

Oliver Landfill

2022 Annual Report



Operational Certificate: 15280



Prepared by:

Regional District of Okanagan-Similkameen

Environmental monitoring section prepared by:

EcoScape Environmental Consultants Ltd

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2022 Environmental Monitoring Report (EcoScape Environmental Consultants Ltd.)

I. INTRODUCTION

The Regional District of Okanagan-Similkameen (RDOS) operates a solid waste landfill facility near the Town of Oliver. The Oliver Landfill (OLF) currently operates under Operational Certificate (OC) No. 15280 issued to the RDOS by the British Columbia Ministry of Environment and Climate Change Strategy (MoE). EcoScape Environmental Consultants Ltd. (EECL) was retained by the RDOS to prepare the environmental monitoring section of the 2022 Environmental Monitoring Report for the Oliver Landfill (OLF); their report is attached. The RDOS compiled the operational information for this landfill. This report presents the monitoring and operational activities for the 2022 reporting period from January 1 to December 31, 2022.

The OLF is located in the RDOS, approximately six (6) kilometers southeast of the Town of Oliver, B.C. and has an estimated total area of 13.8 hectares. Landfilling operations reportedly commenced in 1979 at the southeast corner of the site. The placement of waste reportedly commenced at an elevation consistent with the OLF bedrock/overburden interface. Cover material was historically excavated from the northwest portion of the OLF. After commencing in the southeast, landfilling progressed in a northerly and westerly direction. Scrap metal and other inert materials were stockpiled. Concrete and asphalt were reportedly placed along the bedrock overburden interface at the southeast quadrant of the landfill. The maximum waste depth, located in the west central portion of the active area, is reported to be approximately 15 metres.

This report was prepared in accordance with the annual landfill reporting requirements outlined in Section 4.4 of the OC. To aid the regulator in the assessment of compliance, we provide a concordance table (Table I), which outlines the Operational Certificate 15280 section requirement and the corresponding report information section.

Table I: Operational Certificate I5280 Concordance Table

Operational Certificate Section	Corresponding Report Information Section
Section 4.1 Municipal Solid Waste Management	
4.1.1 - Provide and maintain a weigh scale and record the weight of refuse discharged to the landfill over a 24-hour period	2.4 Waste Disposal and Table 2
4.1.2 - Record the weight or volume of recyclable and reusable materials not being discharged and that are being separated, stored or processed at the landfill over a 24-hour period.	2.3 Waste Diversion Activities and Table 2
4.1.3 - If possible, density tests should be performed utilizing a known scaled volume of representative compacted refuse at a frequency of at least once per year and reported in kg per m3.	2.5 Per Capita Waste Disposal Rates and 2.6 Landfill Volume Consumed
Section 4.2 - Vegetation Monitoring	
4.2 - Inspect vegetation during the growing season in the vicinity of the landfill at least once per year to determine if any environmental impacts are occurring, and take appropriate remedial action if necessary.	2022 Environmental Monitoring Report, Section 7 Vegetation Monitoring
Section 4.3 - Monitoring Program	
4.3.1 - Monitoring Program	2022 Environmental Monitoring Report, Section 4.2 Groundwater Monitoring Network and Table I
4.3.3 - Sampling Techniques	2022 Environmental Monitoring Report, Section 4.3 Groundwater Monitoring Protocols
4.3.4 - Analyses	2022 Environmental Monitoring Report, Water Quality analysis is completed by CARO Analytical in Kelowna, BC a CALA accredited laboratory.
Section 4.4 - Annual Report	
4.4.1 (a) - Type and tonnage of waste received, recycled and landfilled	2.3 Waste Diversion Activities, 2.4 Waste Disposal, 2.6 Landfill Volume Consumed, Table 2
4.4.1 (b) - Current topographic map detailing airspace consumption, on-site borrow pit changes and future developments	Figure 1, 2022 Environmental Monitoring Report
4.4.1 (c) - Updated estimates for the remaining capacity, closure for the current phase and closure date for the current landfill report	2.8 Remaining Facility Life Capacity
4.4.1 (d) - Any new information or proposed changes relating to the facilities and Design and Operation Plan	2.9 Draft Operation Plan to be completed in 2023

Section 4.4 - Annual Report (Continued)	
4.4.1 (e) - Open burning activity, if applicable, including amount of material received for burning, number of burns and updates from a wood waste audit	None
4.4.1 (f) - Occurrences or observations of wildlife (medium and large carnivores) at the facility	Deer and sheep were observed within the facility.
4.4.1 (g) - A statement regarding progress in reducing the waste stream, in accordance with the hierarchy of reduce, reuse and recycle principles; and	2.3 Waste Diversion Activities, 2.4 Waste Disposal, Table 2
4.4.1 (h) - The results of all monitoring programs as specified in this Operational Certificate. Data interpretation and trend analysis, as well as an evaluation of the impacts of the discharges on the receiving environment in the previous year shall be carried out by a qualified professional.	2022 Environmental Monitoring Report, Section 5 Groundwater Monitoring Results
4.4.1 (i) - The methods and amounts of leachate collection, treatment and disposal, if applicable	Not Applicable

2. LANDFILL OPERATION AND MANAGEMENT

2.1 OLIVER LANDFILL (OLF) OPERATIONS

The OLF is administrated by the RDOS. RDOS staff operate the scale and scale house. Landfilling operations are conducted by B&B Group Ventures Inc during the reporting period. The OLF currently accepts residential, commercial and light industrial waste from the Town of Oliver, RDOS Electoral Area C and the Osoyoos Indian Band. Wastes that are prohibited from disposal at the OLF, according to Section 4.12 of the OC, include the following:

- Hazardous Wastes other than those specifically authorized in the Hazardous Waste Regulation;
- Bulk liquids, semisolid sludges which contain free liquid;
- Liquid or semisolid wastes (septage, black water, and sewage treatment sludge);
- Automobiles, white goods, other large metallic objects, and tires;
- Biomedical waste; and
- Dead animals and slaughter house, fish hatchery wastes, and farming wastes or cannery wastes and by products.

The equipment required for completion of the daily tasks and for other maintenance at the OLF includes the following:

- 350 Rex Trashmaster;
- 966 D Cat Loader;
- 790ELC John Deere Excavator;
- 850B John Deere Dozer;
- Freightliner 1000 Gal. Water Truck;
- Ford 9000 DumpTruck.

The landfill hours of operations was as follows:

- 10:00 am to 3:45pm, Monday to Saturday (March to November);
- 12:00 pm to 3:45 pm, Monday to Friday (December to February); and
- 10:00 am to 3:45 pm, Saturday (December to February).

Closed on Sundays and statutory holidays.

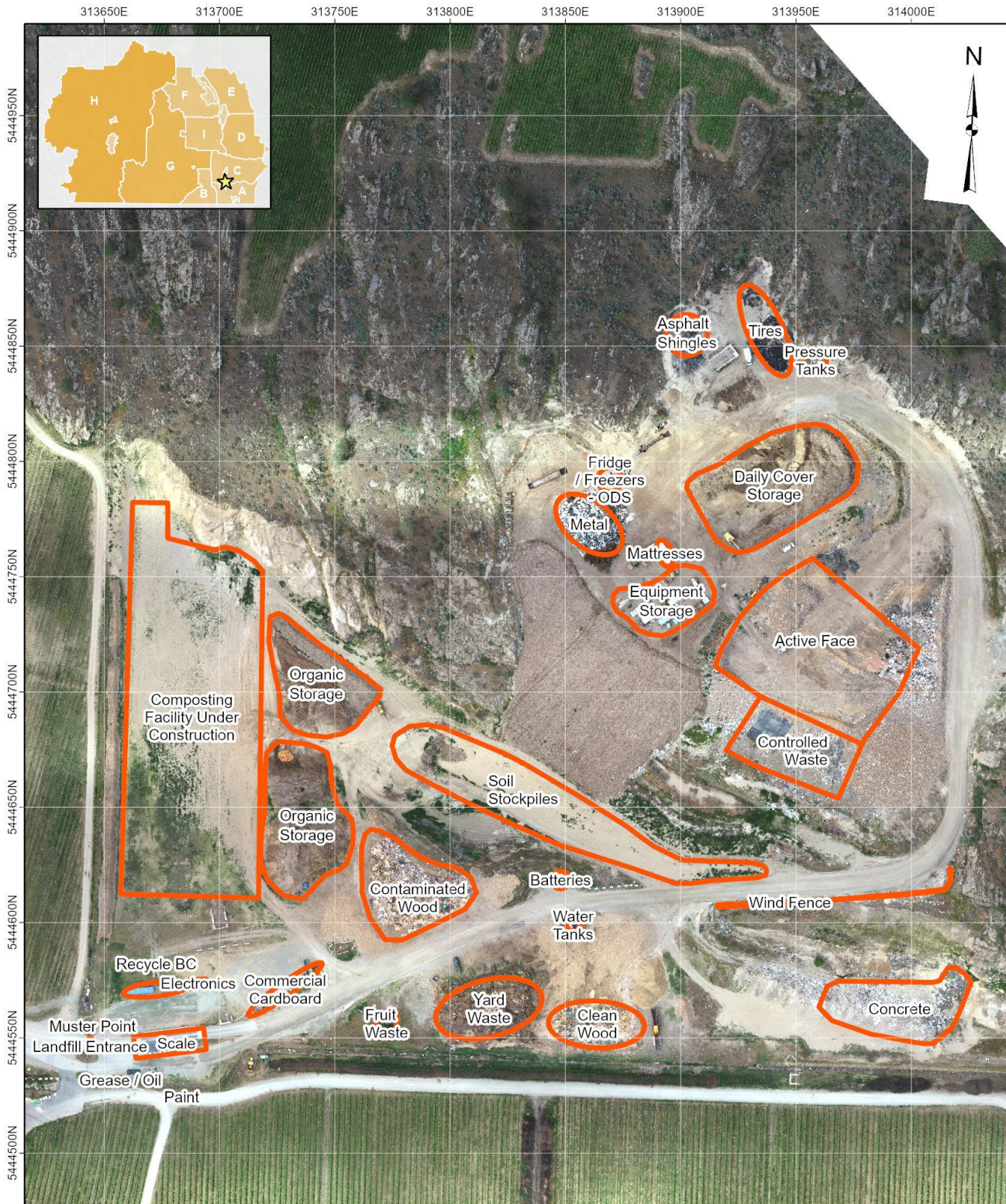
Alternative daily cover (ADC), in the form of mats made of heavy strips of conveyor belt chained together, and commercial glass is used at the facility. Addition ADC is imported from the Okanagan Falls Landfill Demolition Sort Facility. This materials is a mix of fines and unsortable mixed demolition material. Intermediate cover is applied weekly.

Operational Notes for 2022:

- As indicated on the site layout, the old borrow pit along the southern boundary of the site continued to be filled with aggregate. This area will continue to be filled throughout 2023.
- No active composting took place in 2022. Organic materials are being windrowed but not developed or sold as compost. A new compost facility is under construction along the western boundary.
- Ground wood waste continues to be a challenge to move offsite. Co-generation plants are less willing to take ground wood waste due to contaminants, wood fibre is expected to be used in relatively high quantities for the new compost site once complete.

- The RDOS was successful in receiving a \$800,000 grant from the Organics Infrastructure Program for the construction of a residential food waste site at the Oliver Landfill. The grant covers 2/3 funding. The other 1/3 was allocated from reserves. This site is expected to be commissioned for Mid 2023.
- The development of a Master Plan, combining a Design, Operations and Closure Plan with the design of the compost site and other onsite improvements, was started. Sperling Hansen and Associates was awarded this work. Completion in 2023.

Figure I(a): March 2023 Oliver Landfill Site Layout



Landfill Site Areas

NAD 1983
 UTM Zone 11N
 1:2,100

Aerial photo : 05/07/2022,
 Site areas current as of March 2023

OLIVER LANDFILL
SITE PLAN
MARCH 2023

101 Martin Street
 Penticton, BC
 Canada V2A 5J9
 Phone : 250-492-0237
 Email: info@rdos.bc.ca
<https://www.rdos.bc.ca>

Figure I(b): March 2023 Oliver Landfill Topographical Map



2.2 OLF FACILITIES

The OLF is accessed from Black Sage Road via the newly named Saddle Ridge Road (formerly Sibco Landfill Road). An access gate controls entrance and/or exit. The gate is locked when the Site is closed to prevent unauthorized vehicle entry and uncontrolled waste disposal. The scale house was installed in 1998 and is located in the southwest quadrant of the Site (Figure 1). During operating hours, the quantity of waste received is weighed and recorded by the Scale Attendant. Household recyclable materials brought to the OLF, such as residential cardboard, mixed paper, containers, glass, film plastic and polystyrene packaging are placed in Recycle BC Containers located north of the scale house. Commercial cardboard is placed in containers inside the Site. The facility also operates a mattress and box spring reduction program.

2.3 WASTE DIVERSION ACTIVITIES

During the reporting period, approximately 6,865 tonnes of recyclable materials were collected through Landfill Recycling Programs and consequently diverted from burial at the landfill, an increase of 5% from 2021. The following materials were reported to have been diverted from the landfill:

- Asphalt Roofing
- Batteries and Alarms
- Recycle BC (Landfill Entrance)
- Commercial Cardboard
- Concrete, Asphalt Ceramic Fixtures (used operationally)
- Electronic waste and Appliances including Ozone Depleting Substance (ODS)
- Fruit Waste
- Metal
- Tree Stumps
- White Wood
- Yard Waste
- Pressurized Tanks
- Tires
- Used Oil
- Paint

Converted Cargo Containers at the landfill entrance are used to collect household recyclables under Recycle BC. A summary of recovered materials associated with landfill recycling activities is presented in Table 2.

2.4 WASTE DISPOSAL

The quantity of waste received at the OLF is weighed at the scale and recorded by the attendant. Excluding composted/recycled materials/ clean fill/ contaminated soil (below Hazardous Waste level) which were used for cover/ construction or operationally, 7,976 tonnes were landfilled in 2022. This is a 2% increase over 2021 and inline with expected increases based on population. There was a 5x increase to asbestos material, a return to historical norms for burnt materials. A waste disposal summary is presented in Table 2.

Table 2: Summary of Waste and Diverted Materials at the OLF**Waste Material Landfilled**

Waste Material (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022
Agricultural Plastics	95.285	127.19	73.84	85.69	120.24	99.46	116.85	87.8
Asbestos	5.94	18.73	29.86	6.925	13.23	16.71	19.68	103.1
Bulky Waste	0.55	0	6.03	1.61	1.23	3.48	3.72	2.6
Burnt material	7.88	13.9	90.31	31.85	43.11	115.13	172.41	54.4
Carcasses	5.655	7.315	7.97	8.28	7.15	0.77	.57	2
Carcasses - Highways						1.63	2.26	-
Construction Mixed	6.2	17.79	7.75	7.035	7.89	0	0	-
Controlled Waste	5.68	6.98	16.1	12.84	24.71	57.5	70.35	7.6
Curbside – Out of Service Area						7.85	21.75	-
Curbside Area 'C'	545.42	559.8	566.95	549.33	555.84	585.27	598.48	607.6
Curbside Area 'C' Bulky Waste	7.12	9.11	14.93	9.58	3.38	18.11	10.82	10.25
Curbside Oliver	672.08	743.34	679.2	662.15	709.19	765.41	800.71	796.6
Curbside Oliver Bulky Waste	2.94	12.89	10.12	13	17.79	13.67	3.25	4
Demolition/Renovation Mixed Assessed	12.9	4.74	0	6.23	0	1.81	0	-
Demolition/Renovation Mixed Non-Assessed	28.95	38.89	74.42	13.39	9.87	25.75	0	-
Garbage – Commercial Account	1759.45	2201.9	2349.3	2384	2925	3243.0	3521.04	3763.5
Garbage – Refuse Non-Commercial	1269.77	1421.1	1413.2	1656.5	1732.4	1783.6	2011.72	2064.1
Garbage – Out of Service Area						91.89	0	5.8
Gypsum			18.9	221.73	157.2	113.29	131.03	197.5
Highway Refuse	26.5	32.69	35.16	38.99	11.87	1.25	1.37	0.3
Illegal Dumping	2.505	0.43	10.42	2.59	1.66	0.07	4.92	0.9
Infested Vegetation/Noxious Weeds	77.685	89.95	98.3	100.37	106.43	108.53	135.97	130
Lead Painted Material				0.14	0.53	3.86	8.28	1.5
Preserved Wood	244.05	369.94	240.51	167.09	267	298.23	167.06	148
Prohibited Waste								0.4
DRC Material								
Noxious Weeds								
TOTAL LANDFILLED (tonnes)	4777	5677	5743	5979	6715	7356	7802	7982

Diverted Material

Cover Material (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022
Clean Earth Fill	220.035	2582.5	1151.55	2068.7	579.8	558.89	1159.47	658.9
Contaminated Soil	0	0	19.54	9.7	97.21	142.8	6.98	4.9
Sod								
Commercial Glass	185.34	127.7	95.7	66.7	88.33	71.83	0	96.6
Operationally Beneficial Cover					721.31		.35	32
Tar and Gravel Roofing		93.42	120.92	94.5	172.05	38.82	48.62	293.4
TOTAL Contributed for Cover Material	405	2804	1388	2240	1659	812.34	1215.42	1085.8

Recycled Material (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022
Asphalt Roofing	374.01	374.01	305.6	81.5	238.7	0	329.16	0.3
Batteries	0	1.5	5.43	3.98	5.01	8.05	4.091	2.7
Commercial Cardboard	88.795	36.82	17.04	11.995	8.43	7.16	6.66	42.3
Concrete, Asphalt, Ceramic, Rock	737.36	621.69	802.45	1125.77	614.61	773.9	748.32	530.4
Concrete Bulky					50.36	13.77	35.88	11.5
Fruit Waste	203.19	116.07	419.36	1003.3	864.4	1030	361.39	721.1
Gyproc	173.60	276.04	178	0	0	0	0	0
Metal	87.39	286.43	216	225.24	208.9	194.2	355.82	233.3
Wood Salvaged					5.13	0	0	0
Tree Stumps (m3 converted)	0	0	0	0	87	65.16	74.14	36.2
White Wood (m3 converted)	2351.0	2010.2	1905.32	1561.3	1188.7	742.16	2263	2098
Processed Organics - White	222.87	844.32	0	0	0	0	0	0
Wood Product (painted)							.08	0
Yard Waste Small Dimension		34.27	201.68	249.65	243.18	166.86	150.24	556.2
Organics (m ³ converted) Yard Waste	2207.8	1848.7	1729	2371.2	2284.9	2621.8	1308	1210.5
Small Pressurized Tanks (units converted)		0.32	0.40	0.44	0.30	0.245	1.08	0
Large Pressurized Tanks (units converted) 5lbs and up		4.71	8.00	2.50	16	2.50	6.77	53.06
Wood Waste Industrial			9.62	0	0	0	823.64	871.25
Tires	22.594	12.089	10.813	8.07	16.04	25.68	18.80	480.9
Tires on rims (units converted)	1.386	3.938	3.817	0.781	4.19	3.95	.492	3.5
Tires Oversized	3.21	0.33	0.85	3.18	0.5	0.67	.25	3.33

Residential Recycling Depot (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022
Blue Bag Commercial	11.46	22.25	22.33	0	0	0	0	0
RecycleBC Fibre	1.83	14.5	10.9	9.5	7.8	5.37	4.825	4.557
RecycleBC Containers	0.128	2.8	1.84	1.5	1.7	1.57	1.322	1.076
RecycleBC Film Plastic	1.496	1.5	1.18	1.2	.5	0.38	.292	.182
RecycleBC Poly - Coloured	0.022	0	0.01	0.0	0	0.03	.028	.02
RecycleBC Poly - White	0.741	0.7	0.88	1.0	0.9	0.62	.552	.613
RecycleBC Glass	1.52	3.3	3.2	0.7	0.8	3.69	3.090	2.52
RecycleBC Other Flexible Plastic					0.8	0.51	.376	.40
Total Depot	17.197	45.05	40.34	13.9	12.5	12.17	10.485	9.368
PRODUCT CARE / BCUOMA (tonnes)	2015	2016	2017	2018	2019	2020	2021	2022
Paint	2.27	2.9483	2.5	3.4	2.5	2.72	9.0	
Aerosol	0	0.1587	0.16	0	0	0.2	.25	
Oil	7.568	0.0096		8.976	7.3	0.88	2.03	0.918
Oil Filters	1.36	0.39				0	0	0
Antifreeze	0.205	0.615		0.615	.416	0	.21	0.14
Plastic Oil Containers	1.65		0.42			0	0	0
TOTAL Diverted from the Landfill (tonnes)	6645	6521	5857	6689	5859	5672	6509.79	6865
Supplemental Information (tonnes included elsewhere)	2015	2016	2017	2018	2019	2020	2021	2022
Agricultural Organics	178.17	136.98	463.4	219.03	240.32	217.19	211.08	154.22
Curbside Area 'C' Yard Waste			39.45	44.79	55.44	50.61	69.91	-
Curbside Oliver Yard Waste			209.61	219.09	332.37	426.35	356.76	-
Electronic Waste (included in CMLF)	10.44	9.895	10.96	8.15	5.5	5.08	0	0
Mattress / Box spring Diversion (units)	634	1014	999	1038	1041	1106	1057	1247
Refrigeration Units (units)	481	526	560	451	408	738	613	447
Compost Soil Amendment sold (tonnage)	220.29	0	0	0	0	0	0	0
Yearly Loads at Scale (Number)		24856	24560	27151	26371	27583	28284	26753

Table 3: Recorded Loads Per Month at Scale 2022

Oliver Landfill	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2021	1445	1100	3251	3128	2968	2597	1921	2738	2580	3013	2480	1063	28284
2022	988	1264	2786	2848	3030	2686	2618	2620	2571	2844	1691	807	26753

Notes:

The tonnage data from recycled Asphalt Roofing, Batteries, Metal, Tree Stumps, White Wood, Organics, Propane Tanks, Tires, RecycleBC and Product Care 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).

Conversion estimates to tonnage used

AVERAGE White Wood	0.23 tonnes/m ³
AVERAGE Organics	0.35 tonnes/m ³
AVERAGE Tree Stumps	0.3 tonnes/m ³
Small Pressurized Tanks	0.00045 tonnes/unit
Large Pressurized Tanks	0.0136 tonnes/unit
Tires (no longer used)	0.011 tonnes/unit
Rims from Tires	0.014 tonnes/unit
Used Motor Oil	0.00088 tonnes/L
Gycol	0.001 tonnes/L
Paint	0.225 tonnes/tub
Drum	208 L

2.5 PER CAPITA WASTE DISPOSAL RATES

Based on an estimated population of 9,842 people (Statistics Canada 2021 Census) in the OLF service area (Electoral Area C, Town of Oliver and Osoyoos Indian Band), the average daily mass of waste disposed per capita is approximately 2.16 kg per day.

2.6 LANDFILL VOLUME CONSUMED

Excluding composted/recycled materials which were diverted, 7,802 tonnes were landfilled at the OLF during the reporting period. This is a 2% increase over 2021.

Refuse compaction rates are a function of the type and size of compaction equipment utilized and the nature of the refuse. As indicated in Section 2.1, a 350 Rex Trashmaster is currently used to compact the refuse and is estimated to yield an in-situ refuse density of approximately 0.7 tonnes/m³.

Based on the above compaction rate and a 4:1 cover ratio determined in the Oliver Landfill Life-Cycle Cost Analysis prepared by Sperling Hansen Associates (DOCP Draft 2021), the estimated landfill volume consumed by the placement of refuse during the reporting period is about 8,973 m³ in 2022.

2.7 APPROVED DESIGN VOLUME

It has been estimated that the total remaining OLF capacity as of December 2021 was approximately 336,115 m³ based on a final top refuse elevation of 415 m AMSL, calculated as part of the Operation and Closure Plan (SPH, Draft 2021).

2.8 REMAINING FACILITY LIFE CAPACITY

Based on the 2017 Oliver Landfill Life-Cycle Cost Analysis prepared by HBHE Consulting, the estimated closure date is 2054. If all organics are removed the report estimates closure will occur 2062.

The RDOS intends to update Landfill Life-Cycle Cost Analysis as part of a Design, Operations and Closure Plan to be completed in 2023.

2.9 2022 OPERATION PLAN

OLF operations, including operating hours, will remain unchanged.

The Design, Operations and Closure Plan update will be completed in 2023 and will include the design of a Master Plan for the property.

The construction of a compost site at the Oliver Landfill commenced in 2022. The Oliver Landfill has received funding through the Organics Infrastructure Program. The intent of the compost site will be to treat existing fruit waste, organics, yard waste and green waste and residentially collected food waste from Oliver, Osoyoos, Electoral Areas 'A' and 'C' and the Osoyoos Indian Band.

The site will be an OMRR compliant turned windrow system. It will not receive commercial food waste or wastewater sludge. Through the development of the updated DOCP, the RDOS will engage with the Ministry regarding this project.

2.10 OPERATION AND MAINTENANCE EXPENDITURES

The operational and maintenance expenditures for the OLF during 2022 are reported below. These expenditures include Contractor costs, RDOS salaries and other miscellaneous expenses. A summary of the 2022 financials and budget for the landfill is presented in Table 4.

Table 4: Financial Summary for OLF in 2022

GL Account	2022 Actual	2022 Budget
Revenues		
1-3000-1000 - TAX REQUISITION	104,302	104,302
1-3000-1800 - GRANT IN LIEU OF TAXES		202
1-3000-2700 – INTEREST INCOME	-	-
1-3000-2900 – REGIONAL COMPOST OPTIMIZATION STUDY	-	-
1-3000-2999 – FUNDED FROM COVID GRANT	-	22,000
1-3000-3070 - AGREEMENT - OSOYOOS INDIAN BAND	2,920	3,000
1-3000-4600 - FEES - REFUSE DISPOSAL	1,072,362	812,475
1-3000-4630 - SCRAP METAL RECYCLING	115,169	15,150
1-3000-4640 - MMBC REVENUE	-	1,545
1-3000-6000 - TRANSFER FROM RESERVE	-	-
1-3000-6100 – TRANSFER FROM CAPITAL RESERVE	-	-
1-3000-6290 – TRANSFER FROM OPERATING RESERVE	-	45,000
1-3000-8900 – FEDERAL GRANTS	-	-
1-3000-9000 - MISCELLANEOUS REVENUE	5,380	4,545
1-3000-9001 – WOOD CHIPPING REVENUE	-	10,150
1-3000-9990 - PRIOR YEARS SURPLUS	-	5,000
TOTAL REVENUE	1,878,533	1,023,369

GL Account	2022 Actual	2022 Budget
Expenses		
2-3000-1000 - SALARIES & WAGES	170,047	186
2-3000-1400 - ADMINISTRATION CHARGES	50,428	50,428
2-3000-2500 - OPERATIONS	42,646	99,470
2-3000-2501 – OPERATIONS SHADOW BID	-	-
2-3000-2529 - AG WOOD CHIPPING	-	40,600
2-3000-3000 - CONSULTANTS	31,456	20,000
2-3000-3520 - CONTRACT SERVICES	-	-
2-3000-3521 - CONTRACT SERVICES - OPERATIONS	484,060	334,950
2-3000-3522 - CONTRACT SERVICES - RECYCLING	41,648	39,854
2-3000-3525 - CONTRACT SERVICES WOOD WASTE	97,333	113,098
2-3000-3526 - CONTRACT SERVICES - E WASTE	13,833	1,320
2-3000-3527 - CONTRACT SRVCS-ASPHALT SHINGLES RECYLNG	-	32,480
2-3000-3529 - CONTRACT SERVICES - GYPSUM RECYCLING	-	-
2-3000-4000 - EDUCATION & TRAINING	104	1,918
2-3000-4100 - MEMBERSHIP & DUES	-	1,015
2-3000-5000 - ENVIRONMENTAL CONTROL	5,910	7,613
2-3000-5002 – COMPOST EXPENSES	-	-
2-3000-5003 – INSTALLATION OF SECURITY CAMERAS	-	-
2-3000-5100 - ENVIRONMENTAL MONITORING	4,070	3,106
2-3000-5400 – DEPRECIATION-REPLACEMENT EQUIPMENT	-	6,060
2-3000-5500 - CAPITAL EXPENDITURES	-	-
2-3000-5501 - CAPITAL EXPENDITURES OLIVER LANDFILL MASTER PLAN	4,919	-
2-3000-5502 - CAPITAL EXPENDITURES – COMPOST	149,250	-
2-3000-6000 - INSURANCE – PROPERTY	128	115
2-3000-6050 - INSURANCE – LIABILITY	3,871	4,400
2-3000-6150 - INSURANCE – ENVIRONMENTAL	9,873	5,177
2-3000-6200 - LEGAL FEES	4,923	2,000
2-3000-7000 – SUPPLIES	-	1,015
2-3000-8010 - ADVERTISING - PUBLIC EDUCATION	-	3,106
2-3000-8200 - TRAVEL/LEASING	2,282	3,727
2-3000-8500 – UTILITIES	12,259	10,042
2-3000-9200 - TRANSFER TO RESERVE CAPITAL	-	30,000
2-3000-9202-TRANSFER TO VEHICLE REPLACEMENT RESERVE	-	-
2-3000-9290 – TRANSFER TO RESERVE RE INTEREST	-	-
2-3000-9290 - TRANSFER TO OPERATING RESERVE	-	16,600
2-3000-9650-BAD DEBTS EXPENSE	-	173,089
TOTAL EXPENSES	1,129,040	1,023,369

RESERVE BALANCES		
RESERVE BALANCES	Dec 2021	Dec 2022
Capital Reserve	\$1,731,926	\$1,459,342
Operating Reserve	\$715,162	\$693,880

2.11 LEACHATE MANAGEMENT

The OLF is operated as a natural control landfill; therefore, a leachate collection system has not been implemented. Leachate generated from precipitation infiltrating into the refuse mass may be attenuated by the overburden below the landfill. The depth (up to 85 metres) and nature of the overburden indicate significant attenuation potential at the OLF.

2.12 LANDFILL GAS COLLECTION

Landfill gas is not currently managed at the OLF. A Landfill Gas Generation Assessment Report (LFG Report) was completed for the Site in 2010 in accordance with the MoE Landfill Gas Generation Assessment Procedure Guidelines (CRA, 2009). A Supplemental Landfill Gas Generation Assessment for the Oliver Landfill was completed by GHD in 2018 (GHD, 2018). The next supplementary LFG Generation Assessment should be completed and submitted by September 1, 2023.

Based on the findings of the 2018 LFG Report, the estimated methane released from the Oliver Landfill in 2020 was 304 tonnes. As this amount is less than 1000 tonnes per year, the RDOS is not required to submit a Landfill Gas Management Design Plan to the MoE, as per the Landfill Gas Management Regulation, for the Oliver Landfill.

Based on the findings of the 2018 LFG Report, the peak methane generation rate at the OLF is 402 tonnes per year in 2050. Diversion of organics has the potential to reduce this estimated amount.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 OPERATIONAL CONCLUSIONS

C1 7,982 tonnes were landfilled in 2022; a 2% increase over 2021.

3.2 OPERATIONAL RECOMMENDATIONS

Based on the progress of activities at the OLF, the following operational recommendations are provided:

R1 A new Design, Operations and Closure Plan will be finalized as part of a Master Plan in 2023 incorporating the purchase of the parcel of land north of the landfill property, the completion of a gore covered windrow compost site and an updated fill plan. The DOCP will include an updated LifeCycle-Cost Analysis and Landfill Gas Generation estimates.

R2 The construction of the compost site to be completed and commissioned by end of December 2023.

3.3 ENVIRONMENTAL CONCLUSIONS AND RECOMMENDATIONS

The attached 2022 Environmental Monitoring Report by EcoScape Environmental Consultants Ltd. contains additional Environmental Conclusions and Recommendations in their report.

4. REFERENCES

Conestoga Rovers & Associates (CRA), 2010. Landfill Gas Generation Assessment Report, Oliver Landfill Site, Oliver B.C.

Conestoga Rovers & Associates (CRA), 2010. Operational/Closure Plan for the Oliver Landfill Site, Oliver B.C. Ref No. 049846(04).

GHD Limited (GHD), 2018. Supplemental Landfill Gas Generation Assessment Oliver Landfill, Ref No. 11139565(02).

HBHE Consulting (HBHE), 2017. Oliver Landfill Life-Cycle Cost Analysis, October 2017

Sperling Hansen Associates, 2021 Draft. Oliver Landfill Design, Operations and Closure Plan. PRJ20064

APPENDIX

2022 Environmental Monitoring Report (EcoScape Environmental Consultants Ltd)