

2.0 Reporting Requirements

This report has been completed in accordance with the requirements of Sections 9.3, Subsections (a) to (j), of The Environmental Management Act Permit No. PR-17150.

9.9.3(a) The category and tonnage of waste received, recycled and discharged for the preceding calendar year

A summary of the waste streams/materials received at the Tervita Silverberry Secure Landfill and Hazardous Waste Facility:

Description	Volume (tonnes)
Contaminated Soil (Crude Oil/Condensate)	138,070.66
Contaminated Soil (Produced/Salt Water)	70,176.27
Contaminated Soil (Mercury/Metals)	27,468.20
Contaminated Soil (Refined Fuels/Oils)	6,986.59
Contaminated Soil (Chemical/Solvent)	3116.71
Incinerator Ash	7,520.26
Frac Sand (non-radioactive)	1,013.72
Cement	504.73
Flare Pit Material	15,955.13
Hydrocarbon Contaminated Material	1,893.40
Miscellaneous Waste (Landfill)	23,909.88
Drilling Waste (Invert cuttings)	185,633.59
Drilling Waste Gel Chem	59,618.49
Drilling Waste (KCl)	1,746.31
NORM	24,521.33
Absorbents	59.6
Catalyst Non-Sulphur (Spent)	37.63
Sand (Produced)	1,931.71
Sulphur	2,029.54
TOTAL:	572,193.75

In 2012, 29,408 m³ of leachate from the Landfill or Bio-Remediation pad was processed and disposed of at the Silverberry Treatment Recovery and Disposal Facility. The 2012 Leachate Disposal Volume Summary is included as Attachment 1.

2.0 Reporting Requirements

This report has been completed in accordance with the requirements of Permits PR-16078 Section 9.3, Subsections (a) to (j), and PS-15866 Section 9.

PR-16078

9.3(a) The category and tonnage of waste received, recycled and discharged for the preceding calendar year

A summary of the waste streams/materials received at the Tervita Northern Rockies Secure Landfill and Special Waste Treatment Facility is provided in the table below. A Landfill Ticket Summary summarizing the total amount of each material received at the landfill is provided in Attachment 1.

Please note that only the final page of each waste material summary has been provided for review. The complete data set is available upon request. Please also note that the Landfill Ticket Summaries provided in Attachment 1 also includes the government surcharge for each load; therefore the total volume reported in the Landfill Ticket Summaries provided in this attachment reports twice the volume actually received.)

Description	Tonnes
Sewage	6,369.5
Drilling Waste KCl	3,168.9
Drilling Waste Gel Chem	4,652.04
Drilling Waste Hydrocarbon	46,612.03
Miscellaneous Wastes Landfill	6,168.24
Hydrocarbon Contaminated Soil	8,528
Sulphur	39.74
Cement – Landfill	5.88
Frac Sand (non-radioactive)	3,320.85
Contaminated Soil w/ Refined Fuels	25,482.54
Contaminated Soil w/ Produced / Salt Water	8,306.31
Contaminated Soil w/ chemical / solvent	172.02
Contaminated Soil w/ Mercury / Metals	1,253.5
Contaminated Soil w/ Crude oil / Condensate	835.35
Construction / Demolition	330.1
Catalyst Non Sulfur	131.44
Total:	115,376.4

*Note- Industrial Sewage is reported in m³.

9.3(b) A review of the decision matrix for determining which wastes will be treated versus directly disposed and recommended revisions to the matrix;

Please find attached the decision matrix in Attachment 2.

9.3(c) A current topographic map of the site;

A topographic map of the Tervita Northern Rockies Secure Landfill and Special Waste Treatment Facility was completed in December 2013. This survey information has been incorporated in the Tervita Northern Rockies Landfill and Special Waste Treatment Facility 2013 Annual Status Report, which is included in Attachment 3.

2.0 Reporting Requirements

This report has been completed in accordance with the requirements of Permits PR-16078 Section 9.3, Subsections (a) to (j), of The Environmental Management Act Permit No.: PR-16078

9.3(a) The category and tonnage of waste received, recycled and discharged for the preceding calendar year

A summary of the waste streams / materials received at the Tervita Northern Rockies Secure Landfill is provided in the table below.

A Landfill Ticket Summary summarizing the total amount of each material received at the landfill is provided in Attachment 1.

Please note that only the final page of each waste material summary has been provided for review. The complete data set is available upon request.

Table 1

Description	Tonnes
Drilling Waste Advanced Gel Chem	3,107.48
Drilling Waste Gel Chem	14,399.11
Drilling Waste Hydrocarbon	51,892.68
Desiccant	37.22
Incinerator Ash	3.75
Produced Sand	908.80
Flare Pit Material	743.67
Lime	142.00
Miscellaneous Wastes	4,590.19
Hydrocarbon Contaminated Material	7,926.34
Cement	110.02
Cement Returns (Dry)	1,295.32
Frac Sand (non-radioactive)	934.90
Contaminated Soil w/ Refined Fuels	3,295.24
Contaminated Soil w/ Produced / Salt Water	4,431.12
Contaminated Soil w/ Mercury / Metals	292.45
Contaminated Soil w/ Crude oil / Condensate	241.22
Construction / Demolition	279.70
Liner Disposal	92.94
Total:	94,760.15

In 2014, 34,520.8 m³ of leachate from the Landfill or Bio-Remediation pad was processed and disposed of at the Tervita Sierra, Boundary Lake, and Silverberry Waste Management Facilities, as well as third party waste management facilities. The 2014 Leachate Disposal Volume Summary is included as Attachment 7. Analysis was done on 2013 versus 2014 waste types received to determine trends. In September 2013, Tervita switched internal reporting and coding systems, thus not all 2013 data will be consistent with 2014. See Table 2 and Graph 1 for the trend analysis.

Table 2: Waste Types Received in 2013 versus 2014

Waste Number	Substance	2013	2014
1	Drilling Waste KCl	3168.9	0.00
2	Drilling Waste Advanced Gel Chem	0.00	3,107.48
3	Drilling Waste Gel Chem	4652.04	14,399.11
4	Drilling Waste Hydrocarbon	46612.03	51,892.68
5	Desiccant	0.00	37.22
6	Incinerator Ash	0.00	3.75
7	Produced Sand	0.00	908.80
8	Flare Pit Material	0.00	743.67
9	Lime	0.00	142.00
10	Miscellaneous Wastes	6168.24	4,590.19
11	Hydrocarbon Contaminated Material	8528	7,926.34
12	Cement	5.88	110.02
13	Cement Returns (Dry)	0.00	1,295.32
14	Frac Sand (non-radioactive)	3320.85	934.90
15	Contaminated Soil w/ Refined Fuels	25482.54	3,295.24
16	Contaminated Soil w/ Produced / Salt Water	8306.31	4,431.12
17	Contaminated Soil w/ Mercury / Metals	1253.5	292.45
18	Contaminated Soil w/ Crude oil / Condensate	835.35	241.22
19	Contaminated Soil (chemical / Solvent)	172.02	0.00
20	Construction / Demolition	330.1	279.70
21	Liner Disposal	0.00	92.94
22	Catalyst Non-Sulphur	131.44	0.00
23	Sulphur	39.74	0.00

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9.3(a) The category and tonnage of waste received, recycled and discharged for the preceding calendar year

A summary of the waste streams / materials received at the Tervita Silverberry Secure Landfill and Hazardous Waste Facility:

Table 1

Substance	Tonnage Received
Catalyst Non-Sulphur (03)	343.25
Catalyst Sulphur (04)	69.11
Cement (05)	2019.14
Construction & Demo Material (06)	184.4
Contaminated Soil (Chemical/Solvent) (07)	610.64
Contaminated Soil (Crude Oil/ Condensate) (08)	28432.98
Contaminated Soil (Mercury/ Metals) (09)	6931.11
Contaminated Soil (Produced / Salt Water) (11)	35230.8
Contaminated Soils (Refined Fuels / Oils) (12)	16735.9
Contaminated Soils (Sulphur) (13)	205.44
Desiccant (14)	4.17
Frac Sand (Non- Radioactive) (15)	154.03
Incinerator Ash/ Buffer (16)	6518.82
Sand Produced (17)	38.21
Flare Pit Material (18)	29530.04
Hydrocarbon Contaminated Material (19)	11432.67
Lime Sludge (20)	238.02
Contaminated Process Material (Pad Waste) (21)	6172.69
Sulphur (22)	1252.75
Misc. Waste Industrial (24)	37690.38
Drilling Waste Hydrocarbons (26)	273564.65
Drilling Waste Gel Chemical (27)	17355.56
NORM (28)	16775.32
Drilling Waste Advanced Chemical (47)	49559.34
Liner Disposal (48)	1348.42
Total:	542,397.84

In 2014, 34,205.5 m³ of leachate from the Landfill or Bio-Remediation pad was processed and disposed of at the Silverberry Treatment Recovery and Disposal Facility. The 2014 Leachate Disposal Volume Summary is included as Attachment 1. Analysis was done on 2013 versus 2014 waste types received to determine trends. In September 2013, Tervita switched internal reporting and coding systems, thus not all 2013 data will be consistent with 2014. See Table 2 and Graph 1 for the trend analysis.

Table 2: Waste Types Received in 2013 versus 2014

Waste Number	Substance	2013	2014
1	Catalyst Non-Sulphur	16.87	343.25
2	Catalyst Sulphur	26.44	69.11
3	Cement	970.09	2,019.14
4	Construction & Demolition Material	0.00	184.40
5	Contaminated Soil (Chemical/Solvent)	146.86	610.64
6	Contaminated Soil (Crude Oil/Condensate)	41,029.72	28,432.98
7	Contaminated Soil (Mercury/Metals)	29,007.38	6,931.11
8	Contaminated Soil (Produced/Salt Water)	30,377.42	35,230.80
9	Contaminated Soils (Refined Fuels / Oils)	35,727.17	16,735.90
10	Contaminated Soils (Sulphur)	109.81	205.44
11	Desiccant	73.44	4.17
12	Frac Sand (Non- Radioactive)	677.20	154.03
13	Incinerator Ash/ Buffer	10,733.76	6,518.82
14	Sand Produced	0.00	38.21
15	Flare Pit Material	36,050.25	29,530.04
16	Hydrocarbon Contaminated Material	14,022.33	11,432.67
17	Lime Sludge	0.00	238.02
18	Contaminated Process Material (Pad Waste)	0.00	6,172.69
19	Sulphur	1,673.96	1,252.75
20	Misc. Waste Industrial	48,539.95	37,690.38
21	Drilling Waste Hydrocarbons	386,367.57	273,564.65
22	Drilling Waste Gel Chemical	89,634.66	17,355.56
23	NORM	27,783.78	16,775.32
24	Drilling Waste Advanced Chemical	76,916.30	49,559.34
25	Liner Disposal	0.00	1,348.42