Campbell Mountain Landfill

2023 Annual Report

Operational Certificate: 15274

Prepared by: Regional District of Okanagan-Similkameen

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EcoScape Environmental Consultants Ltd.

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Appendix I – 2023 Environmental Monitoring Report

1. EXECUTIVE SUMMARY

In 2023, there was 26,711 tonnes of waste disposed at the Campbell Mountain Landfill compared to 27,061 disposed in 2022, which is a 1.2% decrease compared to 2022. Most waste streams have returned to normal levels of disposal, 2021 was an outlier year for the suspected reason of 'Covid' staying at home resulting in excess disposals. There was a large decrease seen in illegal dumping 2.01 tonnes in (2023) compared to 61.75 (2022). The largest decrease continues to be seen in assessed demolition as this is being directed to Okanagan Falls.

Large amounts of clean fill continue to be received in 2023, resulting in limited use of onsite cover material. There was a decrease in yard waste in from 11,042 tonnes in 2022 to 7690.01 tonnes in 2023 but some shifting of the category of yard wastes received. Agricultural fruit woods and yard waste from commercial landscape companies.

The Campbell Mountain Landfill remains a Contaminated Site under the Contaminated Site Regulation due to leachate exiting the property. Leachate generation is partly due to the City of Penticton Biosolids Compost operation on the property, a closed septage receiving facility and landfilled garbage. The leachate containment pond, commissioned in 2018, has received groundwater pumped from a series of wells at the base of the property and from onsite surface water. Leachate is now being conveyed from the north ravine area to the pond. Information on 2023 environmental monitoring and recommendations by EcoScape Environmental Consulting Ltd has been attached as an appendix.

The Campbell Mountain Landfills remains out of compliance with the Landfill Gas Regulation. The Regional District of Okanagan-Similkameen has formally requested substituting requirements for the use of a biocover in place of Active Landfill gas capture to mitigate methane emissions from Campbell Mountain Landfill submitted in 2020.

2. INTRODUCTION AND SITE BACKGROUND

The Campbell Mountain Landfill (CMLF) is presently operated as a natural attenuation site under Operational Certificate (OC) 15274. A copy of the OC, as updated January 8, 2015, can be found in Appendix I and Table 1 provides the concordance between sections in the OC and their locations in this current document. EcoScape Environmental Consultants Ltd (EECL) was retained by the Regional District of Okanagan-Similkameen (RDOS) to prepare the environmental monitoring section of the 2023 Annual Operations and Monitoring Report for the Campbell Mountain Landfill (CML); their report is provided in the attached Appendix I. The Regional District of Okanagan-Similkameen compiled the operation and management information for this landfill.

CMLF is located on District Lot 368, Similkameen Division of Yale District (S.D.Y.D.) and is situated within the City of Penticton, B.C. The Site has an estimated total area of 59.5 hectares and a landfill footprint of approximately 10 hectares. The landfill is located on a bench east of Okanagan Lake between Spiller Road to the east and a dominant north-south oriented bedrock ridge, directly to the west.

The landfill services the City of Penticton, Village of Keremeos, Penticton Indian Band, RDOS Electoral Areas 'B', 'D', 'E', 'G' and 'I' and part of Electoral Area 'F' (West Bench area). The population serviced in 2021 as per Statistics Canada (2021 Census) is 52,545.

Table 1: Operational Certificate 15274 Concordance Table

Approved Schedule Condition	Corresponding Report Information Section
Section 3 Monitoring and Reporting Requirements	
3.1 Municipal Solid Waste Measurement	
3.1.1 Provide and maintain a weigh scale and record the weight of refuse discharged to the landfill over a 24-hour period.	3.4 Waste Disposal, 2.5 Per Capital Waste Disposal Rates, Table 2
3.2.1 Record the weight of recyclable and reusable materials not being discharged and that are being separated, stored or processed at the landfill over a 24-hour period.	3.4 Waste Disposal, Table 2
3.2 Groundwater Monitoring Program	
3.2 The Regional District must implement and maintain a groundwater and surface water monitoring program prepared by a qualified professional.	2023 Environmental Monitoring Report
3.3 Vegetation Monitoring	

3.4 Sampling and Analyses	
3.4.1 Sampling is to be carried out in accordance with the procedures described in the 'British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples, 2003 Edition'	2023 Environmental Monitoring Report
3.4.2 Analyses are to be carried out in accordance with procedures described in the 'British Columbia Laboratory Manual (2009 Permittee Edition)'	Analyses completed by CARO Analytical in Kelowna, BC a CALA Accredited Laboratory
3.5 Quality Assurance	
3.5 Quality Assurance	2023 Environmental Monitoring Report
3.6 Changes to the Sampling and Monitoring Program	
3.6 Changes to the Sampling and Monitoring Program	2023 Environmental Monitoring Report
3.7 Annual Report	
3.7 (a) Executive Summary	1. Executive Summary
3.7 (b) The type and tonnage of waste received, recycled, stored on site and discharged / landfilled for the year	3.3 Waste Diversion Activities, 3.4 Waste Disposal, 3.5 Per Capita Disposal Rates, Table 2
3.7 (c) Any proposed changes to the Design, Operations and Closure Plan and the environmental monitoring program	3.9 2023 Operation Plan, 2023 Environmental Monitoring Report
3.7 (d) Review of the preceding year of an operations update which summarizes landfill development work and airspace filled, work completed in the subject reporting year and work planned for the subsequent year. A summary of any new information or changes to the facilities and plans, assessments, surveys, programs and reports.	3.9 2023 Operation Plan, 3.11 Leachate Management, 4.2 Landfill Operation and Management, 5. Recommendations
3.7 (e) Occurrences or observations of wildlife (medium and large carnivores) at the facility;	2023 Environmental Monitoring Report
3.7 (f) A statement regarding the facility's progress in reducing the regional solid waste stream being landfilled and the objectives of the Regional Solid Waste Management Plan	3.3 Waste Diversion Activities, 3.4 Waste Disposal, 3.5 Per Capita Disposal Rates, 3.6 Landfill Volume Consumed, Table 2

3.7 (g) An outline of the current Environmental Monitoring Program and a compendium of all environmental monitoring data in accordance with the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills and Landfill Criteria for Municipal Solid Waste. Must document any effect of the discharge on the quality of the receiving environment using appropriate statistical and graphical analysis. Trend analyses, as well as an evaluation of the impacts of the discharges on the receiving environment	2023 Environmental Monitoring Report
3.7 (h) A list of training programs completed for landfill operators during the previous year.	TDG Training

2.1 SITE HISTORY

Landfilling operations were initiated at the Site in 1972 by the RDOS. In 1975, the RDOS began waste disposal within the North Ravine. The waste deposited within this area is reported to be composed of municipal and industrial solid waste, in addition to liquid waste. In 1998, a landfill fire occurred within the refuse mass located in the North Ravine.

A liquid waste facility was constructed at the Site in the mid-1980s, for receiving septic and holding tank waste generated within the service area; the facility was decommissioned in 2008-09.

Compostable materials are sent to the City of Penticton's Bio-Solids Composting Facility, located on-site (Figure 2 – City Composting). In 1994, The City of Penticton initiated bio-solids composting and until the year 2000 materials were mixed in static piles, in 2000, upgrades were completed to add aeration to the composting windrows. The cured compost is sold from the landfill for use off-site. Although unlined there is a leachate capture system for the bio-solids composting operation that collects surface water to prevent infiltration and from within the composting area. Upgrades were completed in 2020. The collected liquids are reused in the composting process.

Leachate has been determined to have left the Campbell Mountain property and the landfill is deemed a Contaminated Site under the Contaminated Site Regulation.

The Campbell Mountain Landfill has been deemed a 'regulated landfill' as per Section 4(5) of the Landfill Gas Management Regulation. The RDOS has made an application for substituting requirements under Section 20 of the Regulation to allow for the use of a passive bio cover instead of active landfill gas extraction.

3. LANDFILL OPERATION AND MANAGEMENT

The following section details the operation and management of the Site.

3.1 SITE OPERATIONS

The site contractor is Green for Life (GFL) having won the recent tender procurement for operations to May 31, 2027. The Site, operated during the report period by GFL personnel, currently accepts residential, commercial, and light industrial waste from the following RDOS communities:

- Penticton
- Penticton I.B.
- Upper and Lower Similkameen Bands
- Naramata
- West Bench/Sage Mesa
- Westwood/Husula
- Redwing
- Kaleden
- Lakeshore Highlands/Heritage Hills
- Skaha Estates
- Okanagan Falls
- Twin Lakes
- Olalla
- Keremeos
- Hedley
- Cawston

Wastes that are prohibited from the disposal at the Site without the authorization of the MoE Director, according to Section 1.1.3 of the OC 15274 January 8, 2015, include the following:

- Hazardous Wastes other than those specifically authorized in the Hazardous Waste Regulation;
- Bulk liquids, semi-solid sludge's which contain free liquid;
- Liquid or semisolid wastes (septage, black water, sewage treatment sludge);
- Automobiles, white goods, other large recyclable metallic objects and tires;
- Hog fuel, log yard debris and chipped wood waste (The reuse of these materials for temporary roads, dust control or a component of alternative daily cover is permitted);
- Biomedical waste; and
- Dead animals and slaughter house, fish hatchery wastes, and farming wastes or cannery wastes and byproducts (carcass disposed by CO's Road Maintenance, SPCA and Veterinary Clinics is allowed).

The equipment in use for the completion of daily tasks and for other maintenance at the Site include the following:

- Aljon 500, Compactor;
- CAT 826-C Compactor (spare);
- CAT 980 Loader;
- Komatsu 480 Loader;
- Mack G4813 (4,000 Gallon Capacity) Water Truck;
- Hitachi EX210LCH-5 Excavator;
- Freightliner FL80 Roll-off Truck; and
- CAT D250B Rock Truck.

The landfill hours of operation are as follows:

- March to end of November – Open 8:30 am to 4:45 pm, Monday through Sunday – Open BC Statutory holidays
- December to end of February – Open 8:30 am to 4:45 pm, Monday through Saturday – Closed BC Statutory holidays, Boxing Day and Sundays

The placement of daily cover and alternative daily cover fulfills a number of functions, which include the following:

- reduce erosion
- minimize odour impacts
- reduce quantity of blowing litter
- discourage vermin and vector activity
- improving vehicular access to the active disposal area
- maintain a more aesthetic site appearance

Refuse landfilled on the working face is covered daily with an Iron Grizzly or daily cover. Once a week, the working face is covered with 0.15 m of soil.

In 2023 loads of yard waste were diverted thru the City of Penticton compost yard entrance at specific times where an RDOS employee allowed access to the facility. This was scheduled to reduce pressure on the scale during seasonal rushes of yard waste.

3.2 SITE FACILITIES

The perimeter of the landfill is secured with an electrified-wire fence. The Site entrance is located on Reservoir Road. An access gate controls entrance and/or exit from the Site. The entrance gate is locked when the Site is closed to prevent unauthorized vehicle entry and uncontrolled waste disposal. The City of Penticton has a separate entrance off of Spiller Rd which they control but provides an alternative access point to the facility.

A scale house and scale are located near the entrance to the Site. During operating hours, the quantity of waste received at the Site is weighed and recorded by the Scale attendant. Household recyclable materials brought to the Site, in compliance with RecycleBC depot requirements, are placed in the recycle bins located south of the scale house.

In addition to the scale house and recycling station, the following facilities are maintained at the Site:

- Small Vehicle Transfer station 3 bays - 40yd. containers
- Cover soil quarry area
- Residential and Commercial Yard Waste areas
- Residential and Commercial Wood Waste areas
- Commercial cardboard and recycling transfer station
- Pressurized tank area
- Tire area
- Lead acid and household battery area
- Refrigeration Unit area
- Electronic waste facility
- Scrap metal area
- Household hazardous waste facility
- Gypsum Recycling Stockpile
- Asphalt Shingle Recycling Stockpile
- Mattress and Box Spring Reduction Area

In 2018 a leachate collection pond was commissioned on the property at the south west corner.

Compostable materials are diverted to the City of Penticton Bio-Solids Composting Facility as required to support their operations, located on-site. Alternatively composted materials are chipped and sold through the landfill, on behalf of the City of Penticton, and then taken off-site. The City of Penticton has conducted annual compost give away events. The City of Penticton used their own entry from Spiller Rd for vehicles that collected free compost as part of this event and these vehicles weights were visually estimated.

Figure 1(a): March 2023 Site Plan of Campbell Mountain Landfill

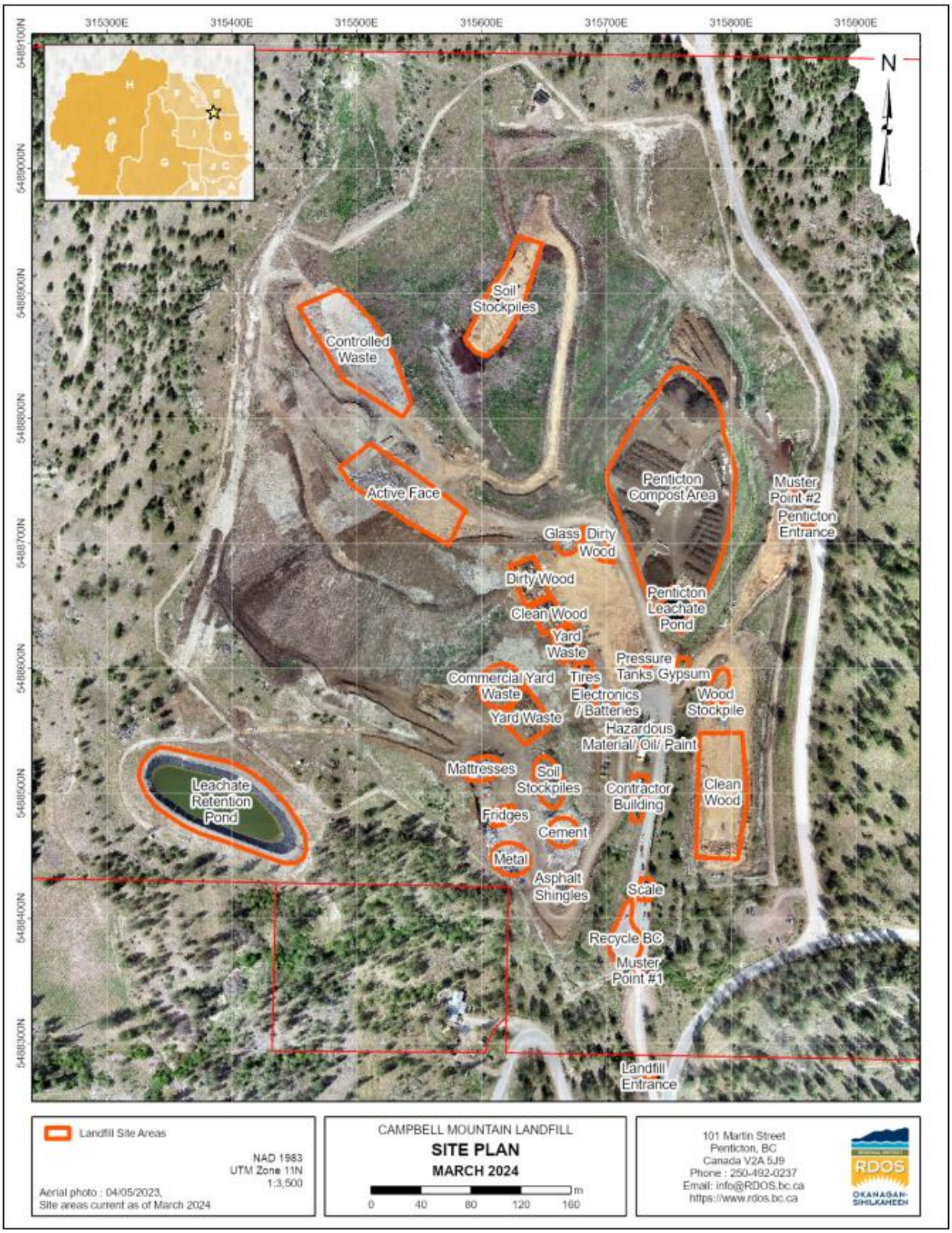
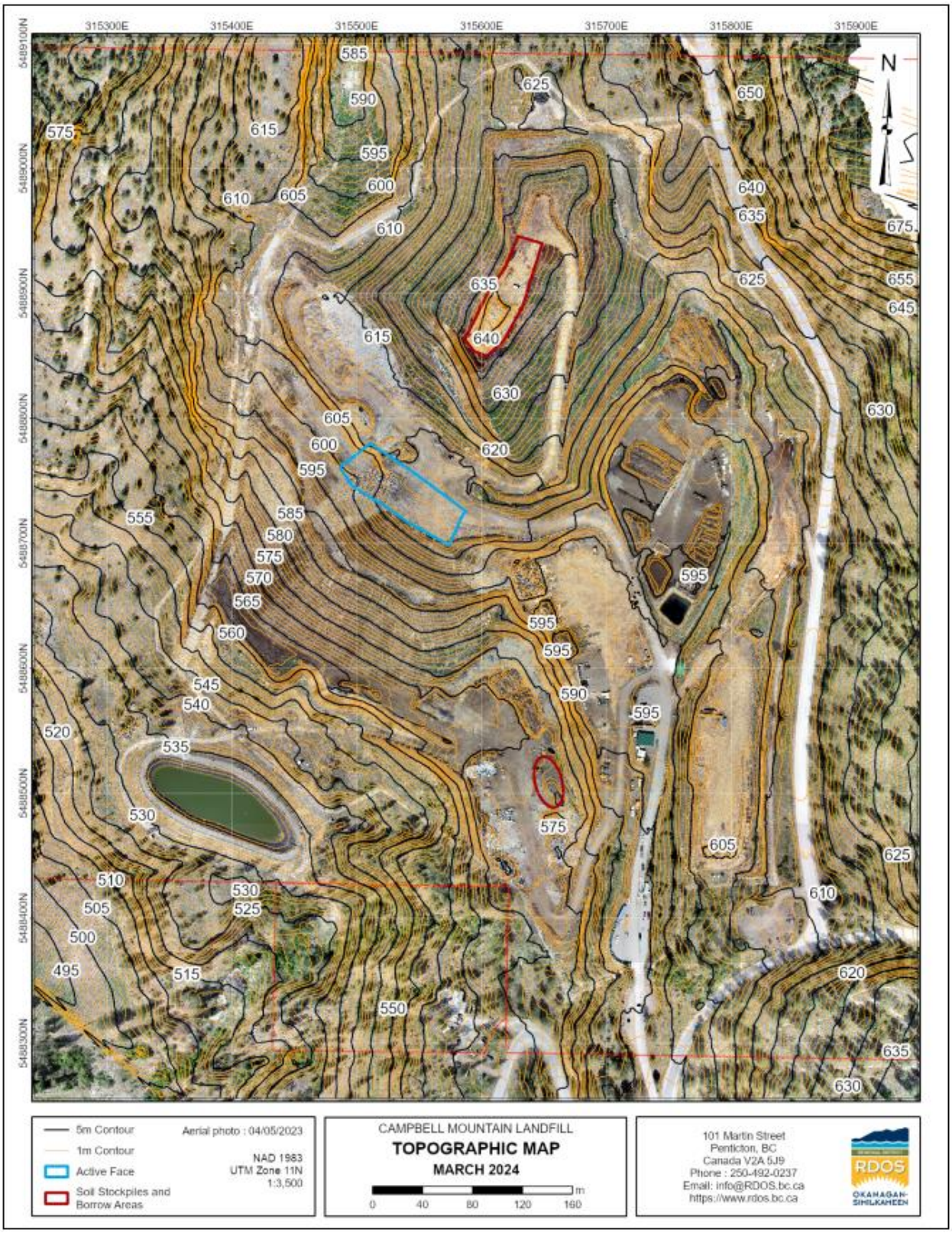


Figure 1(b): March 2023 Topographic Map of Campbell Mountain Landfill



3.3 WASTE DIVERSION ACTIVITIES

Table 2 below, specifies the specific tonnage of materials diverted from landfilling along with the tonnage of waste materials landfilled at the site in 2023.

During the reporting period, recyclables and compostable's were collected in the landfill. These include:

- Asphalt Roofing
- Batteries
- Residential Recycling
- Commercial Cardboard
- Concrete
- Electronics and small appliances
- Gyproc
- Household Hazardous Waste (including EPR programs and additional products)
- Metal
- Tires
- Tree Stumps, Yard Waste
- Pressurized tanks
- White Wood
- Light Bulbs
- Smoke and CO detectors

Electronics, small appliances, light bulbs and smoke detectors were received from the Oliver and Okanagan Falls Landfills and Keremeos Transfer Station to the Campbell Mountain Landfill for collection and ultimate diversion.

Wood waste is chipped on-site and diverted for other uses or utilized operationally as required. Composted green waste (yard and garden waste) is used for erosion control purposes.

Other programs that are diverting waste at the landfill but were not recorded by weight include the following:

- Books, hard and soft cover

3.4 WASTE DISPOSAL

The quantity of waste received at the Site is weighed at the scale house and recorded by the gatehouse attendant is summarized below. Total waste disposed decreased by 1.2% from 2022 to 2023. Waste received under commercial account in 2023 was about the same as 2022. There was a 70% increase in self-hauled refuse. Consistent increase in curbside garbage collected in urban and rural areas. Other types of waste disposal generally increased or stayed similar from 2022 to 2023, with the exception of Controlled Waste which saw a significant increase.

Table 2: Tonnage of Waste and Diverted Materials Summary

Disposed (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agricultural Plastics	1	0.155	0.52	0.39	10.25	2.47	28.30	6.08	21.44
Asbestos	116	162.05	185.03	237.89	207.22	141.77	227.30	254.52	312.77
Bulky Waste		0.595	16.54	5.77	3.02	9.23	72.55	20.13	1.01
Burnt material	64	59.48	311.98	204.34	440.57	64.36	183.76	373.89	101.15
Burnt material containing asbestos						5.53	100.41	0	7.59
Carcasses	5	5.59	3.095	6.26	5.88	3.18	2.21	1.61	2.27
Carcasses - Highways						1.63	1.66	0.40	0.02
Concrete Non-Recyclable			18.52	0	0	0	0	0	0
Construction Mixed	2	6.38	2.28	2.24	0	0	1.13	2.21	0.94
Controlled Waste	302	333.16	163.47	219.75	174.58	152.68	105.21	95.63	150.80
Curbside Non-Service Area						3.5	2.91	5.91	4.17
Curbside Area B, G, Keremeos				852.99	882.93	912.03	961.28	1056.59	1050.06
Curbside Area B, G, Keremeos Large Item				12.22	7.88	6.92	14.84	32.42	
Curbside E, F, Carmi				524.56	754.7	832.35	833.47	797.79	801
Curbside D,E,F Carmi Large Item*	17	11.545	7.67	18.72	15.67	16.46	6.60	9.89	
Curbside Area D,I				667.15	963.19	1072	1095.68	938.22	952
City of Penticton Residential	4171	4060.1	4013.8	4107.2	4108.5	4441	4471.47	4564	4388
City of Penticton Large Item	57	57.195	62.83	66.84	57.34	61.9	66.96	7.21	64.93
Demolition/Renovation Mixed Assessed	27	7.97	2.36	16.21	22.73	0	43.19	1.15	
Demolition/Renovation Mixed Non-Assessed	18	10.815	112.53	11.03	0	6.08	6.63	12.75	3.82
Foundry Dust (Industrial)	0	88.13	430.34	418.34	442.59	294.68	377.47	424.12	428.40
Disposed Continued (tonnes)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**

Garbage – Commercial Accounts	13805	12661	12818	14649	14934	12488	12650.43	12950	13953
Garbage - Refuse Non-Commercial	3251	3663.0	3958.9	3973.6	3885.9	4452	5405.87	4614	4567
Gypsum			479.43	1144.1	1140.9	995.84	882.17	0.34	865
Highway Refuse	6	2.635	3.79	1.9	1.62	2.17	9.77	1.12	0.02
Illegal Dumping	3	5.2	26.86	12.77	7.55	5.56	3.56	61.75	2.01
Invasive/ Infested Vegetation	0	9.66	45.96	9.4	16.42	9.04	22.19	16	9.12
Keremeos Transfer Bin	418	419.28	452.72	537.4	577.9	564.06	567.24	542.58	596.76
Lead Painted Material					26.89	14.44	49.92	46.74	84.47
Plate Glass					0.35	0	1.69	0	3.01
Preserved Wood	149	247.3	252.23	177.77	202.2	203.65	186.55	222.99	150.00
Sewage Screening	0	0	0	0	0	3.56	0	0	0
Curbside Area B	165	182.76	186.45						
Curbside Area B Large Item	0	0	4.42						
Curbside Area G	462	464.1	449.4						
Curbside Area G Large Item	11	8.555	3.89						
Curbside Village of Keremeos	227	236.66	245.665						
Curbside Keremeos Large Item			0						
Curbside D, E, F	924	1010.1	994.70	307.92					
Curbside Area D (OK Falls, Twin Lakes)	679	686.89	695.07	220.33					
DRC Material									
Noxious Weeds	19								
TOTAL Disposed	**24903**	**24403**	**25952**	**28422**	**28891**	**26766**	**28382.42**	**27061**	**26711**

Cover Material (tonnes)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Clean Earth Fill	3177	14828	35559	23511	42363	47231	30033.30	32391.9	41509.4
Contaminated Soil	634	17414	2868.8	817.1	87.63	818.61	166.75	414.19	449.82

Commercial Glass	28	47.065	54.64	15.65	3.55	7.15	80.64	10.70	0
Tar and Gravel and Asphalt Roofing		765.14	725.2	926.14	733.12	863	769.9	260.14	1011.62
TOTAL Contributed for Cover Material	**3839**	**33054**	**39208**	**25270**	**43187**	**48920**	**31051**	**33077**	**42971**

Recycled Material (tonnes)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Asphalt Shingles	363.3	537.76	263.4	290.46	305.64	289.99	136.12	574.55	576.83
Batteries	0	0	2.76	2.97	6.93	9.73	9.67	5.1	19
Commercial Cardboard	315	354.7	261.39	41.33	54.87	87.3	82.25	121.37	1.93
Concrete, Asphalt, Ceramic, Rock	1268	1264	5689.4	2835	3780	3453.6	3299.87	3594.26	4058.35
Concrete Bulky					46.28	235.99	371.22	154.49	73.84
Fruit Waste	6	22.825	14.01	657.74	4.51	2.12	1.12	0.86	0.49
Gyproc	898	976.04	671.76	0	0	0	0	1078.69	865
Metal	287	970.8	496.92	731.46	493.6	990.1	479.86	396.82	433.40
Tree Stumps*	0	125.4	0	0	0	481.4	350	138.21	128.53
Wood Product* - Contaminated	9746	7168.6	8091.4	7268.6	10253	8146.3	4127	2730	10067.14
Wood* - Clean						1558.2	6068	4385.57	3946.02
Wood Salvage		1.88	0	0	2.32	1.06	0	0	0.14
Yard Waste Small Dimension		482.58	1492.8	1725.7	3397.5	1226.1	979.57	5948	908.64
Wood Clean Small Dimension	1057	448.22	135.92	0	10.27	39.56	68.52	138.03	42.22
Organics*	4549	6131.3	5665.8	5870.4	5874.3	9731.0	11287	11042	7445.18
Pressurized Tanks Small* one pound		0.8496	0.6988	0.4041	0.7443	0.765	2.57		0
Pressurized Tanks Large* 10lbs & up	6.6	13.7	31.783	8.2552	43.17	7.9968	15.50	56.8	109.49
Tires no rims*	36	17.0	28.5	30.6	34.15	39.06	32.70	361.9	441.46
Tires with rims*	12	4.246	7.282	5.698	4.55	9.394	14.70	14.28	18.09
Tires Oversized	12	6.175	1.32	2.28	6.61	0.64	1.37	0.47	0.40
Total	**18556**	**18826**	**22855**	**19471**	**24318**	**26310**	**27327**	**30736.3**	**29136.15**

Residential Recycling Depot (tonnes)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Blue Bag Recycling	23	23.765	20.8	2.64	0	0	0	0	0
RecycleBC Fibre	294	315	298.16	303.77	244.13	258.67	369.43	312.0	275.0

RecycleBC Containers	25	22	21.3	19.615	2.89	20.428	32.680	21.735	24.300
RecycleBC Film Plastic	4	4.9	4.84	4.922	2.44	5.177	5.133	6.87	0
RecycleBC Polystyrene Coloured	0	0.1	0.09	0.126	0.11	0.24	.264	.137	0.152
RecycleBC Polystyrene White	3	3.2	4.97	5.462	5.66	6.249	7.272	6.503	6.211
RecycleBC Glass	9	9.3	7.72	2.686	1.82	8.569	11.310	9.13	7.67
RecycleBC Other Flexible Plastic Packaging					2.93	5.014	7.488	2.732	10.63
+Total Depot	**358**	**378.2**	**357.8**	**339.2**	**259.9**	**304.3**	**433.6**	**359.2**	**323.9**

Other Stewardship Programs (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022	2023
Paint	15	17.24	16.56	16.78	15.66	22.473	22.50	2.23	20.88
Aerosol	1	0.4536	1.09	1.27	0.994	1.59	1.27	0.33	0.039
Solvents	1	0.6804	1.13	0.68	0.681	0.454	1.589	7.08	0.908
Oil	7	0.0132		12.056	12.584	11.44	11.14	18.0	16.2
Oil Filters	0	0.13				0	0	0.22	0.46
Antifreeze	1	0.82		1.435	1.664	0.955	.41	1.3	0.77
Plastic Oil/Antifreeze Containers	2					0	0	0.9	1.64
Alarms						0.033	.06	.02	.055
Lightbulbs						1.731	1.90	0.9	2.4
Electronic Waste	114	152.34	138.25	119.35	108.25	107.3	68.99		110.402
Small Appliances					44.35	45.87	53.78	24.3	

Household Hazardous Waste (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022	2023
Household Hazardous Waste	13	18.37	9.15	13.73	16.95	9.94	19.12	18.55	21.31
TOTAL Landfill Diverted	**19089**	**18968**	**23379**	**19976**	**24780**	**26816**	**27941**	**31095**	**29460**

Additional Information – (Weights Included Above)	2015	2016	2017	2018	2019	2020	2021	2022	2023

Agricultural Organics (organics)	57	82.145	222.15	347	398.11	357.47	103.80	155.11	134.898
Christmas Trees (organics)			9.76	9.9	8.6	7.24	7.73	0.61	1.16
Curbside B, G, Keremeos Yard Waste (organics)			92.39	85.62	105.35	108.84	116.51	106.52	
Curbside D,E,F Yard Waste (organics)			448.49	312.26	370.84	467.48	420.46	379.92	
Curbside Area D I Yard Waste (organics)			220.01	357.9	309	274.65	214.15	279.16	
Curbside City of Penticton Yard Waste (organics)			1899.1	1997.3	1938.0	2313.3	2088.41	2012.8	2120.6
Mattress / Boxspring Reduction (units)	3451	3400	3644	3631	3886	4569	4802	4920	2504
ODS Removal (units)	1449	1624	1733	1974	1577	2138	2125	1742	1641
City of Penticton Compost sold (tonnage)[+]	*2394*	*1723.6*	*1529.3*	*888.71*	*780.01*	*31.18*	*1467.54*	*4000**	*4000*
Loads Received at Scale (number)		85777	89073	89697	89636	92532	97597	89943	95508

Table 3: Loads Recorded Per Month

Loads	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Avg Daily
2021	5580	4790	10606	9932	9542	8739	8976	9318	9158	9059	7901	3996	97,597	280
2022	4334	4856	8793	9672	9753	9169	9085	8781	8711	9030	5394	3397	89,943	258
2023	5217	5244	8979	9636	10056	9280	8879	8857	8410	9040	7434	4476	95508	286

Notes:
The tonnage data from recycled Asphalt Roofing, Batteries, Household Hazardous Waste, Metal, Tree Stumps, White Wood, Organics, Propane Tanks, Tires, Rims on Tires, RecycleBC and Stewardship materials supplied by contractors.

'Tar and Gravel and Asphalt Roofing' under the Cover Material is determined by taking the total materials received as Asphalt Roofing less the amount recycled plus Tar and Gravel roofing received. Tar and Gravel roofing weights (non-recyclable but good for cover) is weighted with Asphalt Roofing (recyclable).

[+] 'City of Penticton Compost sold' does not represent the amount of compost produced by the City of Penticton. In 2023, Penticton conducted several free compost days using a separate entrance at the landfill. These amounts were not recorded as the scale was not used.

***Conversion Estimates to Tonnage**

AVERAGE White Wood	0.23	tonnes/m3
AVERAGE Organics	0.35	tonnes/m3
AVERAGE Tree Stumps	0.3	tonnes/m3

Small Pressuruzed Tanks	0.00045	tonnes/unit
Large Pressurized Tanks	0.0136	tonnes/unit
Tires (no longer used)	0.011	tonnes/unit
Rims on Tires	0.014	tonnes/unit
Used motor oil	0.00088	tonnes/L
Gycol	0.001	tonnes/L
Paint	0.225	tonnes/tub
Terrapure HHW Volume Conversion	0.488	L/kg
Drum	208	L

3.5 PER CAPITA WASTE DISPOSAL RATES

Based on an estimated population of 54,750 (Statistics Canada 2021 Census) in the Site Service Area, and reported waste diversion activities, the average daily mass of waste landfilled in 2023 is 1.34 kg per capita per day, a decrease from 2022 (1.45 kg / capita per day).

3.6 LANDFILL VOLUME CONSUMED

Excluding the diverted recycled/composted materials, 26,711 tonnes were landfilled at the Site during the 2023 report period. Total 2023 materials accepted and stockpiled to be used for cover material weighed approximately 47,106.58 tonnes.

Refuse compaction rates or waste densities achieved are a function of the type and size of compaction equipment utilized; further, the organic content and characteristics of the waste and the number of passes the compactor makes over the waste. A detailed compaction analysis was undertaken during the DOCP update process and a relative waste density of 0.85 tonnes per cubic meter. The relative waste density represents the mass of the waste that can be disposed in each cubic meter of landfill air space. Soil used as daily cover is excluded from consideration since an increase in soil usage can increase the true density and provide a skewed representation of landfilling efficiency.

Based on a conservative compaction rate of 0.8 m^3, the estimated landfill volume consumed by refuse during the 2023 report period is 33,389 m^3 (not including estimated daily cover). The 2021 DOCP, with calculations from Drone Surveys states, “Based on tonnage provided by the 2019 and 2020 Landfill annual reports, from 2012 to 2020 an average of 25,717 tonnes of waste were disposed at the CML annually. This correlates to an average airspace consumption of 33,000 m3/year using the approximated waste density of 0.80 tonnes/m3 from the detailed airspace analysis SHA completed in late 2021.”

3.7 APPROVED DESIGN VOLUME

The Site Design Operations and Closure Plan (DOCP) as provided by Sperling Hansen Associates (2021). From Table 7-2 of the DOCP the total remaining capacity of the Site is estimated at 3,283,697m^3. An additional conceptual phase 6 could extend the life to 2148 (41 years beyond).

3.8 REMAINING SITE LIFE CAPACITY

From the Design, Operations and Closure Plan (SHA 2021), the estimated life remaining for the Site is approximately 86 years (until 2107).

3.9 2023 OPERATION PLAN

In 2023, the active filling continued on the face of Phase 2 proceeding from the bottom of the existing garbage area, in the south west of the slope, following Phase 2 of the DOCP. Controlled waste continued to be buried at the midpoint of the slope created by the existing area of garbage.

Upgrades and maintenance of drainage and leachate works were completed in 2022.

The RDOS continues to work with the City of Penticton to determine the best location for a combined wastewater treatment and green waste composting facility. Depending on the site, this may be combined with a compost site for food waste. The RDOS has purchased the neighboring property at 1313 Greyback Mtn Rd and applied to the Agricultural Land Commission for permission to place a food waste and wastewater treatment sludge compost site. This is the preferred location for the joint compost facility. In addition a grant has been received for $10.8 million to support the development of a composting facility.

The RDOS has updated the Design, Operation and Closure Plan. This includes updated lifecycle costing and a Master Plan to optimize the operation of the landfill, compost site and other activities conducted on the property.

Once approved by the Province, the RDOS intends to install landfill gas biocover to meet substituted requirements of the Landfill Gas Management Regulation. Once approvals are received the RDOS will proceed with this project in closing the Phase 1 area.

3.10 OPERATION AND MAINTENANCE EXPENDITURES

The Site operates on a joint budget with Okanagan Falls Landfill (Operational Certificate 15279). The financial summary for the two landfills for 2023 is below. These expenditures included site operator costs, contracted costs, labour costs for the gatehouse attendant, and other miscellaneous expenses.

Table 4: Financial Summary for 2023 for CMLF and OKLF

GL Account	Actual	Budget
Revenues		
1-3500-1000 - TAX REQUISITION	-	-
1-3500-2700 – INTEREST INCOME	(709,748)	-
1-3500-4600 - FEES - REFUSE DISPOSAL	(3,944,611)	(3,465,843)
1-3500-4600 - FEES - REFUSE DISPOSAL	7,100	-
1-3500-4600 - FEES – WAIVED – PIB ILLEGAL DUMPING	178	-

1-3500-4605 - REFUSE DISPOSAL - OK FALLS	(593,189)	(506,414)
1-3500-4605 - REFUSE DISPOSAL - OK FALLS	71	
1-3500-4610 - GYPSUM DISP. FEES	(101,386)	(111,191)
1-3500-4620 - ORGANIC DISPOSAL FEES	(485,612)	(239,996)
1-3500-4630 - SCRAP METAL RECYCLING	(171,754)	(159,999)
1-3500-4640 - MMBC REVENUE	(44,719)	(10,180)
1-3500-4650 – RECYCLING DEPOT REVENUE	(15,022)	-
1-3500-4670 – LIQUID WASTE FEES	-	-
1-3500-6000 - TRANSFER FROM RESERVE	-	-
1-3500-6080 - TRANSFER FROM CLOSURE RESERVE FUND	-	-
1-3500-6290 - TRANSFER FROM OPERATING RESERVE	-	(10,000)
1-3500-8010 – PROV GRANT – Organics Composting Facility Contingent on Grant Approval	-	-
1-3500-8900 – FEDERAL GRANTS	-	-
1-3500-9000 - MISCELLANEOUS REVENUE	(28715)	-
1-3500-9000 - MISCELLANEOUS REVENUE	(52874)	-
1-3500-9001 – WOOD CHIPPING RECOVERABLE	-	-
1-3500-9990 - PRIOR YEARS SURPLUS	-	-
TOTAL REVENUES	**(6,140,282)**	**(4,503,623)**
GL Account	**Actual**	**Budget**
Expenses		
2-3500-1000 – PENTICTON/D3 REFUSE DISPOSAL WAGES	771,618	662,458
2-3500-1001 – SALARIES & WAGES – NEW FTE	-	48,032
2-3500-1050 – OK FALLS LANDFILL WAGES	68,780	82,000
2-3500-1400 – ADMINISTRATION CHARGES	211,652	211,652
2-3500-1422 – IT SUPPORT COSTS	-	9,900
2-3500-2500 – OPERATIONS CMLF	563	-
2-3500-2500 – OPERATIONS CMLF	199,258	120,000
2-3500-2501 - OPERATIONS OKFL	27,005	25,000
2-3500-2502 – OPERATIONS SHADOW BID	-	-
2-3500-2529 – AG WOOD CHIPPING	-	
2-3500-2593 - GYPSUM RECYCLING	-	-
2-3500-3000 – CONSULTANTS CMLF	14,817	-
2-3500-3001 – CONSULTANTS OKFL	-	86,478
2-3500-3520 - CONTRACT SERVICES - OPS OK FALLS	527,123	540,000
2-3500-3521 - CONTRACT SERVICES - OPS CMLS	826,100	820,000
2-3500-3522 - CONTRACT SERVICES - RECYCLING	185,500	175,000
2-3500-3523 - CONTRACT SERVICES - RECYCLING - OTHER AR	16,235	20,000
2-3500-3525 - CONTRACT SERVICES - WOOD WASTE CHIPPING	357,552	549,000
2-3500-3526 - CONTRACT SERVICES - WOOD WASTE CHIPPING	189,019	40,000

2-3500-3527 - CONTRACT SERVICES - SHINGLE RECYCLING	-	-
2-3500-3528 CONTRACT SERVICES – CONCRET CRUSHING	86,661	80,000
2-3500-3529 - CONTRACT SERVICES - SHINGLE RECYCLING OK FALLS	-	-
2-3500-3530 - HHW DISPOSAL CONTRACTOR	91,345	95,000
2-3500-4000 - EDUCATION & TRAINING CMLF	3000	3,700
2-3500-4001 - EDUCATION & TRAINING OKLF	-	761
GL Account Expenses (continued)	Actual	Budget
2-3500-5000 - ENVIRONMENTAL CONTROL CMLF	21,065	22,500
2-3500-5001 - ENVIRONMENTAL CONTROL OKLF	1,395	2,100
2-3500-5100 - ENVIRONMENTAL MONITORING CMLF	25,771	49,000
2-3500-5101 - ENVIRONMENTAL MONITORING OKLF	20,000	6,200
2-3500-5400 – DEPRECIATION		12,483
2-3500-5500 - CAPITAL EXPENDITURES CMLF	-	-
2-3500-5502 - CAPITAL EXPENDITURES Funding of Operations	-	-
2-3500-5503 - CAPITAL EXPENDITURES Access Upgrades and Scales	-	-
2-3500-5504 - CAPITAL EXPENDITURES Organics Composting Facility (conditional on Grant)	-	-
2-3500-5505 - CAPITAL EXPENDITURES Rezoning Communications	-	-
2-3500-5506 - CAPITAL EXPENDITURES Leachate Implementation Plan Phase 3	-	-
2-3500-5507 - CAPITAL EXPENDITURES Bio Cover Design & Implementation (waiting Ministry Approval)	-	-
2-3500-5508 – CAPITAL EXPENDITURES Design Operations & Closure Master Plan	-	-
2-3500-5509 – CAPITAL EXPENDITURES Design Operations & Closure Master Plan Continued	-	-
2-3500-5510 – CAPITAL EXPENDITURES Completion of Master Plan	-	-
2-3500-5511 – CAPITAL EXPENDITURES Funding of Operations	-	-
2-3500-6000 - INSURANCE – PROPERTY	6,643	5,964
2-3500-6050 - INSURANCE – LIABILITY	21,478	18,652
2-3500-6150 - INSURANCE - ENVIRONMENTAL	31,645	32,000
2-3500-6200 - LEGAL FEES CMLF	6,215	5,000
2-3500-6210 – LEGAL FEES OKFL	-	1,000
2-3500-7000 – SUPPLIES	957	2,500
2-3500-8010 - ADVERTISING - PUBLIC EDUCATION CMLF	2,060	10,000
2-3500-8011 - ADVERTISING - PUBLIC EDUCATION OKFL	-	609
2-3500-8200 - TRAVEL/LEASING CMLF	47,022	31,000
2-3500-8250 - TRAVEL/LEASING OKFL	778	-

2-3500-8500 – UTILITIES CMLF	40,804	44,414
2-3500-8510 - UTILITIES OKFL	1,091	3,100
2-3500-8700 - LANDFILL LEASE	181,000	109,072
2-3500-9200 - TRANSFER TO CLOSURE RESERVE CMLF	72,000	72,000
2-3500-9201 - TRANSFER TO CLOSURE RESERVE OKLF	-	-
2-3500-9202 – TRANSFER TO VEHICLE REPLACEMENT RESERVE	12,483	-
2-3500-9205 - TRANSFER TO RESERVES RE INTEREST	709,748	-
GL Account Expenses (continued)	Actual	Budget
2-3500-9260 - TRANSFER TO IMPAIRMENT RESERVE	-	-
2-3500-9270 - TRANSFER TO CAPITAL RESERVE CMLF	483,526	483,526
2-3500-9271 - TRANSFER TO CAPITAL RESERVES OKLF	100,000	100,000
2-3500-9290-TRANSFER TO OPERATING RESERVE	751,529	10,000
2-3500-9650-BAD DEBTS EXPENSE CMLF	-	-
2-3500-9655-BAD DEBTS EXPENSE OKLF	-	-
TOTAL EXPENSES	**6,140,282**	**4,503,623**

Reserves		
CMLF Reserve Balances:	**Dec 2022**	**Dec 2021**
Capital Reserve	1,903,225	2,062,889.33
Environmental Impairment Reserve	2,341,602	2,206,783.93
Closure Reserve	5,352,402	5,106,970.78
Operating Reserve	579,755	105,591.29

3.11 LEACHATE MANAGEMENT

In 2015 off-site migration of leachate was confirmed. The Campbell Mountain Landfill is a natural control landfill; however, the components for leachate management (extraction wells and leachate pond) were constructed in 2017. The installation of conveyance lines to further capture leachate from the north ravine was completed construction as of 2022.

More information on leachate management is included in the attached 2022 Environmental Monitoring Report.

3.12 LANDFILL GAS MANAGEMENT

As required by Section 4(5) of the MoE's Landfill Gas Management Regulation (Regulation), a landfill gas generation assessment was completed on the Site in 2010 by CRA.

The Regulation applies to landfills that accept MSW on or after January 1, 2009. A landfill is termed a regulated landfill site under the Regulation if it has 100,000 tonnes or more MSW in place or receives 10,000 or more tonnes of MSW in any calendar year after 2008. The Site is considered a 'regulated landfill' as per Section 4(5) of the Regulation.

From CRA's 2011 assessment the modelled methane produced per year for the CMLF was slightly above the threshold at 1,380 tonnes per year (CRA 2011). The 2016 Sperling Hansen DOCP estimates landfill methane generation for CMLF of 1250 tonnes per year in 2020 without organics diversion or landfill gas capture.

The RDOS continues to work with the Province for substituted requirements under Section 20 of the Regulation to allow for the use of a passive bio-cover instead of active landfill gas extraction. At the time of reporting the RDOS has submitted a request for substituted requirements under the Regulation to the Province for passive bio-cover mitigation.

4. CONCLUSIONS

4.1 LANDFILL OPERATION CONCLUSIONS

C1 Excluding the diverted composted/recycled materials from the landfill, 26,711 tonnes were landfilled at the Site in 2023. Total waste decreased by 1.2% from 2022 to 2023.

4.2 LANDFILL OPERATION RECOMMENDATIONS

R1 A topographic survey of the site should be completed annually to verify void-space consumption. A high definition drone survey was completed in 2023, in depth analysis was completed and data is stored with RDOS GIS. Further drone surveys will be completed annually each spring.

R2 In accordance with recommendations made in the DOCP, the current bio-solids composting area operated by the City of Penticton should to be upgraded to be in compliance with Organic Matter Recycling Regulation (OMRR). Specifically, in the DOCP SHA recommends the composting area be lined with an environmental containment system or be paved with asphalt. (SHA 2016).

4.3 ENVIRONMENTAL CONCLUSIONS AND RECOMMENDATIONS

The attached 2023 Environmental Monitoring Report by EcoScape Environmental Consultants Ltd contains additional Environmental Conclusions and Recommendations within their report

5. REFERENCES

British Columbia Ministry of Environment (MoE). 2016. Landfill Criteria for Municipal Solid Waste, Draft Second Edition. June 2016.

Conestoga-Rovers & Associates (CRA). 2012. 2011 Operations and Monitoring Report Campbell Mountain Sanitary Landfill – Regional District of Okanagan – Similkameen, British Columbia. Ref. No. 033765(18) annual report prepared for the RDOS March 2012.

Sperling Hansen and Associates (SHA). 2016. Campbell Mountain Landfill Design Operations and Closure Plan, Final Report Prepared for the RDOS, July 2016, report number PRJ15061.

Appendix I – 2023 Environmental Monitoring Report