

Tables

This page left intentionally blank.

Table 3-1: Applicable Regulatory Requirements Ordot Landfill Post-Closure Plan

Description	Title 22 GEPA Requirement	40 CFR RCRA Subtitle D Requirement	Name and/or PCCP Location
GEPA Post-Closure Permit	§23104	Not Applicable	Pending (Appendix A, when issued)
Emergency Response	§23303	§258.20	Appendix K
Air Criteria	§23307	§258.24	Permit No. GEPA-2015-F-1 (Appendix A)
Access Requirement (Site Security)	§23308	§258.25	Section 7.5
Run-on/Run-off Control systems	§23309	§258.26	<i>LCRS Operations and Management Contingency Plan for Storms TM</i> (Appendix C)
Surface Water (NPDES General Stormwater Permit)	§23310	§258.27	MSGP (Appendix A)
Record Keeping	§23312	§258.29	Section 9
Maintain Final Cover	§23602(a)(1)	§258.61(a)(1)	SP-1 (Appendix B)
Maintain and Monitor Leachate System	§23602(a)(2)	§258.61(a)(2)	Section 8.6
Ground Water Monitoring and Corrective Action (40 CFR E)	§23602(a)(3)	§258.61(a)(3)	<i>RCRA-Compliant Groundwater Monitoring Program TM</i> (Appendix H) & <i>Sampling and Analysis Plan</i> (Appendix J)
Maintain Landfill Gas Monitoring and Control Systems	§23602(a)(4)	§258.61(a)(4)	Section 7.4; SP-5, SP-6, and SP-7 (Appendix B); & <i>Operation and Maintenance Manual, Skid Mounted Landfill Gas Flare System</i> (Appendix D)
Post-Closure Care Period	§23602(b)	§258.61(b)	Sections 1 and 10
Description of Monitoring and Maintenance Activities	§23602(c)(1)	§258.61(c)(1)	Environmental Monitoring and Control Systems (Section 7) and Post-closure Monitoring, Inspection, and Maintenance Program (Section 8)
Responsible Persons	§23602(c)(2)	§258.61(c)(2)	Section 3.3
Planned Uses of Property	§23602(c)(2)	§258.61(c)(3)	Section 6
Professional Certification	§23602(e)	§258.61(e)	Section 12

Description	Title 22 GEPA Requirement	40 CFR RCRA Subtitle D Requirement	Name and/or PCCP Location
Financial Assurances for Post-Closure Care	§23703	§258.72	Section 11
Post-Closure Care Cost Estimate	§23703(a)	§258.72(a)	Section 10 and Appendix L
Financial Assurances for Post-Closure Care	§23703(1-4)	§258.61(e)	Section 11
Financial Assurances for Corrective Action	§23703	§258.61(e)	Not applicable
Wetlands Monitoring (Nationwide Permit 32 No. POH-2011-00297)	Not Applicable	Not Applicable	Appendix A
Wastewater Discharge Permit	Not Applicable	Not Applicable	Not Applicable

Table 3-2: Facility Permits

Permit	Renewal Frequency	Agency
Post-Closure Care Permit	TBD	Guam Environmental Protection Agency
Air Permit	5 years	Guam Environmental Protection Agency
Well Operating Permits (Monitoring Wells)	5 years	Guam Environmental Protection Agency
Acceptance of Leachate Sewer Discharge	Not Applicable	Guam Waterworks Authority
Nationwide Permit (Wetlands)	Not Applicable	United States Army Corps of Engineers
Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity	Whenever a new MSGP is issued	United States Environmental Protection Agency

This page left intentionally blank.

Table 8-1: Summary of Inspection, Monitoring and Maintenance Activities

Type	Frequency	Inspection	Submitted to
Cover	Daily-Visual	Daily Assessment	GBB-Monthly Report
	Monthly Assessment (Detailed)	Daily Assessment	
	Quarterly - Air Monitoring Survey	Annual/Semi-Annual Air Permit Report	GEPA post GBB review and signature
Leachate Pumps	Daily	Daily Assessment	GBB-Monthly Report
Leachate System	Daily	Daily Assessment	GBB-Monthly Report
Generator	Daily	Daily Assessment	GBB-Monthly Report
	Monthly Maintenance	Monthly Assessment	GBB-Monthly Report
Flare	Daily	Daily Assessment	GBB-Monthly Report
Stormwater	Daily	Daily Assessment	GBB-Monthly Report
	Quarterly	Quarterly Assessment	GBB-Monthly Report
	Storm Event	Storm Assessment	GBB-Monthly Report
Security	Daily	Daily Assessment	GBB-Monthly Report
	Monthly	Monthly Assessment	GBB-Monthly Report
Vegetation	Monthly	Monthly Assessment	GBB-Monthly Report
Roads	Monthly	Monthly Assessment	GBB-Monthly Report
Groundwater Monitoring Wells	Monthly	Monthly Assessment	GBB-Monthly Report
	Quarterly	Quarterly Sampling	GBB-Monthly Report
Landfill Gas Monitoring Wells	Monthly	Monthly Assessment	GBB-Monthly Report
	Quarterly	Quarterly Sampling	GBB-Monthly Report
Landfill Gas Extraction Wells	Monthly	Monthly Assessment	GBB-Monthly Report
	Monthly	Monthly Well Balancing	GBB-Monthly Report
MSGP	Weekly	Weekly	Filed
	Quarterly	Quarterly Assessment	EPA-NetDMR
SVE	Weekly	Daily Log	EPA

This page left intentionally blank.

Table 9-1: Post-Closure Reporting

System/Subject	Report	Frequency	Agency
Final Cover	Settlement Monument Survey	One report every year	Guam Environmental Protection Agency
	Topographic Survey	One report every 5 years	
	Major Repairs	Report upon completion of repair	
Groundwater Monitoring	Sampling and Analysis	Semi-annual and annual report each year	Guam Environmental Protection Agency
Stormwater Drainage	Benchmark Monitoring	Quarterly	United States Environmental Protection Agency
	Annual Report	One report every year	United States Environmental Protection Agency
	Major Repairs	Report upon completion of repair	Guam Environmental Protection Agency
Landfill Gas	Perimeter Landfill Gas Monitoring	Quarterly	Guam Environmental Protection Agency
	SVE System Routine Monitoring	Monthly	Guam Environmental Protection Agency
	Flare – Semi-annual Report	One report every year	Guam Environmental Protection Agency
	Flare – Annual Emissions Report	One report every year	Guam Environmental Protection Agency
	Surface Emissions Survey	One report every year	Guam Environmental Protection Agency
Leachate Collection	Sampling and Analysis	Quarterly	Guam Waterworks Authority
Post-Closure Cost Estimate	Annual Indexed Cost Update	Once each year	Guam Environmental Protection Agency
	Cost Update	Once every 5 years	Guam Environmental Protection Agency

This page left intentionally blank.

TABLE 10-1
ORDOT DUMP POST-CLOSURE FACILITY
POST-CLOSURE AND MAINTENANCE COST ESTIMATE 2021

Item No.	Description	Estimated Quantity		2021 Unit Price	Annual Cost (2021 \$)
1	SITE SECURITY				
	Security Inspections and Reports - Quarterly	4	QTR	\$ 750	\$ 3,000
	Fence Maintenance/Replacement	1	YR	\$ 6,000	\$ 6,000
	Vegetation Maintenance	12	MO	\$ 7,500	\$ 90,000
	Subtotal				\$ 99,000
2	FINAL COVER MAINTENANCE				
	Vegetation Maintenance	12	MO	\$ 4,750	\$ 57,000
	Settlement	1	YR	\$ 17,600	\$ 17,600
	Subtotal				\$ 74,600
3	GROUNDWATER MONITORING PROGRAM				
	Semi-Annual Event	1	YR	\$ 79,091	\$ 79,091
	Annual Event	1	YR	\$ 87,930	\$ 87,930
	New Wells - 8 events	1	YR	\$ 9,431	\$ 9,431
	Well Repair/Replacement	1	YR	\$ 4,000	\$ 4,000
	Subtotal				\$ 180,453
4	LANDFILL GAS MONITORING PROGRAM				
	Quarterly Monitoring	4	QTR	\$ 2,550	\$ 10,200
	Probe Replacement	1	YR	\$ 5,100	\$ 5,100
	Subtotal				\$ 15,300
5	LANDFILL GAS COLLECTION AND CONTROL SYSTEM				
	Routine Inspections	1	YR	\$ 6,300	\$ 6,300
	Extraction Well Monitoring and Adjustments	1	YR	\$ 8,610	\$ 8,610
	Replacement of Header Pipe	1	YR	\$ 933	\$ 933
	Replacement of Extraction Wells	1	YR	\$ 0	\$ 0
	Flare System	1	YR	\$ 6,067	\$ 6,067
	Surface Emissions Monitoring	1	YR	\$ 933	\$ 933
	GEPA Permit Reporting	1	YR	\$ 3,733	\$ 3,733
	SVE System	1	YR	\$ 11,583	\$ 11,583
	Subtotal				\$ 38,160
6	DRAINAGE SYSTEM				
	Drainage Repairs and Component Replacement	1	YR	\$ 16,000	\$ 16,000
	Remove Debris and Vegetation	1	YR	\$ 12,000	\$ 12,000
	ACOE/Wetlands Permit Compliance	1	YR	\$ 5,167	\$ 5,167
	MSGP	1	YR	\$ 11,500	\$ 11,500
	Subtotal				\$ 44,667
7	LCRS				
	Leachate Monitoring	1	YR	\$ 10,400	\$ 10,400
	LCRS O&M	1	YR	\$ 9,800	\$ 9,800
	Enhanced LCRS Monitoring	1	YR	\$ 1,500	\$ 1,500
	Leachate Contingency Plan	1	YR	\$ 7,920	\$ 7,920
	Sumps, Pumps and Other Component Replacement	1	YR	\$ 3,000	\$ 3,000
	Subtotal				\$ 32,620
8	ANNUAL REPORT				
	Annual Report	1	YR	\$ 7,500	\$ 7,500
	Subtotal				\$ 7,500
9	GSWA DIRECT PAY ITEMS				
	Leachate Disposal	1	YR	\$ 482,080	\$ 482,080
	Electrical Power	1	YR	\$ 25,000	\$ 25,000
	Technical Support to GEPA	1	YR	\$ 15,333	\$ 15,333
	Trustee	1	YR	5,000	\$ 5,000
	Subtotal				\$ 527,413

TABLE 10-1
ORDOT DUMP POST-CLOSURE FACILITY
POST-CLOSURE AND MAINTENANCE COST ESTIMATE 2021

Item No.	Description	Estimated Quantity		2021 Unit Price	Annual Cost (2021 \$)
10	OTHER				
	Property Insurance	1	YR	\$ 3,300	\$ 3,300
	Performance Bond	1	YR	\$ 6,700	\$ 6,700
	Permit Fees	1	YR	\$ 420	\$ 420
	General Administration	1	YR	\$ 59,076	\$ 59,076
	Subtotal				\$ 69,496
11	COST ESTIMATES				
	Annual	1	YR	\$ 1500	\$ 1,500
	5 Year Update	1	YR	\$ 1000	\$ 1,000
	Subtotal				\$ 2,500
	Subtotal Annual Post-Closure Maintenance Cost				\$ 1,091,709.05
	Contingency (5%)				\$ 54,585.45
	ANNUAL POST-CLOSURE MAINTENANCE COST=				
					\$ 1,146,295
	TOTAL 24 YEAR POST-CLOSURE MAINTENANCE COST=				
					\$ 27,740,327

GENERAL:

- A. Post-closure cost estimate assumes a 30 year post-closure period of which 24 years remain. Estimated post-closure cost for 24 years is \$27,511,068.00. Post Closure Period Credit Assumed for period from March 1, 2016 to January 2022. The single most expensive operational cost is the Leachate Treatment where GWA charges the Government of Guam/GSWA its single highest commercial rate at \$27.42/1000gal. The GWA Government and Federal Rate is \$11.60/1000gal. The leachate quality is similar to that of normal wastewater and should be charged accordingly.

NOTES:

- 1.0 **ITEM 1 - SITE SECURITY:** Cost is based on quarterly inspections and reporting; replacement of 50 LF of fence each year @ \$120/LF; 100 hrs of vegetation maintenance each month at \$75/hr for technician and equipment.
- 2.0 **ITEM 2 - FINAL COVER:** In the 6 years since closure completion, there has been one isolated instance of differential settlement. Otherwise settlement has been found to be uniform across the surface of the Facility without having an effect on the final cover system to function as designed. Cost for Item 2 is based on quarterly inspections and reporting; full landfill surface topographic survey every 5 years @ \$73,000/event and annual settlement repair cost based on 100 CY of new fill each year @ \$30/CY.
- 3.0 **ITEM 3 - GROUNDWATER MONITORING:** Cost is based on 2021 Sampling and Analysis Plan which includes one semi-annual event each year, one annual event each year and eight quarterly events (Years 1 and 2) for 4 new monitoring wells. The 4 new monitoring wells will be sampled quarterly until 8 events have been completed after which time they will be added to the semi-annual and annual events. Sampling event cost assumptions are: (1) semi-annual events in Years 1 and 2 at \$47,960/event (\$5,995/well), (2) annual events in Years 1 and 2 at \$53,987/event (\$6,748/well), (3) quarterly events in Years 1 and 2 at \$32,868/event (\$8,217/well), (4) semi-annual events Years 3 to 30 at \$71,940/event (\$5,995/well) and (5) annual events Years 3 to 30 at \$80,980 (\$6,748/well). Well repair/replacement assumes each monitoring well will be replaced once during the post-closure period @ cost of \$10,000 for each well.
- 4.0 **ITEM 4 - LANDFILL GAS MONITORING:** Cost is based on quarterly testing of 18 landfill gas monitoring wells. Well repair/replacement assumes each gas monitoring well will be replaced once during the post-closure period @ cost of \$8,500/well.
- 5.0 **ITEM 5 - LANDFILL GAS COLLECTION AND CONTROL SYSTEM:** In 2021, the flow at the flare has been approximately 125 scfm at 35% methane content (includes approximately 15 scfm of flow from the SVE system). This flow is approximately equal to 88 scfm at 50% methane content which is close to the LandGEM projected flow of 82 scfm for 2020. LandGEM projects a flow of 48 scfm at 50% methane content in 2023 (Year 7). The low end operating range for the flare is 50 scfm so it is projected the flare will cease operation in Year 7 due to low flow and the unit will be placed in long-term storage. Costs are based on GCCS operation for 7 years with weekly inspection and reporting; monthly well-field tuning; \$2,500/yr for well-head, valve and flex hose replacement; 100 LF of header replacement each year @ \$40/LF; surface emissions monitoring will be performed annually; semi-annual and annual reporting to GEPA for air permit
- 6.0 **ITEM 6 - DRAINAGE SYSTEM:** Costs are based on annual drainage system repairs @ \$16,000/yr (based on first 3 years of OMM); \$12,000/yr for debris and vegetation removal (96hrs @ \$125/hr); annual compliance reporting to ACOE for wetlands permit @ \$31,000/yr for a period of 5 years; MSGP weekly monitoring and quarterly/annual reporting.
- 7.0 **ITEM 7 - LCRS:** Leachate monitoring costs based on quarterly testing required by GWA; operation and maintenance @ \$38,000/yr for labor and pipe/tank cleaning; 48hrs/yr @ \$165/hr for vacuum truck to address contingency plan; replacement of one leachate pump every 5 years @ \$15,000/replacement.
- 8.0 **ITEM 8 - REPORTS:** Cost based on annual report preparation @ \$7,500/yr.
- 9.0 **ITEM 9 - GSWA DIRECT PAY ITEMS:** Costs are based on: leachate disposal costs based on 48,168 gpd (average flow between May 2016 and Aug 2021) @ \$27.42/1,000 gallons GWA commercial 2 discharge fee which is the highest discharge rate (a lower rate may be negotiated in the future); electrical power @ \$25,000/yr; technical support to GEPA @ \$100,000 for 1 year and \$90,000/yr for 4 additional years; cost for trustee \$5,000 per year.
- 10.0 **ITEM 10 - OTHER COSTS:** Costs are based on property insurance @ \$3,000/yr (actual); performance bond @ \$6,700/yr (actual); permit fees (air) @ \$500/yr and \$500/5yrs for renewal; permit fee (monitoring well permit renewals every 5 years) @ \$600/renewal; general administration cost is assumed to be 12% of the cost for Items 1 through 8.
- 11.0 **ITEM 11 - COST ESTIMATES:** Costs are based on \$1,500/yr for inflation cost adjustment reviews and \$5,000/5yrs for complete cost update.