and bylaw enforcement staff in 2006 to confirm compliance following initial inspections. These repeat inspections are summarized in Table 6.

The majority of RSCP repeat inspections (434) were carried out within the food services sector since it is the largest sector regulated under a code. As in previous years, there was a high level of repeat inspections for this sector, indicating a relatively high number of compliance issues requiring resolution.

Table 6. Code of Practice Repeat Inspection Summary – 2006

| Code of Practice | # Repeat Inspections (2006)¹ |
|-------------------------|--|
| Photographic Imaging | 10 |
| Dental | 2 |
| Food Services | 434 |
| Carpet Cleaning | 1 |
| Fermentation | 9 |
| Automotive Repair | 16 |
| Laboratory | 2 |
| Dry Cleaning | 0 |
| Vehicle Wash | 7 |
| Printing | 5 |
| Recreation Facility | 4 |
| TOTAL | 490 |

Notes:

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

3.1.6 Monitoring

RSCP staff carried out the following types of monitoring in 2006: permit compliance, authorization compliance, COP, key manhole and treatment plant influent monitoring. All wastewater samples collected in 2006 were analyzed by a contract laboratory using standard analytical procedures specified in the RSCP Sampling and Analysis Procedure manual.

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. These data are normally submitted to the RSCP 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 two times 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 collects these samples throughout the year on a random basis, without prior notification of the event being given to the permittee. Additional sampling events are carried out, as necessary, on suspected problem discharges from permitted sites.

The average number of scheduled audit events per permit was 1.8 in 2006. Although this was a slightly higher level of audit sampling than that carried out in 2005, the goal of collecting audit samples from each permitted site twice per year was not met. A small number of sites were not in operation or not discharging at the time of the scheduled sampling event and severe weather conditions in November and December 2006 resulted in the cancellation of several other sampling events.

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.

All audit results obtained in 2006 were, in general, not significantly different from self-monitoring results reported from the same site. This indicated that the self-monitoring results being submitted by permittees had been collected and analyzed in an appropriate manner, as required by each permit. Results at one site, an electroplater, showed elevated metals levels in several audit samples taken in 2006. These elevated levels were not present in permittee self-monitoring samples. An increased audit sampling frequency is being undertaken in 2007 as part of an investigation into discharges from this site.

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

Audit monitoring was also carried out at a small number of businesses operating under authorizations in 2006. Since authorizations do not normally include self-monitoring requirements, the RSCP audit 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. The results of this monitoring in 2006 indicated that discharges from authorizations were generally in compliance with Sewer Use Bylaw restricted waste limits. At four sites where limits were exceeded, follow-up communication was necessary with the businesses concerned (see Section 3.2).

Code of Practice Monitoring

Another type of monitoring undertaken by RSCP staff is COP monitoring. Businesses operating under codes are not normally 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.

RSCP staff carries out 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. Investigations may follow receipt of results that are above specified contaminant limits.

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 new sectors.

In 2005, the COP monitoring component was reviewed to re-examine the rationale for the monitoring, set reasonable targets and increase the number of sectors sampled per year. As a result of this review, COP monitoring was carried out in nine of the 11 regulated sectors in 2006 (total of 45 samples collected). Two additional sectors were sampled in 2006 in comparison to 2005, however the total number of samples collected was lower. Sampling targets were not met for four of the nine regulated sectors sampled in 2006.

In some sectors (e.g. automotive repair, printing, photographic imaging), the number of businesses using off-site waste management was found to have significantly increased therefore the number of dischargers was low in relation to the actual sector size. This has resulted in recommendations to reduce the number of sites targeted for sampling within these sectors in 2007.

In general, the sampling results indicated that treatment works installed at the sampled sites were operating correctly and that proper operating practices were being used to minimize the discharge of contaminants.

Elevated levels of zinc were found in wastewater from several automotive repair operations. An investigation into potential sources of this contaminant will be carried out in 2007. Sampling point accessibility was a concern at some of the automotive repair and vehicle wash sites sampled in 2006.

In general, more complete information on wastewater flows needs to be obtained from sites sampled in 2007 in order to provide estimates of contaminant loads from each sector.

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 residential sites, Department of National Defence (DND) sites and sites within the Saanich Peninsula Wastewater Treatment Plant (SPWWTP) collection area.

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 data have been used to predict contaminant loads from domestic sources for planning purposes.

The 2006 residential sampling program included sampling events at the Dean Park and Harling Point stations in June and December. The Vantreight station was sampled in July and December. All events included sampling and analysis for a wide range of substances, including priority contaminants. Only one of the residential samples collected contained concentrations of contaminants above restricted waste limits during these sampling events – a total oil and grease result of 180 mg/L was recorded at Vantreight in July.

An additional residential sample was taken at a manhole on Cameo Street in Saanich in November 2006. This sample was analysed for surfactants (methylene blue active substances) in addition to the usual suite of residential parameters. Sampling at this site was undertaken to provide baseline information on typical surfactant levels in wastewater for residential outreach performance measurement purposes.

DND Sites

Key manhole sampling was also carried out in 2006 at the Esquimalt pump station, serving the DND Dockyard area (sampled in July and November) and at the DND Colwood (Rosebank) pump station (June and December). This year's sampling showed exceedences of restricted waste limits for copper at the DND Dockyard site in July and chloride in November. These exceedences were discussed with DND staff at CRD/DND working group meetings in 2006 and will be further investigated in 2007.

SPWWTP Collection Area Sites

Monitoring within the SPWWTP collection area was increased in 2006 in response to a treatment plant upset reported in January. Monitoring continued at Victoria Airport Manhole #5 and two new sites, Keating pump station and Sidney pump station were added. Since the majority of SPWWTP incidents have occurred over weekends in the fall and winter, baseline monitoring was carried out at all sites in October, and monitoring was repeated in December 2006 with composite samples collected over a three day period. The October monitoring at Keating showed exceedences of restricted waste limits for biochemical oxygen demand (BOD), total suspended solids (TSS) and total oil and grease. These results are consistent with the location of a large food processing plant within the Keating collection area.

Key manhole monitoring will continue at a similar frequency at the three residential sites, two DND pump stations and three SPWWTP collection area locations in 2007.

Treatment Plant Influent Monitoring

Monthly influent sampling continued at the SPWWTP in 2006. Eight grab samples (for metals analysis) and four composites (for metals and priority pollutant analysis) were collected by RSCP staff over the year.

Eight mixed liquor (treatment plant wastewater mixed with activated sludge) samples (for metals analysis) and a single sample of influent (for priority pollutant analysis) were also collected from the Ganges Wastewater Treatment Plant (GWWTP) for analysis in 2006.

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

There will be a similar level of analysis at the SPWWTP and the GWWTP in 2007.

3.2 Enforcement

The district has adopted a stepwise, cooperative 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 Board in February 1997 and was last amended in November 2006.

The CRDs TIA Bylaw contains fines (tickets) that have been set for specific offences under the Sewer Use Bylaw and its associated COPs. 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 COPs. 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.

Waste Discharge Permit Holders

Of the 36 active waste discharge permits in place at the end of 2006, 19 sites were in "full compliance" with their permits and the Sewer Use Bylaw. Four sites were listed at Step 1, five at Step 2 and two at Step 3 of the enforcement policy. In addition there were five sites undergoing assessment by RSCP staff. These 16 sites are considered to be "in progress", but still in compliance with their permits, under the enforcement policy. 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 discharger under review (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 is issued under the *Environmental Management Act* to set conditions for discharge or a lawyer's letter is issued. Failure to comply with an order will result in consideration of legal action.

Only one of the 36 sites operating under waste discharge permits was classified as DUR at the end of 2006. This site, a food commissary, became a DUR in December 2003 due to exceedences of permit discharge limits. An amended compliance plan was finally accepted for this site in July 2004 following several requests for extensions. The implementation of the compliance plan, including installation of a screening tank and aeration system in June 2005, did not result in this facility meeting its permit limits by the end of 2005. A new compliance plan that included installation of Dissolved Air Flootation treatment works was submitted in 2006. This installation, planned for completion by 30 April 2007, will significantly reduce contaminant loads from this facility and meet permit limits.

No tickets were issued or charges laid against waste discharge permit holders under the Sewer Use Bylaw during 2006. The overall waste discharge permit compliance level (97% in "full compliance" or "in progress") for 2006 was substantially higher than that reported in 2005 (90%).

Operations Regulated by Authorization

A relatively small group of the total number of authorizations (160) are scheduled for inspection each year due to the types of contaminants regulated, the contaminant levels, discharge volumes and the overall impact of discharges from these operations being considered relatively minor in comparison to discharges from permitted facilities.

Thirty-two inspections were carried out at sites operating under authorizations in 2006. This represented a significantly higher level of inspection than in 2005. As a result of these inspections, three businesses were placed at Step 1 of the enforcement policy for exceedences of discharge limits specified in their authorizations and one was placed at Step 2 for exceedences. Inspection staff had discussed minor changes to treatment works or maintenance procedures with each business and they were all considered to be in progress towards compliance at the end of 2006. A further site was placed at Step 2 for failure to submit a report. This resulted in an overall authorization compliance level ("full compliance" or "in progress") of 100% since there were no businesses operating under authorizations classified as DUR in 2006.

Operations Regulated by Codes of Practice

The stepwise cooperative 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 in 2006 is presented in Table 7.

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. In general, there has been good cooperation from this sector during application of the escalating approach to enforcement.

A high percentage of non-compliant food services businesses needed additional follow-up, resulting in 434 repeat inspections by RSCP and Bylaw Enforcement staff. As a result, approximately 37% of food services operations inspected were considered to be "in progress" and 14% were classified as DUR following inspections in 2006. The main non-compliance issues encountered were failure to install properly-sized grease interceptors and failure to maintain grease interceptors.

Inspections within the automotive repair sector resulted in 8% of inspected businesses being designated as DUR. The main non-compliance issues in this sector continued to be failure to install properly-sized treatment works (oil/water separators) and failure to retain inspection records.

Table 7. Code of Practice Enforcement Summary – 2006

| Code of Practice | # Regulated Operations Inspected ¹ (2006) | % Full Compliance ² | % In Progress ³ | % Non-Compliance ⁴ (DUR) |
|----------------------|--|--------------------------------|----------------------------|-------------------------------------|
| Photographic Imaging | 33 | 82 | 18 | 0 |
| Dental | 22 | 73 | 27 | 0 |
| Food Services | 275 | 49 | 37 | 14 |
| Carpet Cleaning | 4 | 50 | 50 | 0 |
| Fermentation | 6 | 100 | 0 | 0 |
| Automotive Repair | 12 | 75 | 17 | 8 |
| Laboratory | 14 | 64 | 36 | 0 |
| Dry Cleaning | 1 | 100 | 0 | 0 |
| Vehicle Wash | 6 | 100 | 0 | 0 |
| Printing | 6 | 83 | 17 | 0 |
| Recreation Facility | 3 | 100 | 0 | 0 |

Notes:

1. Number of regulated COP operations inspected in 2006 where there was an enforcement finding
2. Percentage of operations in compliance with all requirements of the code at the last inspection in 2006 – includes sites using off-site waste management
3. Percentage of operations classified at Step 1, 2 or 3 of the enforcement policy at the last inspection in 2006
4. Percentage of operations classified as discharger under review at the last inspection in 2006

All regulated operations inspected within the dry cleaning, vehicle wash, fermentation and recreation facility sectors were found to be fully compliant in 2006. All other COP sectors had some enforcement issues that were considered to be “in progress” however, no businesses in these sectors had been classified as DUR by the end of 2006.

Bylaw Enforcement staff investigated 41 enforcement cases in 2006. As a result of these investigations, 26 businesses were served a total of 31 tickets under the CRD TIA Bylaw in 2006. As in previous years, almost all of the tickets were served to food services businesses. The most common offences in this sector were: failure to upgrade an interceptor, accumulation of excess grease and failure to install a grease interceptor. Following legal counsel, 10 food services businesses that had failed to install properly-sized grease interceptors in a timely manner were subject to additional enforcement action in 2006. One of these cases was subjected to charges under the Sewer Use Bylaw. These charges were later dropped when the business was closed. In addition to the food services offences, one automotive repair operation was convicted under the TIA Bylaw.

As in the past, RSCP staff worked closely with CRD Bylaw Enforcement staff and legal counsel in carrying out these enforcement actions.

Progress on Proper Waste Treatment as Specified in Codes of Practice

Compliance statistics for each sector can vary significantly from year to year since they simply reflect a “snapshot” of compliance within the sector in that particular inspection year. The compliance statistics in Table 7 are based on the number of non-compliant findings at the last inspection at each site in 2006. The compliance status of all sites inspected since full implementation of each code cannot be determined using this “snapshot”. Some previously inspected sites may have continued to be in full compliance and others may have fallen out of compliance since the last inspection. There is no way to determine overall full compliance rates without having sufficient resources to carry out primary and repeat inspections at 100% of businesses in each sector per year. With an estimated 2470 regulated businesses at the end of 2006, this would constitute a challenging and expensive inspection task.

An on-going 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 off-site 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 COPs are presented in Table 8.

Table 8. 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 |
|----------------------|-----------------------------|---|
| Photographic Imaging | 1 June 2000 | 94 |
| Dental | 1 July 2001 | 100 |
| Food Services | 1 January 2003 | 78 |
| Carpet Cleaning | 1 July 2003 | 94 |
| Fermentation | 1 July 2003 | 100 |
| Automotive Repair | 1 January 2004 | 91 |
| Laboratory | 1 July 2004 | 58 |
| Dry Cleaning | 1 July 2004 | 100 |
| Vehicle Wash | 1 January 2005 | 90 |
| Printing | 1 January 2005 | 100 |
| Recreation Facility | 1 January 2005 | 100 |

Notes:

1. Percentage of regulated COP operations inspected since full implementation that had properly-sized treatment works in place, or were using off-site waste management, at the end of 2006

For all code sectors, the percentages of operations properly treating waste increased in comparison to those reported in 2005. The only exception to this was the photographic imaging sector which dropped slightly from 2005 levels, but still maintained a high level of proper waste treatment (94%). The largest increase in proper waste treatment was demonstrated in the vehicle wash sector which rose from 67% to 90% in 2006.

Many sectors were already demonstrating high levels of proper waste treatment one to two and a half years after full implementation of their respective codes. Factors likely responsible for these high levels include: relatively low cost of treatment (carpet cleaning, fermentation and recreation facilities); ready availability of off-site treatment options (automotive repair and printing); and adoption of recent federal regulations (dry cleaning).

Due to the large size of the food service sector, the relatively high cost of installing properly-sized treatment works and the impracticality of off-site treatment, progress has been relatively slow but steady over the last four years in this sector. A large number of food services operations inspected to date have had treatment works (grease interceptors) in place however a portion of them have not been correctly sized.

The lowest level of proper waste treatment was in the laboratory sector which has been fully implemented for two and a half years. Most laboratory operations inspected in 2006 have chosen to meet the requirements of the code by treating all wastes off-site since there are no standard treatment works specified for this sector. The low level of proper waste treatment reflects the finding that about 40% of laboratories inspected to date have yet to complete their off-site waste management programs or install spill containment.

3.3 Contaminants Management

Contaminants management represents an important next step 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. Preliminary work on a new contaminants management plan was undertaken in 2006. This plan is now scheduled for completion in 2007. Several contaminants management activities were undertaken or completed in 2006. These are outlined below.

Following conclusion of stakeholder discussions in 2005 regarding the need to control discharges of high pH and high levels of oil and grease from kitchen equipment cleaning operations, RSCP staff finalized the development of sector outreach materials and a new regulation for the sector in 2006. The outreach materials, prepared at the request of stakeholders and using their input, were released both prior to, and following, the adoption of the new regulation in November 2006. This helped to provide the sector with advanced warning of the planned changes, to answer questions about impacts on food services businesses and provide further confirmatory information once the regulation was adopted.

Investigations into the types of wastes discharged by the hair and aesthetics sector were completed in 2006. A BMP document "Beauty and the Environment" was prepared and distributed to 259 businesses in this sector in September 2006. The BMP contained 14 points encouraging businesses to limit chemical use, save water and minimize solid waste disposal.

The radiator repair sector was also investigated in 2006. The results of the investigation showed that this has become a specialty sector, with most automotive repair shops recommending replacement of radiators in modern vehicles rather than repair. Radiator repair services are now limited to three small operations within the district that serve a limited clientele mainly wishing to repair radiators in older-model or vintage vehicles for which there are few replacement parts. Inspections and monitoring at these sites confirmed that radiator flushing solutions, containing residual amounts of anti-freeze, high pH and metals levels were typically discharged to sanitary sewer. Two of these operations have since opted for recycling radiator flushing solutions on location, with offsite management of residual materials while the third operation was found to be not connected to sewer. Investigations into this sector will be completed in 2007.

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 RSCPs jurisdiction extends beyond the core area, staff was 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 2006, 53% of permitted sites were meeting their target concentration limits and a further 44% 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 2006.

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).

Code of Practice Targets

Contaminant reduction targets have been prepared for each of the 11 existing COPs. 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 9.

Table 9. Contaminant Reduction Targets for Sectors Operating Under CRD Codes of Practice

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

By December 2006, the photographic imaging COP had been fully implemented for over six years. Despite inspection shortfalls prior to 2005, estimated reductions of silver from this sector are currently 92%, based on the findings of inspections to date and the progress on proper waste treatment within the sector.

The dental sector reached the end of its five-year inspection cycle in 2006. Based on the progress on proper waste treatment within this sector to date, estimated metals reductions are approximately 96% - exceeding the reduction target of 86% in Table 9.

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 monitors effluent quality at the Macaulay and Clover Point outfalls for a wide range of substances. The first trend analysis of the data collected through core area effluent monitoring, over the period 1988 to 2000, was carried out in 2002 (PLA, 2002). This preliminary analysis indicated that, over the period 1996 to 2000, concentrations and loads of most metals decreased, while concentrations and loads of most organic compounds and cyanide increased.

The RSCP commissioned a study in 2004 to examine the statistical trends for 16 selected substances of interest in the core area effluent data over the period 1996 to 2003. The main findings of this analysis (PLA, 2004) were that loads of six metals (copper, lead, mercury, silver, nickel and zinc) have decreased by 36 to 70% over the seven year period. The greatest decrease (70%) was shown for mercury. Loads of 1,4-dichlorobenzene, a commonly used deodorizer and disinfectant, were found to have decreased by 63% over the same period. These results were summarized in the RSCP annual report for 2004.

In 2005, Marine programs initiated a study to update core area effluent trends analysis for a wider range of substances over the period 1990 to 2005 (Golder Associates Ltd., 2006). Results from this study suggest that the decreasing trends in contaminant loads reported in PLA, 2004 have continued over the last three years. Significant reductions for additional substances are now becoming evident. In particular, tetrachloroethene (TCE or "PERC") and total cyanide are showing significant load reduction trends over the last three years at one, or both, core area outfalls. These trends were not evident over the period 1996 to 2003, however further data will need to be collected for analysis over a longer time frame in order to confirm these recent trends.

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 recently reported load reductions for TCE, 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 TCE, requires installation of new treatment works that minimize the discharge of TCE to the sanitary sewer.

The RSCP has, since 1994, controlled discharges of contaminants from a wide range of industrial and commercial sources through application of waste discharge permits, authorizations and COPs. Currently, over 2600 businesses are operating under 11 COPs, 36 waste discharge permits and 160 authorizations targeting many of the metals and other contaminants showing reductions. Further contaminant reductions may be expected in the future, particularly for metals associated with other code sectors, such as automotive, vehicle washing and laboratory operations, which have been fully implemented for a shorter period of time.

Results of Macaulay and Clover Point effluent monitoring in 2006 indicate similar concentrations and loads of contaminants to those reported in 2005. This suggests that previously reported decreasing trends for key contaminants have continued. The next long-term analysis of effluent trends for the core area will be undertaken in 2009.

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 over the period 2000 to 2004 was completed in December 2005 (Hatfield Consultants Ltd, 2005). This report identified a significant reducing trend in influent loads of total oil and grease over the five-year period which is probably linked to the full implementation of the food services code 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. It is possible that this trend may be reversed in the future as a result of the full implementation of the automotive repair and vehicle wash codes on the peninsula.

The lack of significant meaningful influent trends in SPWWTP influent data may be related to the fact that source control measures (e.g. several waste discharge permits) had been in place up to five years prior to the commissioning of the new plant resulting in lower initial baseline contaminant levels. Further reductions from these initially low levels may not be evident for some time, particularly using a quarterly monitoring frequency.

There were several meaningful significant trends in the SPWWTP effluent data over the study period. Loads of total oil and grease, total cadmium, chromium VI, total silver and dissolved silver decreased

significantly. These reductions partly reflect the application of source control measures within the SPWWTP catchment area (such as the photographic imaging COP) but may also suggest that the efficiency of the treatment plant at degrading oil and grease and partitioning metals has improved over time. If improvement in metals partitioning was the only factor involved in reducing effluent metals loads, corresponding increases in SPWWTP biosolids metals levels would be expected. As discussed below (see Section 3.4.3), there were no significant increasing trends in SPWWTP biosolids metals levels over the study period, suggesting that source control has been playing an important role in producing the observed effluent metals reductions at the plant.

Results of SPWWTP influent and effluent monitoring in 2006 have shown similar concentrations and loads of contaminants to those reported in 2005. The next long-term analysis of influent and effluent trends for the SPWWTP will be initiated in 2008.

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 is stabilized sludge from a wastewater treatment process that has 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”.

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.

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) confirm that there were significant downward trends in mercury, chromium, barium and manganese concentrations over the period 2000 to 2004. These decreases may be linked to the application of source control regulations within the SPWWTP sewage catchment area.

Figure 1 has been prepared using mercury as an example of metals trends in biosolids and mixed liquor produced at treatment plants within the district. Mercury levels in SPWWTP biosolids have met the Class A criterion of 5 mg/kg since 2000 and have shown a continuing decline over the past six years. Mercury levels in SPWWTP biosolids have been consistently less than 0.25 mg/kg since November 2005, showing further reductions over previous year's levels. These unprecedented low results confirm the 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.

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) since monitoring began in 1994.

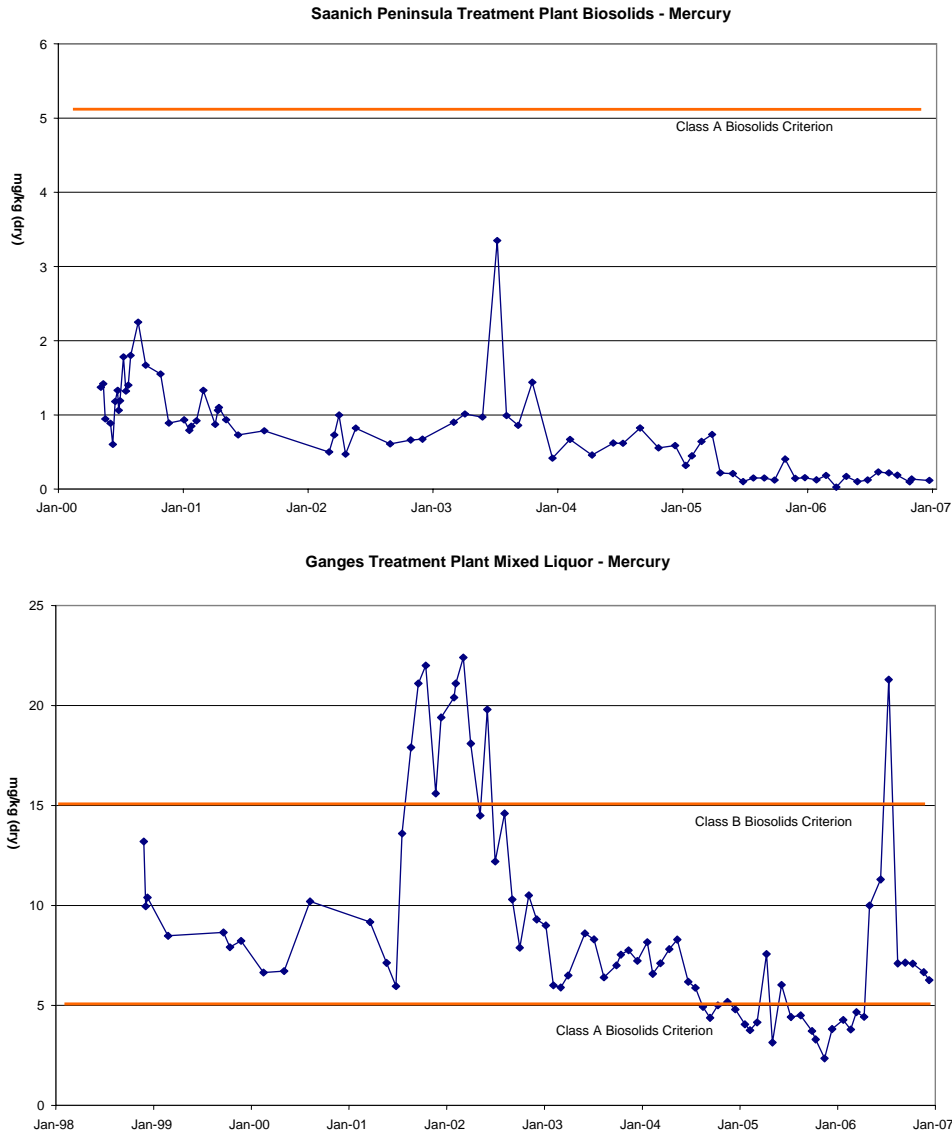
Mercury levels in Ganges mixed liquor show a different temporal pattern than that for SPWWTP biosolids, however the overall trend is toward lower levels (Figure 1). Historically, mixed liquor mercury levels at Ganges had been consistently higher than the Class A criterion. Implementation of the dental COP in July 2001 appears to have resulted in a short-term increase in mixed liquor mercury levels, causing exceedences of the Class B criterion (15 mg/kg) for a period of almost a year. The temporary increase in

mercury levels is thought to have been a result of flushing of plumbing lines within dental offices prior to installing the required amalgam separators. This purging of accumulated amalgam (containing high concentrations of mercury) may have contributed to the elevated mixed liquor mercury concentrations observed in 2001 and 2002.

Ganges mixed liquor quality continued to improve after July 2002, and by the last quarter of 2004, had met the Class A criterion for mercury. With two exceptions, mixed liquor mercury results in 2005 met the Class A criterion, showing declines to historically low levels by the last quarter of 2005. Implementation of the dental COP is also thought to be the main reason for the reductions in mercury concentrations at the GWWTP.

A brief reversal of the declining mercury levels in GWWTP mixed liquor occurred in 2006. After four results that met the Class A criterion in early 2006, mercury levels rose to briefly exceed the Class B criterion in July before returning to levels of 6 mg/kg by year end. An investigation into the cause of this anomaly was launched in September 2006. Inspections carried out at all three dental operations within the Ganges collection system confirmed their full compliance with the dental COP. Subsequent inspections at a hospital, a school and at other potential sources of mercury within the system were inconclusive. Further investigations into this mercury anomaly at the GWWTP are scheduled for 2007.

Figure 1. Mercury in Treatment Plant Biosolids and Mixed Liquor (1998 – 2006)



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 CRDs 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 10 provides a summary of incidents reported in 2006 that impacted, or had the potential to impact, the environment, sewerage works, sewage treatment facilities or worker health. Notes on incident follow-

up were summarized from CRD significant incident reports, complaint forms, memos, emails, conversation records and other notes on file.

There was only one significant incident reported in 2006 – a plant upset at the SPWWTP. Investigations involved analysis of wastewater influent and treatment plant “mixed liquor” and inspections at several industrial and commercial business sites. The cause of the incident was not resolved however the following actions were implemented as a result of the investigations:

- The number of key manhole sites sampled in the collection area and the frequency of sampling at each site was increased
- The duration of composite samples taken at key manhole sites was increased
- Inspections at the Victoria Airport Authority site and at electroplating shops on the peninsula were increased
- All waste discharge permit holders were notified of the plant upset, the impact of contaminants on plant processes and the increased CRD monitoring in the sewer system
- An advertisement was placed in the local weekly newspaper to advise the public of the effects of illegal discharges on the treatment plant and to provide a phone number to report such discharges
- SPWWTP influent/effluent sampling and analytical procedures were reviewed

Table 10. Summary of Reported Sewer System Incidents (2006)

| Contaminant | Nature of Incident | Potential Impact | Incident Follow-up |
|-------------|--|--------------------------------|--|
| Unknown | Plant upset reported at SPWWTP. Biomass toxicity (January) | Treatment process, environment | RSCP investigation into contaminants and sources was inconclusive. No unusual discharges reported by significant industrial/commercial operations. |

3.6 Outreach

Business Outreach

Business outreach activities in 2006 again targeted specific business sectors operating under COPs. Emphasis was placed on providing up-to-date information on changes in regulations, assistance in interpreting code requirements and highlighting specific compliance issues. The following business outreach activities were carried out in 2006.

- News bulletins were completed and distributed to the food services sector in the spring and fall of 2006. The fall issue contained information on the new regulation for kitchen equipment cleaning and how it was expected to impact the sector.
- A news bulletin highlighting the new federal and CRD regulations for the dry cleaning sector was distributed to that sector in February 2006. RSCP staff worked closely with Environment Canada (EC) staff to prepare the bulletin information and help make the two sets of regulations easy to understand.
- A brochure outlining the new regulation for kitchen equipment cleaning operations was distributed to the food services sector, kitchen cleaning businesses and municipal contacts in November 2006.
- Posters developed for the automotive repair sector were completed and distributed in 2006.
- Revised guidebooks for dry cleaning, vehicle wash and laboratory COPs were finalized for distribution in 2007.
- The RSCP web page was updated and maintained.

Outreach work with other CRD programs and external groups, associations and agencies continued to put forward a common waste management message in 2006. For example, RSCP staff worked with EC to develop a dry cleaning sector workshop planned for 2006 (later cancelled by EC). Staff also presented

RSCP information at the "Water in the City" conference in Victoria in September and again at a workshop on boatyard waste management practices hosted by EC in October 2006.

Residential Outreach

The RSCP five-year plan called for the development of a new residential outreach plan in 2006. Consultants were engaged early in 2006 to develop an overall social marketing approach, identify sources of common residential contaminants and develop a campaign aimed at reducing residential sources of fats, oils and grease. RSCP staff worked with corporate communications staff to complete a residential outreach plan by the end of 2006.

The residential outreach plan focuses on reducing common contaminants in residential wastewater by raising public awareness and fostering behavioural change regarding current household waste disposal practices. The contaminant reductions achieved will compliment the reductions already gained through regulation of discharges from businesses and institutions and will further benefit the district's sewage collection and treatment systems and the environment.

The plan is scheduled for implementation in early 2007 beginning with a general campaign launch emphasizing fats, oils and grease (FOG) reduction. Excess FOG blocks pipes, blinds screens and damages sewers causing backups, overflows and odour and corrosion problems upstream of the treatment plant. It has been estimated that up to 60% of FOG in wastewater is discharged by households.

Another plan component, to be phased in later in 2007, is a surfactant reduction initiative. Work on this component, involving co-operation with the Greater Vancouver Regional District, began in 2006. Surfactants, or detergents, produce suds and provide cleaning power for a range of household products. Some surfactants are incompletely broken down by sewage treatment processes and can have harmful effects on marine organisms. The reduction initiative will begin by encouraging residents to use half the manufacturer's recommended amount of laundry detergent to wash clothes. This reduced amount will remain effective due to the softness of our local water. Reductions in surfactant concentrations will directly benefit the receiving environment.

Staff also continued to work with the Post Consumer Pharmaceutical Stewardship Association (PCPSA) regarding raising awareness of their Medication Return Program (MRP). RSCP and other CRD staff attended a stakeholder meeting convened by the PCPSA in August 2006. It is hoped that promotion of the MRP will form another component of the residential outreach program in the future. RSCP staff will continue to liaise with the PCPSA in 2007 and look for opportunities to reduce disposal of expired or unused pharmaceuticals into sewers and solid waste streams.

Although the main focus of residential outreach activities in 2006 was on development of the plan, other activities included participation in a "Home Show" event at the Saanichton Fairgrounds in February. The main message for this event, featuring new display materials, was promotion of the success of the RSCP in reducing contaminant loads to sanitary sewer.

Municipal Involvement

Since 1999, municipal staff have been encouraged to issue waste discharge assessment forms (WDAFs) to persons applying for new building licenses 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 85 WDAFs were submitted in 2006 for evaluation by RSCP staff. This represented a significant decrease compared to the 106 forms submitted in 2005.

RSCP staff attended a Plumbing Officials Association of BC (POABC) meeting in December 2006 in order to increase awareness and use of the WDAF amongst municipal plumbing inspection staff. RSCP staff provided input on the importance of completing WDAFs and discussed other aspects of the program. Copies of the WDAF were distributed to all municipal staff present at the meeting and members were

reminded that the forms were also available through the CRD website. Members felt strongly that the responsibility for completing the WDAF should be given primarily to municipal licensing staff.

In 2007, RSCP staff will be attending further POABC meetings as well as working with CRD Water to get a combined information package (including WDAFs) to appropriate municipal licensing staff in an effort to further increase awareness of the RSCP and the need for accurate, up-to-date information on non-domestic sewer dischargers.

Municipal staff continued to provide wastewater flow data and other information to RSCP staff during, and following, preparation of waste discharge permits and authorizations in 2006. Senior municipal engineering staff was also regularly updated on developments within the RSCP during Engineering Liaison committee meetings throughout the year.

3.7 Data Management

In 2006, RSCP staff continued to use the RSCP database for tracking and updating compliance information for operations regulated by permits, authorizations and COPs. In addition, the RSCP database includes information on all facilities operating under BMPs.

Further enhancements of the database were undertaken in 2006. These modifications were largely to improve interactive queries and enhance tracking of compliance information.

Work on integrating the RSCP Database with CRD Water Services' Cross Connection Control program was initiated in 2006. This project is scheduled for completion in 2007.

3.8 Special Projects

Special projects undertaken by the RSCP are specifically designed to provide information on sources, types and loads of chemical contaminants and other information to support contaminants management initiatives, bylaw amendments, staff reports, municipal communications or LWMP development.

Special projects on-going, initiated or completed in 2006 included:

- Participation in a National Association of Clean Water Agencies (NACWA) work group on control of mercury discharges to sanitary sewer.
- Monthly sampling for low level mercury in SPWWTP influent and effluent as part of an ongoing NACWA study over the period July 2003 to June 2006.
- Initiation of a project to assist RSCP staff with site assessments for the Laboratory COP.
- Assistance with funding of a review of the SPWWTP monitoring program.
- Completion of source control component of a SPWWTP "benchmarking" exercise in September 2006.
- Participation in quarterly DND/CRD working group on liquid waste pollution prevention meetings. Meetings also include representatives from Public Works and Government Services Canada (PWGSC). Activities in 2006 included open exchange of liquid waste information and monitoring data, discussion of odour and corrosion control and reduction of contaminants of concern.

3.9 Program Revenue and Expenditures

A summary of revenue and expenditures for the RSCP in 2006 is provided in Table 11.

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, COP fees and tickets collected in 2006 amounted to approximately \$138,000.

Table 11. Regional Source Control Program Revenue and Expenditures – 2006

| Description | Revenue (\$) | Expenditures (\$) | |
|-------------------------------------|------------------|-------------------|---------------|
| Fees, fines, grants, surplus, other | 406,674 | | |
| Requisition | 764,464 | | |
| Total Program Revenue | 1,171,138 | | |
| Program Expenditures | | 1,105,655 | |
| Administration Expenditures | | 20,141 | |
| Total Program Expenditures | | 1,125,796 | |
| Carry Forward to 2007 | | | 45,342 |

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.

Code of Practice Fees

A COP fee system was adopted into the Sewer Use Bylaw by the Board in November 2000. Under this system, businesses within sectors operating under COPs that did not have the required treatment works in place on inspection were charged an annual fee of \$500. The RSCP fees and charges policy governed the administration of these fees.

In response to growing business concerns about the lack of a process of appeal and delays in invoicing for the fee, the COP fee was removed from the Sewer Use Bylaw in November 2006. The fee was subsequently replaced by a \$500 ticket under the CRD TIA Bylaw for failure to install treatment works. This change introduced an established ticketing and dispute process that will solve the delayed invoicing problem and conserve RSCP staff time while maintaining an equivalent level of cost recovery and the polluter-pay approach to the program.

3.10 Program 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 2006.

- The RSCP annual report for 2005 was 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 May to June 2006. Copies of the report were sent to the Ministry of Environment in May.
- The Sewer Use Bylaw was amended in November 2006 to include a regulation for kitchen equipment cleaning operations, remove the contentious COP fee, remove the unneeded COP registration process and make minor updates and housekeeping changes.
- RSCP enforcement, fees and charges, review process and COP management policies were also amended in November to reflect the amendments to the Sewer Use Bylaw, clarify COP requirements and improve bylaw enforcement.

- The process for amending the Source Control Local Services Establishing bylaw (Bylaw 2402) was initiated in November 2006. This minor amendment was necessary to ensure fair cost apportionment for RSCP services within private sewage systems that are connected to CRD sewage facilities.
- The CRD TIA Bylaw was amended in December 2006 to include offences for kitchen equipment cleaning operations, replace the \$500 COP fee with a \$500 ticket for failure to install treatment works and make changes to harmonize with the amendments to the Sewer Use Bylaw.
- The RSCP continued to meet the commitments outlined in the Core Area and Saanich Peninsula LWMPs in 2006.

A new RSCP five-year plan was developed to guide the implementation of the program over the period 2006 to 2010. This plan, outlined in Table 12, was presented to the CALWMC in October 2005.

Table 12. 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/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, prepare compliance letters, undertake follow-up inspections | | | | | |
| | Codes | Inspect 20% of each sector/year, prepare compliance letters, undertake follow-up inspections | | | | | |
| Monitoring | Permits | Audit all permits 2x/year | | | | | |
| | Other Monitoring | Review, schedule and complete monitoring annually for codes, key manholes and 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 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 | | | | | |

4.0 REFERENCES

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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. Eco-Star award winner in 2002. Composite sampling started in 2006. |
| | | | O&G | 92 | |
| | | | TSS | 87 | |
| Seafood Processor#2 | 1997 | 2002 | BOD/COD | 28/21 | Screens and sump installed 1999, new screens in 2003. Permit amended October 2003. Composite sampling started in 2006. |
| Groundwater Remediation Site | | | TSS | 75 | Filtration, neutralization, flocculation, carbon adsorption installed in 1992, additional carbon adsorption in 1996. Eco-Star award winner in 2003. Phase II of remediation was completed in 2006. |
| | | | 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. |
| | | | Nickel | 47 | |
| Metal Plater #2 | 1997 | 2000 | Cadmium | 43 | Improved operating practices in 1998. |
| | | | Chromium | 76 | |
| | | | Copper | 32 | |
| Metal Plater #3 | 2000 | 2001 | Cadmium | 83 | Oil-water separation, flocculation/filtration installed in 2001. Evaporation equipment installed in 2006. Zero discharge is planned. |
| | | | Chromium | 82 | |
| Electronic Component Manufacturer | 2000 | 2001 | COD | 47 | Flocculation/filtration system installed in mid 2000. Eco-Star award winner in 2001. |
| | | | TSS | 89 | |
| | | | Metals | 43 - >99 | |
| Septage Disposal Facility | 1991 | 2002 | BOD | 96 | De-watering equipment and dissolved air floatation installed 1999. Bio-reactor added in 2001. Business owner changed in 2005, equipment and procedure changes followed. Compliance plan completed in 2006. |
| | | | TSS | 99 | |
| | | | O&G | >99 | |
| | | | MOG | >99 | |
| | | | Metals | 85 - >99 | |
| Transportation Facility | 1998 | 1999 | COD | 33 | Dissolved air floatation (DAF) unit installed in 1999. Permit amended in 2006. |
| | | | MOG | 39 | |
| | | | Lead | 61 | |
| | | | PAH | 58 | |
| Chemical Manufacturer | 1997 | 2002 | pH | in control | Installed pH control works in 1998. |
| Gasoline Station Remediations | 2002 | 2002 | TSS | 98 - 99 | Data represents results from two typical sites in 2002 with bag (solids) and carbon filters installed. |
| | | | BETX | 32 - 97 | |
| | | | MOG | 75 | |
| | | | Lead | 81 - 85 | |
| Street Waste Facility #1 | 2001 | 2002 | TSS | 92 | Solids settling and oil-water separator. DUR in 2005 for TSS exceedences. New treatment works installed under compliance plan in 2006, reduced storm water flows. |
| | | | MOG | 91 | |
| | | | Metals | 75 - 94 | |
| Street Waste Facility #2 | 2001 | 2002 | TSS | 98 | Filtration and oil-water separator. Permit amended in 2005 to include modifications to treatment works. Eco-Star award winner in 2005. |
| | | | MOG | 97 | |
| | | | Metals | 61 - 96 | |
| | | | MOG | 89 | |

| Permit Holder | Baseline Year | Comparison Year | Priority Contaminants | Load Reduction (%) | Comments |
|------------------------------------|---------------|-----------------|-----------------------|--------------------|---|
| Chocolate Manufacturer | 2000 | 2005 | BOD/COD | 50/56 | Grease interceptor installed 2001, permit under review. pH control works installed 2003. Permit amended November 2003. Modified pH control works required in 2007. |
| | | | TSS | 14 | |
| | | | O&G | 85 | |
| Industrial Laundry #1 | 1997 | 2003 | BOD/COD | 56/55 | Shaker screen and oil skimmer installed 1999. Operating procedure modifications in 2003 improved effluent quality. Assessment in 2006 resulted in equipment modifications. |
| | | | TSS | 62 | |
| | | | O&G | 76 | |
| | | | MOG | 92 | |
| Industrial Laundry #2 | 1997 | 2003 | BOD/COD | 64/46 | Shaker screen installed 1999. Met permit limits. Business closed in 2004. |
| | | | TSS | 49 | |
| | | | O&G | 69 | |
| | | | MOG | 98 | |
| Dairy Product Manufacturer | 1998 | 2001 | BOD/COD | -18 / -35 | No treatment installed, loads increasing. DUR for exceedences in 2004. Low pH <5.5. New permit issued in Jan 2005. Compliance plan includes installation of DAF or equivalent treatment works in 2007. |
| | | | TSS | - 52 | |
| | | | O&G | - 58 | |
| | | | pH | | |
| Brewery | 1998 - 1999 | 2004 | BOD/COD | 61/61 | No treatment installed. Solids removal plan and improved waste reduction practices implemented. Permit amended in April 2003. |
| | | | TSS | 68 | |
| Oily Wastewater Treatment Facility | 2002 | 2002 | MOG | >99 | Filtration, primary separation, centrifugation, neutralization, oxidation and activated carbon adsorption. Permit amended April 2003. Bioxide addition for odours in 2005, increased activated carbon adsorption in 2006. |
| Meat Processor | 1996 - 1997 | 2003 | BOD/COD | 91/89 | Grease interceptor installed, operating practices changed, permit amended 2003. |
| | | | TSS | 94 | |
| | | | O&G | 97 | |
| Food Commissary | 2003 | 2005 | BOD/COD | 35/37 | Grease interceptor installed. Screening and aeration added in 2005. Currently DUR for exceedences. Compliance plan includes installation of DAF in 2007. |
| | | | TSS | 39 | |
| | | | O&G | 2 | |
| | | | TSS | 75 | |
| | | | O&G | 90 | |

Note: BOD = biochemical oxygen demand; COD = chemical oxygen demand; 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