



**SOLID WASTE MANAGEMENT
Annual Operations and Monitoring Report
Golden Refuse Disposal Site MR-17006
2014**



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1.0 INTRODUCTION

The Golden refuse disposal site (hereinafter referred to as “the landfill site”) is located at 350 Golden-Donald Upper Road, Golden, BC approximately 2 km northeast from the core of Golden. The legal description of the property is Subdivision 12 of Section 18, Township 27, Range 21, West of the 5th Meridian, Kootenay District. The landfill site is approximately 1.2 km north of the Kicking Horse river, the nearest major surface water body. The site has been in operation since the early 1970’s as a natural attenuation landfill. In the late 1970’s the permit was transferred to the Columbia Shuswap Regional District (CSRD). The property is leased to the CSRD by the Crown and covers an area of approximately 17 ha. The waste footprint currently covers an area approximately 4.4 ha. The landfill site is operated by South Cariboo Ventures under contract with the CSRD.

The landfill site provides solid waste disposal and residual processing services to residents, businesses, and institutions located within the municipality of Golden and to the CSRD Electoral Area 'A'. CSRD manned transfer stations in Parson and a transfer station located in Field (owned and operated by Parks Canada) deliver solid wastes to the site in 50 yrd³ containers on a regular frequency. The site is operated under an approved Design and Operations Plan, in accordance with Operational Certificate 17006, issued by the Ministry of Environment on May 5, 2003 and amended on August 29, 2012.

Environmental monitoring including groundwater sampling, analysis and reporting continued at the site in 2014. Data collected from the groundwater monitoring program has been compared to the historical record to determine whether the site has affected groundwater quality and, if so, to what extent. The qualified professionals report is currently in draft and will be posted to the CSRD’s webpage in April.

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 into appropriate marshalling areas.

2.0 BACKGROUND

With the exception of statutory holidays, the site is open to the public on the following schedule:

Year Round Monday to Saturday from 10:00 am to 4:00 pm

The site contains a lockable gate, a single truck scale with electronic weighing and reporting software, a scale house, and an internal transfer station. The site operates on a user pay system where payment is collected on a load weight bases.

3.0 OBJECTIVES

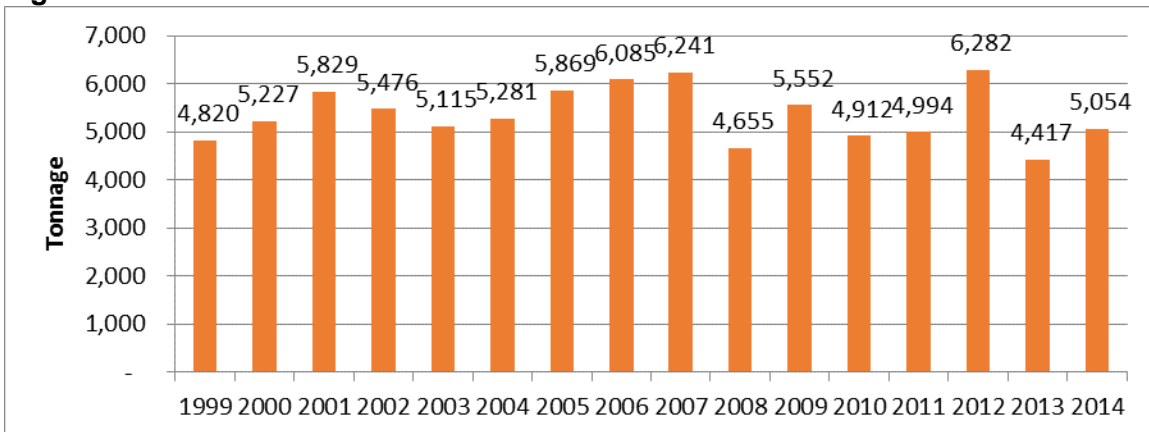
The objectives of this report are as a minimum to provide information required to meet the annual reporting requirements in Section 5.1 of Operational Certificate MR- 17006 issued by the BC Ministry of Environment on August 29, 2012.

3.1 Total Tonnage of Waste Landfilled (Fig.1)

In 2014 approximately 10,543 tonnes of refuse and recoverable wastes were managed at the Golden landfill. The quantity of municipal solid waste landfilled at the site in 2014 was 5,054 tonnes, which represents a 13% increase over 2013. Using the most recent census date (2011) the per capita disposal rate for 2014 was 0.75 tonnes/person/year, based on a population of 6,766 for the service area.

Over half of all incoming materials, 5,567 tonnes, were diverted to marshalling areas for recovery. Existing diversion programs include; mattress, drywall, asphalt shingles, concrete, contaminated soil, wood waste, metal and reusable items. 2014 saw the introduction of a mattress recycling program whereby by a tipping fee of \$25/mattress is charged to marshal, collect and recycle. Recycling is a process of deconstructing and separating materials including, metal, wood and waste into categories to be returned to the Salmon Arm landfill for recycling or disposal. In 2014 290 mattresses were diverted for recycling.

Fig.1



3.2 Design Volume/Life Expectancy

The Golden Design and Operations (D&O) Plan was prepared by EBA Engineering Consultants Ltd. in November 2007 and updated in 2013 in accordance with the requirements of the Operational Certificate. According to the updated plan, the site will be constructed and progressively closed in four phases which would consume an overall 1,230,000 m³ of air space.

Before the D&O plan was created waste had been placed across much of the landfill site. The CSRD is currently completing the construction of the pre-phase of the landfill which will then accommodate the phased development according to the D&O plan which will progress on top of the pre-phase. According to projections in the D&O Plan, phase 1 will reach capacity by 2028 with overall capacity being exhausted by 2098.

It was determined by survey that 10,095 m³ of air space was consumed at the site in 2014, representing a 20% decrease over 2013.

3.3 Accomplishments and Inspections in 2014

The Golden landfill had four site inspections done in 2014. The contractor was found to be in compliance with the contract and the design and operations plan during all inspections.

Landfill contracts expired on June 30, 2014 and new contractors were hired. The Cover and Compaction contract was won by SCV Contractors and the Scalehouse Operations contract was won by Frank Strain. One official notice of non-compliance was issued to the Cover and Compaction contractor.

Site improvement and repair projects were completed at the Golden landfill in 2014. Construction of a new pad for marshalled materials began. The pad was graded and covered in pit-run and a new access road and ditches were put in. On site culverts were dug out to prevent clogging. New gravel was added to slopes around the transfer bay area which were showing signs of erosion. CSRD staff had fewer interactions with neighbors who were complaining about odors at the site. The complaints were coming on hot days with no wind. CSRD staff worked with the contractor to identify these situations and use a liquid deodorant on and around the active face. The use of the deodorant greatly reduced the odor complaints from the neighboring properties.

3.4 Occurrences or Observations of Wildlife

The perimeter of the Golden landfill has an electric fence. Voltage is checked during inspections and is in the 6-7 kV range. Occurrences of wildlife in 2014 included ravens and deer accessing the site. There were no incidents of bears.

3.5 Closure Planning

Each spring the CSRD's Finance Department assesses closure reserves, future closure projects and landfill capacity to ensure adequate reserve funds are available for planned closure work. A copy of this assessment work has been included as Appendix 'A'.

3.6 Plans for 2015

Plans for 2015 include completing the work initiated in 2014 on the new marshalling area for public drop off of recyclable materials and the application of

intermediate cover on closed areas of the landfill. Continued work will be done on the ditches and culverts on site to improve surface water run-off. The CSRD has also budgeted funds to conduct blasting activities on the northeastern banks of the landfill to open up new airspace as per the Design and Operation plan.

3.7 Training Programs

Although no formal training was completed by the contractor in 2014, CSRD staff developed a guide for best landfilling practices based on a consultant's report done in 2012 and training was provided by CSRD staff.

4.0 ENVIRONMENTAL MONITORING

The CSRD hired a new environmental consultant, Western Water, in 2014 to conduct all monitoring and reporting for the Golden Landfill in 2014, as per the requirements of the Operational Certificate. Western Water has provided conclusions and recommendations based on the 2014 data collected, which will be posted on the CSRD website for public review after April 1, 2015.

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 2014 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 2014 in Golden and Electoral Area A 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 given by CSRD staff.

5.1.2 Reuse Website

The CSRD, in partnership with the Recycling Council of BC, continued to promote our reuse website, called www.csr.d.reuses.com. The website allowed 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 limited exchanges and therefore the site was discontinued in the spring.

5.2 Reduce

5.2.1 Media Communications and Advertising

The CSRD continues to utilize local radio advertisements aired on the EZ Rock Network (AM Stations – 1400 Golden) and newspaper advertisements in the local paper (Golden Star) to make residents aware of special events, and to promote various waste reduction themes. The CSRD also published The Loop Newsletter in the Golden Star, which promoted the transition to the Multi Materials BC collection program for packaging and printed paper.

5.3 REUSE

5.3.1 Marshalling Areas at Refuse Disposal Sites

The Golden Refuse Disposal 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 2014, 1,956 m³ of wood waste and 840 m³ of yard and garden waste was chipped at the landfill site. 711 tonnes of wood waste and 423 tonnes of yard waste were received at the site in 2014.

5.3.3 Propane Tank Collection

289 propane tanks were collected from the site in 2013, compared to 132 tanks collected in 2014.

5.3.4 Reuse Centre

The CSRD installed a Reuse Centre at the Golden landfill in the fall of 2009. In 2014, almost 280 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 chose 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 for 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

This site recycled approximately 156.6 tonnes of scrap metal in 2014, compared to 187.3 tonnes in 2013, which includes source separated metal wastes deposited at the site from commercial and residential sources, as well as metal transferred from the Parson Transfer Station. 190.2 tonnes were received at the site in 2014.

5.4.3 Ozone Depleting Substance Removal

In Golden, 253 refrigeration units were serviced to have the ozone depleting substances removed before recycling.

5.4.4 Household and Automotive Battery Recycling

In 2014, 112 automotive batteries were collected from the Golden landfill for recycling.

5.4.5 Gypsum/Asphalt Shingles/Concrete

Marshalling areas for gypsum, asphalt shingles and concrete have been established at the Golden landfill. 102.3 tonnes of shingles and 52.9 tonnes of drywall were transported for recycling in 2014. Concrete stockpiles were crushed to a 3 inch minus product for use on site. 1858m³ of crushed concrete was produced. 43.2 tonnes of drywall, 106.4 tonnes of shingles, and 1011.8 tonnes of concrete were received at the site in 2014.

5.4.6 Mattress Recycling

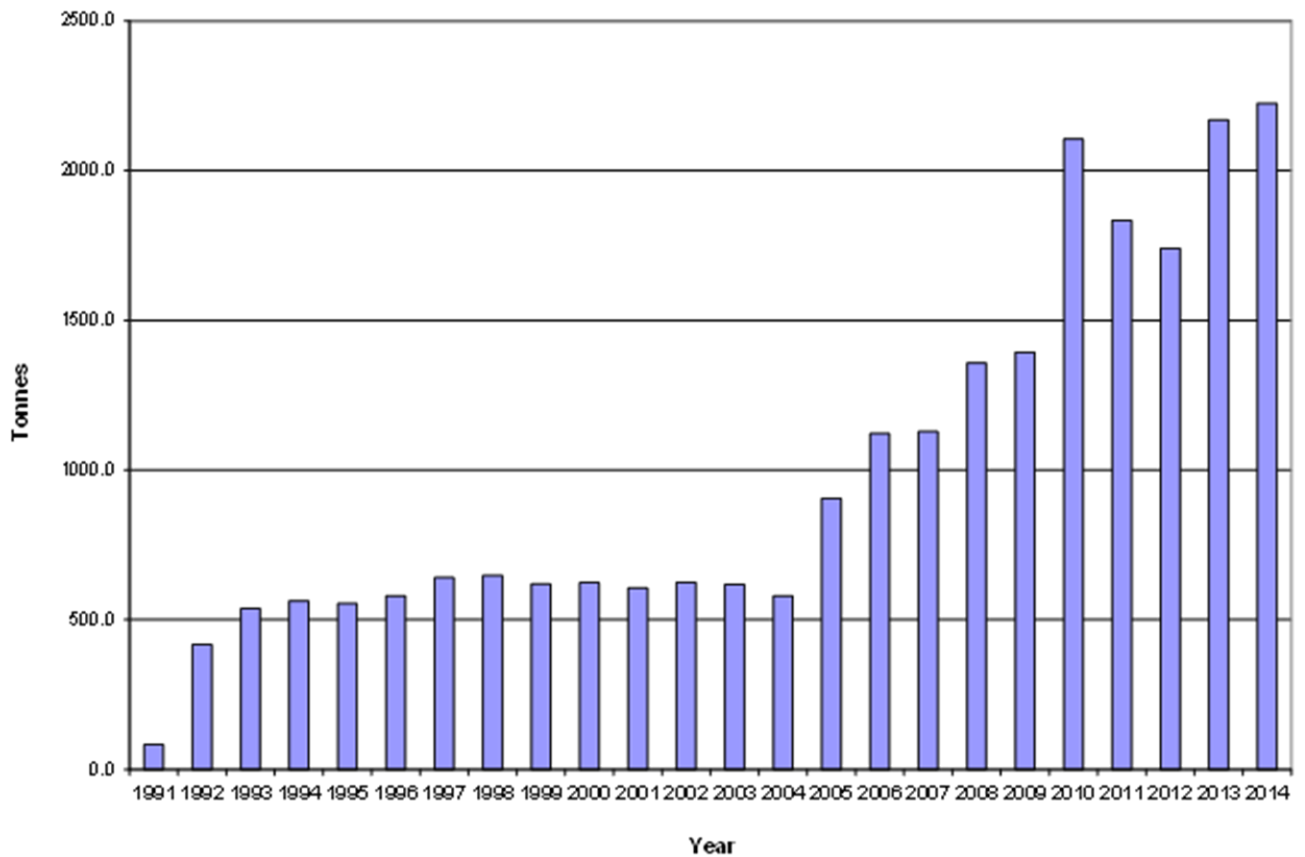
In June of 2014, the CSRD started a mattress recycling program. Mattresses are deconstructed, with metal springs being added to scrap metal, and wood material added to wood waste. The remaining foam and textile portion of the mattress is landfilled. In 2014, 290 mattresses were collected at the site for recycling.

5.4.6.1 Depot Recycling

Opportunities to deposit recyclable items such as: newspaper, mixed waste paper, food cans, glass containers, plastic containers #1 to 7, and corrugated cardboard exist at all Regional District Refuse Disposal sites and depots found in downtown municipalities. In Golden, the downtown recycle depot is located in the bottle depot parking lot. The recycle depot also has bins for the collection of cardboard only. The Town of Golden also provides a curbside collection program. In the fall of 2009, the recycling collection changed to a comingled collection system. A total of 245 tonnes of mixed waste paper, tin food cans, newspaper glass jars and bottles, corrugated cardboard and plastics #1 to 7 were collected in 2014 from the Golden landfill and downtown depot. This is a 7.5% increase over the previous year depot collection program for Golden only.

On a region wide basis, the depot collection program increased 2.6% from 2013 to 2225 tonnes. The following graph represents recycling collection quantities collected region wide (from all depots) since 1991.

Figure 1-Recycling Collected in Depots Region Wide



5.4.6.2 Curbside Recycling

Recycling was collected through a curbside cart collection system from all single family dwellings within the Town of Golden by the Town. The material was delivered to a reload facility operated by VP Waste, baled, and sent to Cascades Recovery in Kelowna. On May 19, the Town opted to partner with Multi Materials BC (MMBC) for the collection of Packaging and Printed Paper. The material continues to be collected in a cart system and VP Waste continues to be the reload facility for the material. In 2014, 141 tonnes of material was collected through the curbside program (66 tonnes from January 1st to May 19th, and 75 tonnes from May 20 to December 31st). This is a 17% decrease over last year.

This, combined with the depot program, resulted in an overall tonnage of 386, or a 31% decrease overall for Golden. There is a -1.4% decrease in recycling from 2013 over the entire region for all depot and curbside collection tonnages combined in 2013, amounting to 3269 tonnes.

5.4.7 Recycle Fair Events

Spring and fall Stewardship collection events were held in Golden in 2014. Tires, small appliances, power tools, lights and light fixtures, paint, pesticides, old gasoline, and batteries were accepted as Golden does not have permanent drop off facilities for most of these items. A hazardous waste round up event was conducted in the spring in conjunction with the stewardship event.

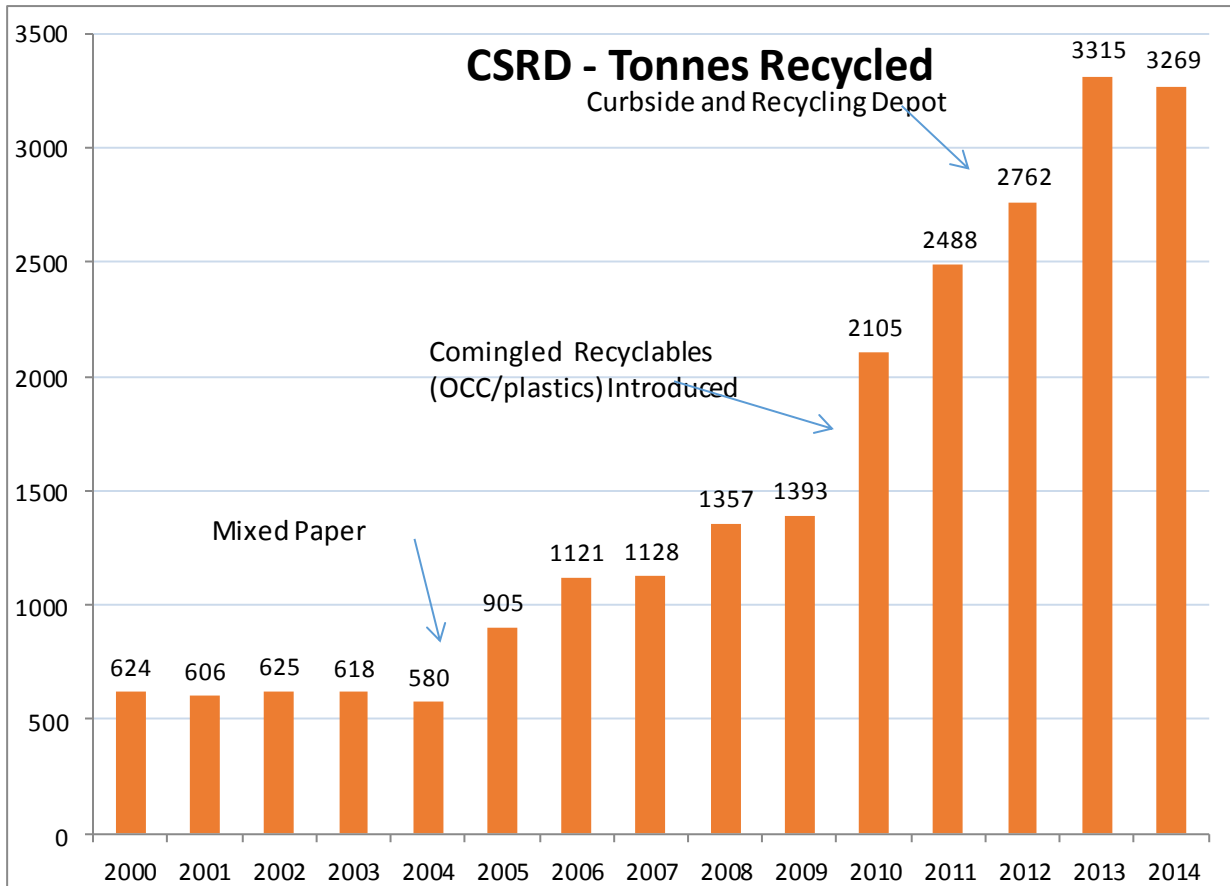
5.4.3 Extended Producer Responsibility

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.

5.4.4 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 Town of Golden.

Figure 2- Decrease in Recycling Regional Wide Combining Depot and Curbside Amounts



Appendix 'A' - Solid Waste Landfill Closure and Post-Closure Liability

COLUMBIA SHUSWAP REGIONAL DISTRICT

Notes to Consolidated Financial Statements

December 31, 2014

5. 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 Regional District 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. Post-closure care activities begin once the entire landfill site no longer accepts waste and continues on for a period of 25 years. As the date of the site closure is unknown, management estimates the liability to begin after the closure of the current active phase, assuming another phase will not be opened. In the event another phase is opened, the start date for the liability will be adjusted to begin upon closure of the newly opened phase.

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 1.00% (2013 - 0.00%) inflation and 3.00% (2013 - 3.85%) long-term borrowing rate (fall issue MFA 25 year rate). The amount remaining to be recognized in future years is \$983,900 (2013 - \$1,229,700). 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 \$899,720 (2013 - \$843,389) 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) on the open phases and the anticipated post-closure costs recognized on total site capacity used.

	Estimated Remaining Life (Years)	Estimated Total Expenditure for Closure	Cumulative Capacity Used (m ³)	Total Estimated Capacity (m ³)	Used (%)	Liability for Closure December 31, 2014
Salmon Arm (phase 2 of 5)	12	\$ 1,650,000	114,708	383,778	30	\$ 493,200
Golden (pre-phase)	14	268,600	613,416	613,416	100	268,600
Golden (phase 1 of 4)	14	307,000	56,591	157,000	36	110,700
Revelstoke (pre-phase)	1	292,000	70,000	70,000	100	292,000
Revelstoke (phase 1 of 4)	1	655,100	98,535	98,535	100	655,100
Revelstoke (phase 2 of 4)	13	541,900	13,067	156,212	8	45,300
Sicamous (phase 2 of 4)	11	220,000	73,706	166,000	44	97,700
Sicamous (phase 4 of 4)	29	257,600	110,000	125,000	88	226,700
Closure liability subtotal		\$ 4,192,200	1,150,023	1,769,941	65	2,189,300
Post closure liability subtotal						1,019,000
2014 total liability						3,208,300
Less: Expenses previously recognized						(2,309,200)
2014 reduction in the liability for landfill closure						\$ 899,100