



**SOLID WASTE MANAGEMENT
Annual Post Closure and Monitoring Report
Skimikin Landfill OC-3991
2016**



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1.0 INTRODUCTION

The Skimikin landfill, closed in 2005, is located 15 km northwest from Salmon Arm on 2281 Skimikin Road. The site is located on the north side of Tappen Creek Valley, about 4km west of Highway 1. The landfill site ranges in elevation from 485-520 metres above sea level. The site is approximately 380 meters northwest from Tappen Creek, which flows from west to east.

The Skimikin landfill site (hereinafter referred to as “the site”) was in operation as a natural control landfill from the early 1970’s until 2005. The Columbia Shuswap Regional District (CSRD) operated the landfill between 1994 and 2005. The Skimikin landfill reached capacity in 2005 when the landfill was capped primarily with a synthetic geomembrane cover system although a portion of the south west side of the landfill directly above the scale house was capped with soil clay material. Once the landfill was closed it was converted to a waste transfer station.

From the mid 1970’s to 1994, the site was operated as a rural landfill under the Pollution Control Permit, PR-3991. In July, 1996, the site was granted Operation Certificate OC-3991 from the Ministry of Environment (issued to the Regional District). The total in-place tonnage landfilled is estimated to be approximately 100,000 tonnes.

2.0 OPERATIONS

The Skimikin transfer station was inspected three times in 2016 and was found in compliance with all aspects of the contract. The site is a scaled facility which contains two 50 yd³ lidded roll-off bins collecting refuse material. All refuse is hauled to the Salmon Arm landfill for disposal. The following table summarizes refuse management operations.

Skimikin Transfer Station - Annual Refuse Summary							
	2010	2011	2012	2013	2014	2015	2016
Refuse Received (MT)	864.0	818.5	784.2	847.9	853.3	894.5	1011.5
% Change From Previous Year	-	-5.2	-4.2	+8.1	+0.6	+4.7	+13.1
Refuse Bins Hauled	-	-	-	200	204	234	248
Average Bin Weight (MT)	-	-	-	4.24	4.18	3.82	4.08
% Of CSRD Waste Stream	2.7	2.5	2.3	2.8	2.6	2.9	3.0
% Of Transfer Station Waste	31.9	31.2	30.0	30.7	31.5	31.6	33.5

The site has one 50 yd³ open-top roll-off bin which collects metal waste and one open-top roll-off bin which collects wood waste material. One open-top roll-off bin is used to collect yard and garden waste during the CSRD’s free organics events which run for six weeks in the spring and six weeks in the fall. Yard and garden waste is incorporated into composting operations at the Salmon Arm landfill. During the rest of the year this bin is used to collect gypsum drywall and asphalt shingles. There is a bin used to collect mattresses. All these materials are hauled to the Salmon Arm landfill and are incorporated into resource recovery and recycling operations.

Appliances containing refrigerants (ODS) are separated and have the refrigerants removed by a CSRD contractor before the units are added to the metal recycling bin. Propane tanks and auto batteries are salvaged directly from the site by CSRD contractors. The following table summarizes resource recovery operations.

Skimikin Transfer Station - Resource Recovery							
Recoverable Resource	2010	2011	2012	2013	2014	2015	2016
Wood Waste - Received (MT)	296	336	392.6	280.9	268.6	362.1	318.7
Wood Waste - Processed (m ³)	to SA	to SA	to SA	to SA	to SA	to SA	to SA
Yard & Garden Waste - Received (MT)	incl. WW	incl. WW	incl. WW	141.8	120.4	140.3	154.7
Yard & Garden Waste - Processed (m ³)	to SA	to SA	to SA	to SA	to SA	to SA	to SA
Metal Waste - Received (MT)	92.5	89	98.6	99	80.8	89.2	116.2
Metal waste - Salvaged (MT)	to SA	to SA	to SA	to SA	to SA	to SA	to SA
Gypsum Drywall - Received (MT)	Refuse	7	43.6	36	29.5	30	32.7
Gypsum Drywall - Salvaged (MT)	-	to SA	to SA	to SA	to SA	to SA	to SA
Asphalt Shingles - Received (MT)	Refuse	2.5	23.4	14.9	15.4	13.6	21.8
Asphalt Shingles - Salvaged (MT)	-	to SA	to SA	to SA	to SA	to SA	to SA
Concrete/Brick/Porcelain - Received (MT)	Refuse	Refuse	Refuse	Refuse	Refuse	Refuse	Refuse
ODS Units - Received	-	69	81	93	86	127	64
ODS Units - Processed	113	96	175	102	142	156	127
Propane Tanks - Salvaged	211	58	370	359	142	120	207
Auto Batteries - Salvaged	211	227	205	126	76	49	88
Mattresses - Received	-	-	-	-	199	310	276
Mattresses - Salvaged	-	-	-	-	to SA	to SA	to SA
MT - Metric Tonne							
m ³ - Cubic Metre							

A re-use centre is available to divert usable items from the waste stream. Tipping fees are charged on items going into the re-use centre and the public signs a salvage permit for items taken out.

Residential recycling opportunities are available through the provincial MMBC depot recycling program. Recyclables are source separated at this CSRD supervised depot.

3.0 POST CLOSURE MAINTENANCE AND MONITORING PROGRAM

3.1 Ground Water and Surface Water Monitoring

Environmental monitoring services have been conducted throughout the lifespan of the landfill site and post closure. The 2016 Environmental monitoring program includes groundwater monitoring and general site conditions. The monitoring program is carried out by Western Water Associates Ltd. On an annual basis, the monitoring data is compiled and analyzed to determine landfill decomposition stages, existing and potential environmental impacts and recommendations for the following operating year.

Western Water has provided conclusions and recommendations based on the 2016 data collected. Recommendations that will be implemented in 2017 include changing the frequency of monitoring from tri-annually to annually. Details are outlined in the full environmental monitoring report that will be posted on the CSRD website for public review in May, 2017.

3.2 Settlement Monitoring

The landfill site is routinely monitored for signs of differential settlement and erosion which would compromise the closure system. No signs of adverse settlement have been noted through 2016.

4.0 CAPITAL PROJECTS

4.1 Bio-filter Application

The CSRD continues to monitor the bio-filter (methane oxidation bed) system installed in 2010, to reduce methane escaping to the atmosphere from the landfill site. In 2016, monitoring of the concentrations of the landfill gas components was conducted using the CSRD's portable gas analyzer. Monitoring of the methane oxidation beds efficiency was performed in collaboration with the University of Calgary. The CSRD and the University of Calgary have plans to make improvements to the methane oxidation beds in 2017.

5.0 CONCLUSION

No significant changes were made to operations at the Skimikin Transfer Station in 2016. Staff continue to work with the University of Calgary on monitoring the methane oxidation beds. No major upgrades or plans are in place for 2017.