



**SOLID WASTE MANAGEMENT
Annual Operations and Monitoring Report
Sicamous Refuse Disposal Site MR-00514
2012**



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1.0 EXECUTIVE SUMMARY

This report has been prepared in accordance with Section 4.4 of Operational Certificate MR-00514. The main objective of the report is to provide the Ministry of Environment with an overview of the operations at the Sicamous landfill for 2012 and to address the specific requirements outlined in Section 4.4.

In 2012 approximately 1,610 tonnes of waste was directed to the active face and landfilled, which represents a 38% decrease over 2011. The decrease in tonnage can be attributed to a 3 month closure of the landfill, due to the flooding events in the area in 2012.

The site was closed from June 23 to October 1 in 2012, peak use times, due to the access road being inaccessible because of the flooding. As a result, the tonnages reported for 2012 do not represent a full year. In addition, a downstream monitoring well was lost because of the flooding and plans for 2013 include restoring the well.

The CSRD has retained Summit Environment Consultants (Summit) to conduct environmental monitoring at the site, as per the requirements of the Operational Certificate. Summit has provided conclusions and recommendations based on the 2012 data collected, which will be posted on the CSRD website in May, 2013.

2.0 INTRODUCTION

The Sicamous refuse disposal site (hereinafter referred to as “the site”) is located approximately 2.5 km south of Sicamous and 900 metres east of Mara Lake along Highway 97A. The legal description of the property is Block A of Section 30, Township 21, Range 7, West of the Sixth Meridian, Kamloops Division of the Yale District. The 10.2 acre site provides solid waste disposal and residual processing services to residents, businesses, and institutions located within the municipality of Sicamous and portions of Electoral Area 'E'. The site is operated under an Operating Certificate issued by the Ministry of Environment (MR-00514) and is governed in operating and closure standards by Provincial criteria.

The landfill is operated in accordance with an approved Design and Operations Plan (D&O Plan). An ongoing groundwater monitoring program is conducted at the site from downstream monitoring wells and from a surface water sample on nearby Sicamous Creek. Data collected from the monitoring program has been compared to historical record to determine whether the respective landfills have affected groundwater quality and, if so, to what extent.

In accordance with the user-pay principles of the Solid Waste Management Plan, fees are charged for the disposal of all waste materials. The disposal fee for co-mingled municipal solid waste across scaled sites is set at \$70 per tonne, as per changes in the 2009 in accordance with the new Solid Waste Management Plan. Furthermore, in 2010 a differential tipping fee was introduced to encourage recycling by creating disincentive fees for loads which are not separated.

3.0 BACKGROUND

The site has been in operation since 1971 when the Ministry of Environment, Lands and Parks issued Permit PR 514 to the Sicamous Waterworks District. In 1977, the permit was transferred to the Columbia Shuswap Regional District (CSRD). The property is leased to the CSRD by the Crown and in 2012 was operated under contract by Darin Northway.

With the exception of Christmas, New Years and Remembrance Day, the site is open on the following schedule:

Year Round - Friday through Tuesday 10:00 am to 4:00 pm.

The site is fully enclosed with an electrified fence, contains a lockable gate, a truck scale with electronic weighing and reporting software, a scale house and marshalling areas for wood waste, gypsum, asphalt shingles, refrigerators and air conditioners, white goods and other metal wastes, concrete and asphalt, propane bottles, and auto batteries. A swap shed for reusable items and a recycling bin for mixed paper, newspaper, tin cans, plastics and glass jars and bottles are also provided.

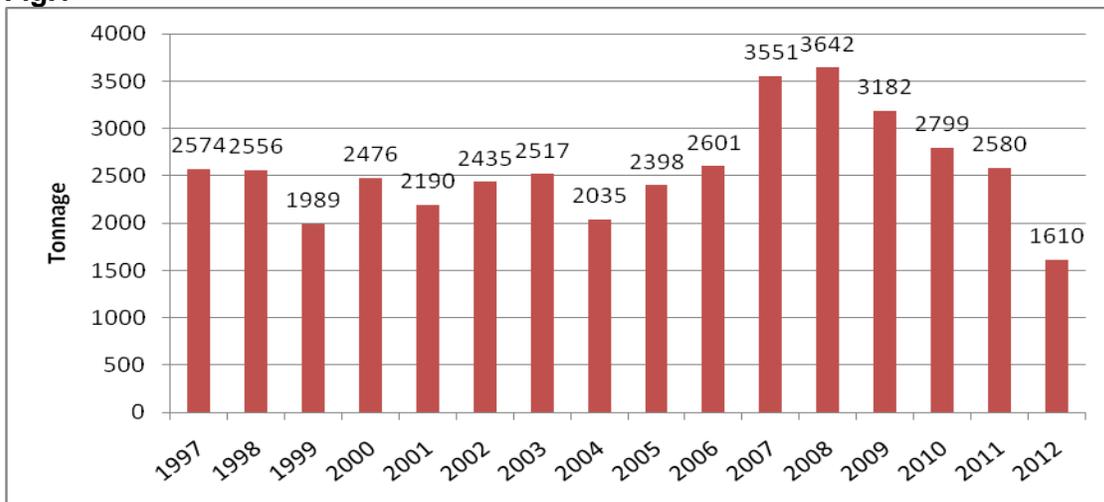
4.0 OBJECTIVES

The objective of this report is to provide information required to meet the annual reporting requirements in Section 4.4 of Operational Certificate MR-00514 issued by the BC Ministry of Environment on December 21, 2007 (most recent).

4.1 Total Tonnage of Waste Discharged (Fig.1)

In 2012 approximately 2,355 tonnes of refuse and recoverable wastes were managed at the Sicamous landfill. The quantity of municipal solid waste landfilled at the site was 1,610 tonnes, which represents a 38% decrease over 2011. The decrease in tonnage can be attributed to the 3 month closure of the landfill due to the flooding events, during the peak use season, in 2012.

Fig.1



During the closure a temporary transfer station was established in the community where residents could drop their garbage off. All garbage collected during the closure was transferred to the Salmon Arm landfill. Furthermore, commercial loads were also diverted to the Salmon Arm landfill. It is estimated that approximately 1,400 tonnes of materials were diverted to the Salmon Arm landfill during the closure.

One third of all incoming materials, 745 tonnes, were diverted to marshalling areas for recovery. Existing diversion programs include; drywall, asphalt shingles, concrete, contaminated soil, wood waste, metal and reusable items.

4.2 Design Volume/Life Expectancy

The Sicamous D&O Plan was prepared by Gartner Lee Ltd in August, 2006. According to the plan, the site will be constructed and progressively closed in four phases which would consume an overall 353,000 m³ of air space.

Phase 1 reached capacity by 2007, and approximately 50,000 cubic meters of excavated material from phase 2 was temporarily placed on the crest of phase 1. This soil material was excavated to provide airspace for the placement of waste in phase 2 and cover requirements for phase 2 and phase 3. Therefore according to the D&O Plan phase 1 closure would occur with the closure of phase 3 when the soil stockpile was exhausted.

It was determined by survey that 5,642 m³ of air space was consumed at the site in 2012. This represents a 30% decrease in air space use over 2011, which is a result of the landfill being closed for the busiest months of the year in 2012. There is approximately 20 years of air space remaining in phase 2/3 with closure anticipated in 2031.

4.3 Projects and Plans for 2013

There are no major projects planned for the site in 2013; however staff continue to provide training to the attendants in an effort to increase waste diversion.

The Sicamous Landfill had four site inspections done in 2012. The contractor was found to be in compliance with the contract and the design and operations plan during all inspections. No major projects were completed at the Sicamous landfill in 2012. Projects for 2013 include improvements to the marshalling areas and re-establishing a downstream monitoring well impacted by the flood clean up events in 2012.

4.4 Wildlife Occurrences

According the scale attendant and the site contractor, there were no reported occurrences of wildlife at the site in 2012. In order to ensure that the electric fence is being maintained at adequate voltage the CSRD has a fencing testing/maintenance kit from our fencing contractor. The kit is used to test the fence voltage and make minor repairs during site inspections.

4.5 Closure Fund

A detailed overview of landfill closure and post-closure liability has been provided in Appendix A, prepared by the CSRD Finance Department for 2012 auditing purposes.

5.0 WASTE HIERARCHY

The CSRD emphasizes and encourages the 6R Hierarchy of Rethink, Reuse, Reduce, Recycle, Recovery and Residual management and continually strives towards a higher 'R' in waste management practice. The programs offered within each category along with successes and challenges experienced in 2012 are indicated below.

5.1 Rethink

5.1.1 Composter Incentive Program

In the fall of 2009, the CSRD launched a Region wide composter incentive program. The CSRD purchased a number of Earth Machine outdoor compost units at a cost of \$45 per unit. These composters were then offered to residents in the spring of 2012 in Revelstoke and Electoral Area 'B' for the same price. To ensure that all residents receiving a composter understood the benefits of home composting as well as how to properly use the Earth Machine composter, all individuals purchasing a composter were given the option to attend a 30 minute training seminar hosted by CSRD staff.

The CSRD, in partnership with the Recycling Council of BC, continues to promote our reuse website, www.csrd.reuses.com. The website allows users to post items for sale, or post wanted items for free, up to a maximum of value of \$99.00. The site has seen exchanges ranging from clothing, furniture and appliances, to musical instruments and construction materials. By the end of 2012, over 74 new members had signed up with 69 exchanges taking place.

5.2 Reduce

5.2.1 Media Communications and Advertising

The CSRD continues to utilize local radio advertisements aired on the EZ Rock Network (FM Stations – 91.5) and newspaper advertisements in the local papers (Eagle Valley News, Lakeshore News, Shuswap Market) to make residents aware of special events, and to promote various waste reduction themes. The CSRD also published The Loop Newsletter in the Shuswap Market, which included local event information, as well as ways to reduce household waste and promote sustainability in our communities. More recently the CSRD has entered into the social media world, utilizing Facebook to grow a network of engaged residents.

5.3 Reuse

5.3.1 Marshalling Areas at Refuse Disposal Site

The site contains reuse marshalling areas for wood waste and propane tanks. A large portion of wood waste material is chipped and reused as alternate daily cover (in a soil/wood blend) or placed on the unloading pads of the active face when the ground is saturated and un-drivable.

5.3.2 Woodwaste grinding

In 2012, 1,565 m³ of wood waste was chipped at the site. 173 tonnes of wood waste and 309 tonnes of yard waste were received at the site in 2012.

5.3.3 Propane Tank Collection

There were 75 propane tanks collected from the site in 2012, compared to 58 collected from the site in 2011.

5.3.4 Reuse Centre

The CSRD installed a Reuse Centre at the site in 2010. In 2012, over 180 items were salvaged from the Reuse Centre by residents. Items include household items, sports equipment, building material, and appliances. Residents are required to pay the regular disposal rate for items, but can choose to place items that are in good working order in the Reuse Centre for someone to take home free of charge.

5.4 Recycling

5.4.1 Marshalling Areas at Refuse Disposal Sites

All CSRD landfills contain recycling marshalling areas for auto batteries (except Salmon Arm), metal wastes including white goods and scrap metal, gypsum, asphalt shingles, concrete, and household recyclables, including mixed paper, newspaper, tin cans, glass containers, plastics #1 to #7 and corrugated cardboard.

5.4.2 Scrap Metal Recovery

In 2012 the CSRD added free metal drop off to the 12 week yard and garden free days in the spring and fall. This site recycled approximately 95 tonnes of scrap metal in 2012, compared to 60 tonnes in 2011, which includes source separated metal wastes deposited at the site from commercial and residential sources. 91 tonnes were received at the site in 2012.

5.4.3 Ozone Depleting Substance Removal

At the site, 176 refrigeration units were serviced to have the ozone depleting substances removed before recycling, compared to 143 in 2011.

5.4.4 Household and Automotive Battery Recycling

In 2012, 130 automotive batteries were collected from the site for recycling, compared to 99 the previous year.

5.4.5 Gypsum/Asphalt Shingles/Concrete

Marshalling areas for gypsum, asphalt shingles and concrete have been established at the site. Stockpiles had not accumulated enough to process any material in 2011, but 25 tonnes of gypsum and 25 tonnes of drywall were recycled in 2012. Concrete stockpiles had not accumulated enough to crush. 55 tonnes of gypsum and 33 tonnes of shingles, as well as 79 tonnes of concrete were received at the site in 2012.

5.4.6 Residential Recycling Service

Opportunities to deposit recyclable items such as: newspaper mixed waste paper, food cans, glass containers, plastic containers #1,-7, and corrugated cardboard exist at all Regional District Refuse Disposal sites and in depots found in downtown municipalities. In Sicamous, the downtown recycle depot location is shared with a local hardware store. For three months in the summer, the Sicamous Landfill was closed due to severe flooding in the area, and the recycling collection was done only at the downtown depot location.

5.4.6.1 Depot Recycling

Recycle depots exist at all refuse disposal sites and within the municipalities of Salmon Arm, Sicamous, Revelstoke and Golden. In the fall of 2009, the recycling collection changed to a comingled collection system. A total of 143 tonnes of mixed waste paper, tin food cans, newspaper glass jars and bottles, corrugated cardboard and plastics #1 to 7 were collected in 2012 from the Sicamous landfill and downtown depot. This represents an increase of 8 tonnes from 2011, or 6%.

Figure 1 represents recycling collection quantities collected region wide since 1991 in the depot collection program. A 7% decrease in recycling was noted in the depot collection program in 2012 region wide, which was expected with the introduction of curbside recycling in Golden, Revelstoke, and Salmon Arm. Figure 2 represents an overall increase of 11% diversion when combining the depot system with the curbside system in the CSRD.

Figure 1-Recycling Collected in Depots Region Wide

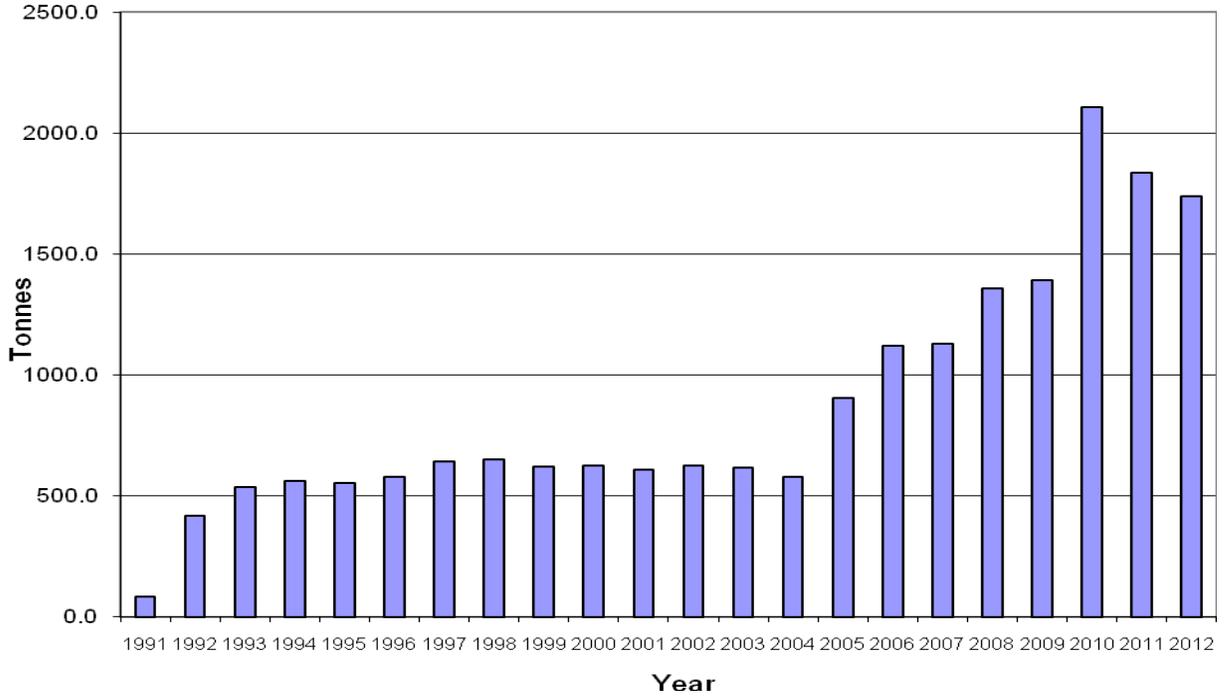
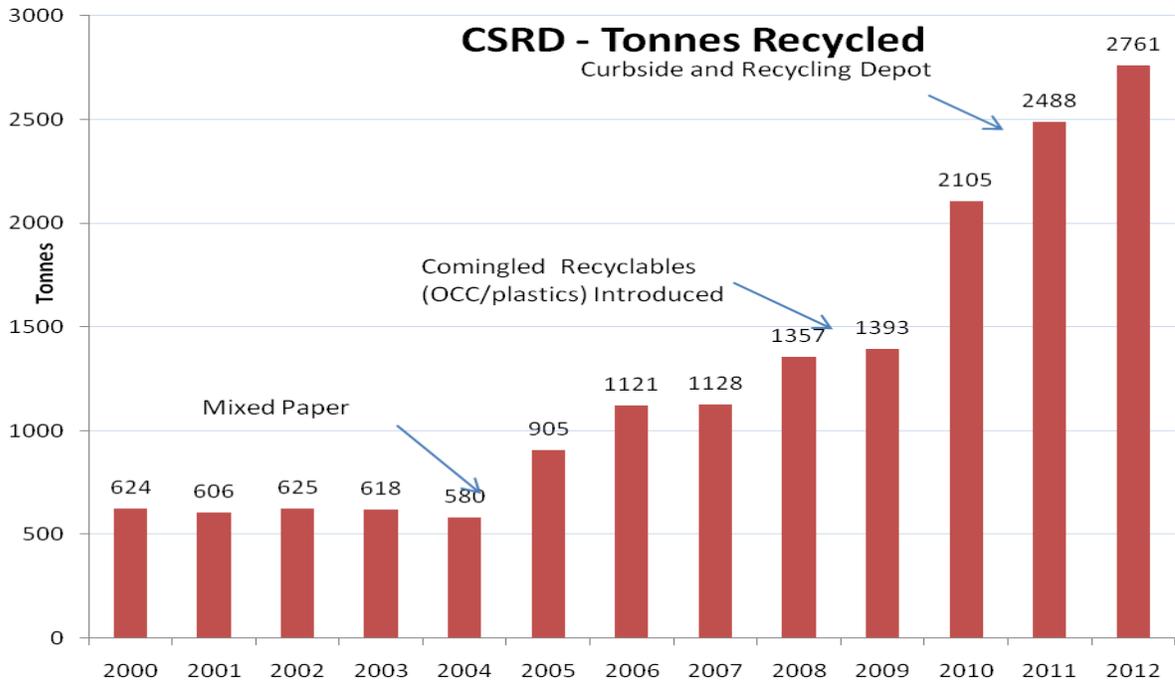


Figure 2-Increases in Recycling Region Wide Combining Depot and Curbside Amounts



5.4.6.2 Recycle Fair Events

Two Recycle Fair events were held in the municipality of Sicamous in 2012, one in the spring and one in the fall. The following items were collected at this Recycle Fair Event:

- fluorescent tubes
- Product Care items (old gasoline, paint, pesticides small appliances, power tools)
- electronic waste
- tires (spring only)

5.4.7 Extended Producer Responsibility

Provincial stewardship programs such as the beverage container deposit-refund system, paint, pesticides and other residuals, waste oil and oil containers, tire recovery programs, pharmaceuticals and electronics contribute to diverting materials from local landfills. Unfortunately, the Province of British Columbia does not require Stewardship agencies to report quantities recycled on a regional district basis; therefore quantities diverted from CSRD landfills through extended producer responsibility programs are largely unknown.

5.4.8 Private Sector Recycling

At this time the Regional District does not have quantitative values of wastes collected through other programs and therefore cannot adequately determine the overall waste diversion rate from the landfill site.

6.0 ENVIRONMENTAL MONITORING

6.1 Ground Water

The CSRD has retained Summit to conduct environmental monitoring at the site, as per the requirements of the Operational Certificate. Summit has provided conclusions and recommendations based on the 2012 data collected, which will be posted on the CSRD website in May, 2013.

Although no significant impacts to groundwater or surface water have been noted, the CSRD is working with Summit to further delineate and examine potential impacts at the site.

Appendix 'A'

Solid Waste Landfill Closure and Post-Closure Liability						
The Environmental Management Act of B.C. and the Ministry of Environment of B.C. set out the landfill criteria to properly close and maintain all active and inactive landfill sites. Under the guidelines, there is a requirement for closure and post-closure care of solid waste landfill sites. Provisions are therefore made over the estimated remaining life of the CSRD landfill sites based on scalehouse records and through tipping fees.						
The main components of the landfill closure plans are: final capping using an engineered cap design and the implementation of a drainage and gas management plan. The post-closure care requirements may involve: cap maintenance; groundwater monitoring; gas management system operation and maintenance; inspections; leachate treatment and monitoring; and annual reports.						
The table below sets out the liability based on the estimated capacities used in cubic metres, multiplied by the estimated total expenditures, expressed as discounted present values, assuming 1.1% (2.4% - 2011) inflation and 1.06% (1.03% - 2011) investment rate (annual MFA money market fund). The amount remaining to be recognized in future years is \$ 3,831,100 (2011 - \$ 5,270,200). The annual provision is reported as an Operating Fund expense and the accumulated provision is reported as a liability on the Consolidated Statement of Financial Position. Reserve funds totalling \$ 830,505 (2011 - \$ 824,304) have been established to provide for this liability in the Landfill Closure Special Reserve Fund.						
The table also indicates the remaining landfill life in years and remaining capacity (100 minus % used). Post-closure care is estimated to continue for a period of approximately 25 years.						
			cubic metres			
Site	Estimated Remaining Life (yrs)	Estimated Total Expenditure for Closure	Cumulative Capacity Used	Total Estimated Capacity	% Used	Liability for Closure to Dec 31, 2012
Salmon Arm (phase 2 of 5)	11	2,063,700	60,273	383,778	15.7%	324,100
Golden (pre-phase)	0	371,600	613,416	613,416	100.0%	371,600
Golden (phase 1 of 4)	13	2,528,900	38,407	146,000	26.3%	665,300
Revelstoke (pre-phase)	0	293,900	70,000	70,000	100.0%	293,900
Revelstoke (phase 1 of 4)	2	659,300	84,408	83,991	100.5%	662,600
Sicamous (phase 2 of 4)	13	270,500	57,553	166,000	34.7%	93,800
Sicamous (phase 4 of 4)	31	454,000	110,000	125,000	88.0%	399,500
Total		\$ 6,641,900	1,034,057	1,588,185	65.1%	2,810,800
					less expenses previously recognized:	2,954,800
					2012 reduction in the liability for landfill closure:	\$ (144,000)