

**Part III
Attachment III-D
Appendix III - D.6**

LEACHATE AND CONTAMINATED WATER PLAN

**Pescadito Environmental Resource Center
MSW-2374
Webb County, Texas**



**Initial Submittal March 2015
Revised September 2015**

**Prepared for:
Rancho Viejo Waste Management, LLC
1116 Calle del Norte
Laredo, TX 78041**

**Prepared by:
CB&I Environmental and
Infrastructure, Inc.**



**12005 Ford Rd, Suite 600
Dallas, TX 75234**

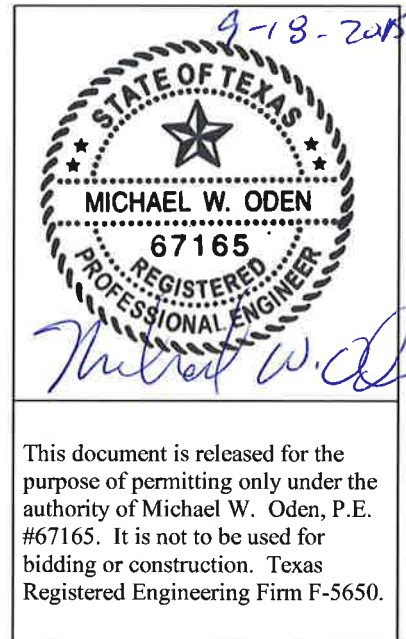


Table of Contents

| | | |
|-----|---|----|
| 1.0 | Introduction..... | 1 |
| 2.0 | Overview of Leachate..... | 2 |
| 3.0 | Overview of Leachate Collection System..... | 3 |
| 3.1 | Drainage Layer..... | 3 |
| 3.2 | Leachate Collection Pipes in Chimney..... | 3 |
| 3.3 | Leachate Collection Sumps..... | 4 |
| 3.4 | Leachate Pump and Riser System..... | 5 |
| 3.5 | Conveyance..... | 5 |
| 3.6 | Leachate Storage..... | 5 |
| 4.0 | Analysis of Leachate Collection System Adequacy..... | 7 |
| 4.1 | Pipe Strength Analysis..... | 7 |
| 4.2 | Geocomposite and Geotextile Flow Capacity Analysis..... | 8 |
| 4.3 | Determination of Peak Leachate Generation Rates..... | 9 |
| 5.0 | Operations..... | 14 |
| 5.1 | Leachate and Contaminated Water Minimization..... | 14 |
| 5.2 | Leachate and Contaminated Water Plan..... | 14 |
| 5.3 | Leachate Treatment and Disposal..... | 15 |
| 5.4 | Monitoring and Maintenance..... | 15 |
| 5.5 | Recordkeeping..... | 16 |

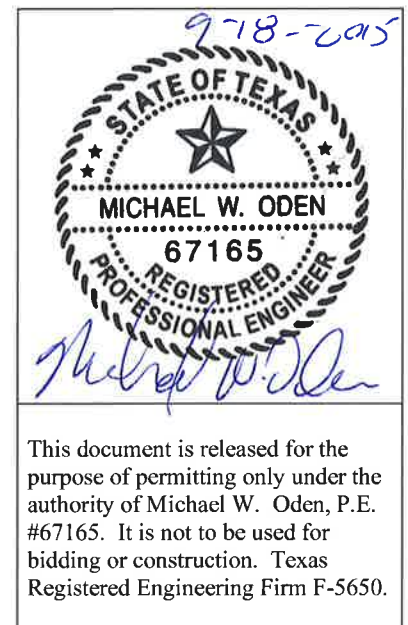
ATTACHMENTS

Attachment A to Appendix III-D.6: Contaminated Water/Leachate Collection System Design Analysis

1. Loads on the Leachate Collection System
2. Ring Deflection of Leachate Pipe
3. Structural Capacity of the Leachate Collection System
4. Compressed Thickness and Hydraulic Conductivity of the Geonet
5. Help Model Analysis
6. Leachate Collection System Flow Rates
7. Geotextile Permittivity
8. Leachate Collection System Design
9. Leachate Tank Size

Attachment B to Appendix D.6: HELP Model Outputs

1. Summary Table of HELP Model Runs
2. Open Conditions
 - a. Leachate Collection System Scenario A
 - b. Leachate Collection System Scenario B
 - c. Leachate Collection System Scenario C
 - d. Leachate Collection System Scenario D
3. Intermediate Conditions
4. Closed Conditions
5. Introduced Contaminated Water Analysis
 - a. Open Conditions – 20 Foot Waste Column
 - b. Intermediate Conditions – 50 Foot Waste Column
 - c. Intermediate Conditions – 100 Foot Waste Column



3.4 Leachate Pump and Riser System

Extraction of leachate from the collection sumps will be accomplished by submersible pumps, which can be operated either manually or automatically. Leachate levels in the collection sumps, will be monitored to maintain a head buildup of less than 30 cm on the lowest point of the landfill floor in each cell.

Sump riser pipes will be located directly up the sideslopes from the sumps at the disposal area perimeter. Risers will be 18-inch diameter HDPE pipe and provide a means for lowering submersible pumps down the 3:1 sideslope incline into the collection sumps. The lower portion of the riser within the sump is perforated (1/2-inch diameter holes), which will allow leachate to flow to the pumps.

The depth of leachate on the liner will be measured using electronic transducers mounted on the leachate pump. Leachate pumps will be sized appropriately to ensure that leachate levels can be maintained at a depth on the liner just outside the sump of 30 cm or less, without short-cycling. Pumps will be automatically controlled using liquid level sensors installed at appropriate elevations to activate the pump when the leachate level is ten inches above the top of the sump, and deactivate the pump when the leachate level is six inches, or less above the bottom of the sump.

3.5 Conveyance

Leachate will be transferred to storage tanks or disposal locations by tanker truck or pipeline. Leachate may be withdrawn from the collection sumps or lines, or storage tanks/ponds into tanker trucks. Spill containment for truck hose connection and loading will be provided by a portable trough or similar spill containment. Protection will be provided at hose connection locations. Contaminated water will be transported to an authorized and permitted facility, or to the on-site evaporation pond, for treatment and disposal.

3.6 Leachate Storage

Leachate will be stored on-site in two on-site leachate storage tanks or evaporation pond prior to transport to a permitted treatment facility. The leachate storage facility will have adequate secondary containment in the event of a tank failure. Secondary containment will be sized to

5.0 OPERATIONS

5.1 Leachate and Contaminated Water Minimization

The first step in the management of leachate or contaminated water is to minimize its generation. As described in **Appendix III-C.2**, stormwater will be managed carefully in all areas of the landfill to limit the quantity that may come in contact with waste. Earthen berms will be used to separate rainfall that has not become contaminated from exposed waste. An intact layer of soil, or other approved cover will be placed over the waste to prevent rainfall from contacting the waste. Ditches, swales, culverts, and other structures as appropriate will be constructed to prevent stormwater run-on onto the active fill areas.

As landfill areas are brought to final grade, final cover will be installed as described in **Attachment III-H - Final Closure Plan**. Vegetation will be established to promote evapotranspiration, limit erosion, and reduce the amount of infiltration.

5.2 Leachate and Contaminated Water Plan

In all excavated areas, containment berms and liner termination berms will be constructed to prevent water from undeveloped areas of the landfill from entering the lined area. Ditches and other structures will control surface drainage as necessary. The berms have been designed for the 100-year 24-hour storm event. Working face berms will be constructed to contain runoff that has come into contact with waste.

Any water that comes in contact with waste, leachate, or gas condensate will be considered contaminated. It will be confined in the working face area and will be collected in the leachate collection system. Should a rainfall event occur whereby the collected contaminated surface water run-off remains on the working face area for 48 hours, the excess contaminated water will be pumped out of the area to the storage facility or transported off-site for proper disposal/treatment. There will be no off-site discharge of contaminated water without prior permission from the TCEQ.

The interim drainage controls will help to minimize the amount of water entering the leachate collection system and potential flooding in the developed cell area. Water that is collected outside the working face area, but within the cell area, is considered to be uncontaminated and

closure care period. Leachate that is stored in the leachate storage facility, or clean water, may be used in cleanout activities.

- Storage Pond Inspections. Visual inspections will include weekly inspections and inspections after every rainfall event in excess of 2-inches to verify adequate freeboard remains.
- Storage Tanks. Visual inspection will be conducted for leakage through the tanks and leachate depths will be recorded.

5.5 Recordkeeping

All records relating to this plan will be retained until the end of the post-closure monitoring period. At a minimum, the following records will be kept in the Site Operating Record at the facility:

- Leachate monitoring field information records
- Leachate analysis results reports
- Leachate and other contaminated water removal and disposal records

Other information will be retained as necessary to ensure proper implementation of this plan.