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

# LEACHATE AND CONTAMINATED WATER PLAN

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

PESCADITO
ENVIRONMENTAL RESOURCE CENTER

**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.**

CB&I

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

9-18-2015

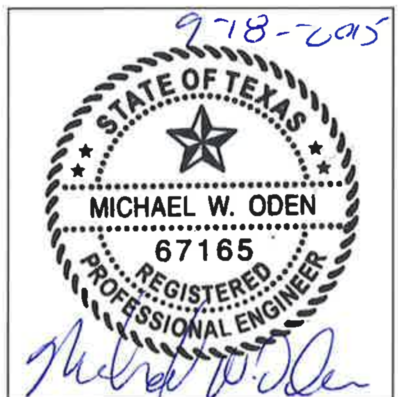
STATE OF TEXAS
MICHAEL W. ODEN
67165
REGISTERED
PROFESSIONAL ENGINEER

This document is released for the purpose of permitting only under the authority of Michael W. Oden, P.E. #67165. It is not to be used for bidding or construction. Texas Registered Engineering Firm F-5650.

## Table of Contents

**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




This document is released for the purpose of permitting only under the authority of Michael W. Oden, P.E. #67165. It is not to be used for bidding or construction. Texas Registered Engineering Firm F-5650.

# 1.0 INTRODUCTION

This Leachate and Contaminated Water Plan (LCWP) for the Pescadito Environmental Resource Center provides methods to minimize the volume of contaminated water generated, describes the leachate collection system design and provides procedures for storage, treatment, and disposal of leachate, contaminated water, and/or gas condensate.

For the purposes of this document, the following definitions are provided:

> Leachate is defined in §330.3(78) as a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.
>
> Contaminated Water is defined in §330.3(36) as leachate, gas condensate, or water that has come into contact with waste.
>
> Gas Condensate is defined in §330.3(57) as the liquid generated as a result of any gas recovery process at a municipal solid waste facility.

## 2.0 OVERVIEW OF LEACHATE

Leachate generation will vary depending on the composition and moisture content of the incoming waste (i.e., dry waste will absorb more water than wet waste). The rate of leachate generation and the composition of the leachate are influenced principally by the following factors.

1. The availability and potential for infiltration or seepage of water into the landfill.
2. The physical and chemical characteristics of the waste (i.e. the moisture content, absorptive capacity, and solubility of the waste).
3. The environment in which the biological decomposition process takes place (i.e. pH, availability of oxygen and temperature).

Municipal solid waste landfill leachate typically contains the following chemicals in order of decreasing concentrations: 1) dissolved and suspended solids including salts (i.e. sodium chloride), sulfates, and sodium bicarbonate; 2) metals (principally iron and zinc); and, 3) organic compounds. The waste decomposition process will also yield methane, carbon dioxide, and traces of other gases. Some heat will be generated as the waste decomposes.

Inert materials (i.e., particles of sand, grit, metal, plastics, and construction/demolition debris) which do not readily degrade will essentially remain unchanged by the decomposition process. The rate of decomposition in a landfill depends on the type of waste and the landfill environment in which the waste is present, with moisture content being the primary factor. Food wastes typically decompose first, followed by paper, wood, textiles, and discarded un-stabilized plastics. Microbes that are initially present in the waste or introduced with the materials used as daily cover will initiate the aerobic portion of the decomposition process.

Most of the leachate in a conventional landfill stems from precipitation that falls on the active area of the landfill, or from precipitation that percolates through daily/intermediate cover. The final cover will essentially eliminate long-term leachate generation on sections of the landfill that have been capped.

## 3.0 OVERVIEW OF LEACHATE COLLECTION SYSTEM

The leachate collection and management system is designed to ensure that the leachate head on the liner is not greater than the thickness of the geocomposite leachate drainage layer. All leachate collection materials will be constructed of materials that are chemically resistant to the leachate expected to be generated. The leachate collection and management system consists of the following main components:

- Drainage layer
- Leachate collection pipes in gravel chimney
- Sumps, pumps, and risers
- Storage tanks and/or evaporation pond

This system will collect and remove leachate from the landfill, minimize head buildup on the composite liner, and effectively manage leachate. Specific details of the leachate collection system can be seen on Drawings in Appendix III-D.3.

### 3.1 Drainage Layer

The drainage layer is placed above the composite liner to allow leachate to flow laterally to perforated collector pipes. A 270 mil, double-sided geocomposite drainage layer will be placed above a geomembrane liner. The geocomposite drainage layer consists of a geonet enclosed by a layer of geotextile on each side.

The bottom drainage layer will be constructed with either a 2% or 2.5% cross slope to promote flow toward the leachate collector pipes and ultimately to the sump. The geocomposite drainage layer provides sufficient flow capacity to effectively transmit leachate to the leachate chimneys and sump area, thereby reducing head buildup. A two-foot thick protective soil layer will be installed above the geocomposite and will serve to prevent damage to the geocomposite drainage layer during waste filling and construction operations.

### 3.2 Leachate Collection Pipes in Chimney

The leachate collection system utilizes leachate collection pipes that run along the center of each cell. The pipes are placed in two-feet wide by two-feet deep leachate collection trenches (chimney) situated within the protective soil layer. Six-inch diameter perforated HDPE pipes run along the inside of the trenches, sloping toward the leachate sumps at a minimum grade of 0.5 percent. The collector pipes are HDPE SDR 7.3 with 1/2-inch perforations. The perforated collector pipes will be placed at the invert of the bottom slopes and embedded in granular material. The collection trenches will be wrapped with a geotextile to prevent soil from entering the granular layer and potentially clogging the perforated collection pipe. Spacing between collector pipes varies from cell to cell with a maximum spacing of approximately 1,100 feet in the north unit and 1,000 feet in the south unit. The perforated collector pipes discharge directly into the sump area at the base grade low points of each of the cells. Refer to Drawing D.3-5 for sump layout and leachate collection trench spacing. Refer to Drawing D.3-7 for leachate collection trench and collector pipe details.

Cleanouts are provided at the top of the sideslopes for periodic maintenance of the collector pipes for each of the cells. The cleanouts are constructed of a minimum six-inch diameter non-perforated HDPE pipe that is joined to the perforated collector pipe. The six-inch pipe size allows sufficient cross-sectional area for effective cleaning by pressurized jetting equipment. Details showing the HDPE cleanout pipes are shown in Drawing D.3-6 and D.3-7.

Pipe crushing, buckling and ring deflection calculations were performed to demonstrate that the leachate collection piping will perform satisfactorily under expected maximum overburden pressures.

### 3.3 Leachate Collection Sumps

Leachate entering the drainage layer and collector lines will be discharged into collection sumps. Leachate sumps will be located at the toe of the landfill sideslopes in the center of each cell and will consist of a 4-foot deep inverted truncated square pyramid with 3H:1V sidewalls. The top of the sumps will be 30 feet by 30 feet and the bottom of the sumps will be 6 feet by 6 feet. The sumps are sized to handle leachate generated for 1 week from the largest cell using the peak daily generation rate obtained from the Hydrologic Evaluation of Landfill Performance (HELP) model. Refer to Drawing D.3-7 and D.3-8 for layout and details of the leachate collection sumps.

### 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 handle either 110% of the volume in one tank or the volume of one tank plus the rainfall generated from the 100-year, 24-hour storm event. Tanks will include spill containment structures in conformance with TCEQ requirements. Evaporation ponds will be monitored so that a minimum of one foot of freeboard is available at all times to handle the 100-year, 24-hour storm event of 9.8 inches. Should the liquid level in the pond(s) be such that one foot of freeboard is not available, contaminated water will be removed to the storage tanks or hauled off to an authorized and permitted facility.

## 4.0 ANALYSIS OF LEACHATE COLLECTION SYSTEM ADEQUACY

Leachate collection is a critical function of modern landfills. Therefore, the components of the leachate collection system must be designed to ensure continued performance through the entire life of the landfill. In order to determine whether the selected leachate collection system components are appropriate for the specific landfill, the following design objectives must be met:

1. Ensure that the leachate collection system is able to function with the loading associated with landfill equipment and with the weight of the overlying waste column.

2. Ensure that the leachate collection system is suitably sized to collect and convey the peak daily leachate generation rate for daily, intermediate, and closed conditions.

All components of the PERC leachate collection system design have been evaluated and found to meet the design objectives. This section provides an overview of the detailed analysis and supporting information that is provided in **Attachment A to Appendix III-D.6 (III-D.6-A).**

### 4.1 Pipe Strength Analysis

Analysis was completed to determine the peak loading that will be subjected to the leachate conveyance pipes (leachate collection pipe, leachate riser pipe and leachate cleanout pipe), considering two scenarios:

- ❑ Full Loading: Loading on pipe due to landfill at final grade.
- ❑ Point-Source Loading: Loading on pipe due to 5 feet of waste (half of one 10-foot lift) and compactor concentrated load.

Based on calculations provided in **III-D.6-A**, the full-loading scenario has been determined to provide a greater loading on the pipe than point-source loading. Therefore, all calculations and determinations described in the following text use the full loading values to analyze the pipe strength and their appropriateness for use at Pescadito Landfill.

These values are then used to determine the pipes' ability to resist the loads. Each pipe configuration that will be constructed within the landfill was analyzed:

- ❑ 6-inch SDR-7.3 Leachate Collection Pipe in Leachate Chimney

- 18-inch SDR-11 Leachate On Side-Wall
- 6-inch SDR-11 Leachate Cleanout Pipe On Side-Wall

When pressure is applied to the sidewall of a pipe due to loading, the pipe will undergo a deformation identified as ring deflection. This deformation results in an elliptical-shaped pipe with the shortest cross-section aligned with the direction of loading. The leachate collection and conveyance pipes have been analyzed to ensure that the degree of ring deflection does not exceed material performance specifications. In addition to verifying that the pipe is operating within manufacturer recommendations for ring deflection, this analysis is also important for pipe cleaning operations: by knowing the maximum ring deflection and resulting minimum diameter within the pipe, the appropriate cleanout jet head size can be selected. The maximum ring deflection calculated for the pipes to be used at PERC is 7.88 percent, which is less than the eight percent maximum allowable ring deflection recommended by the manufacturer. Therefore, the pipes are deemed able to support the overlying waste with continued performance. Please see **III-D.6-A** for additional information.

The leachate collection and conveyance pipes were also reviewed to ensure that the pipes would not undergo crushing failure (pipe collapse) or buckling (bending) failure. All pipes were found to have a safety factor of 2.5 or more for both failure scenarios. Therefore, the pipes are deemed appropriate for loading associated with landfill construction and operations. Please see **III-D.6-A** for additional information.

## 4.2 Geocomposite and Geotextile Flow Capacity Analysis

The geocomposite is the principal leachate collection and conveyance material throughout the landfill, due to the fact that it is located above the composite liner in all areas and is used to direct leachate toward the leachate collection pipes and, ultimately, to the leachate sumps for removal. The geocomposite has been analyzed to ensure that it is able to convey the peak daily leachate generation rate without restrictions or backup for the landfill during open, intermediate, and closed conditions.

It is recognized that the performance of the geocomposite will decrease after installation due to partial clogging of the geotextile (a component of the geocomposite) and the compression of the geonet (a component of the geocomposite) due to both compression that results from loading associated with the overlying waste and creep and intrusion performance reduction factors.

As the geonet is considered the principal conveyance structure component of the geocomposite, it was analyzed first to determine its resultant hydraulic conductivity after compression. Using manufacturer's material specifications for a typical geocomposite, performance reduction factors and a reduction in geonet thickness were determined to reduce the "as-installed" hydraulic conductivity. This reduced value is then used as an input in the HELP model as the maximum leachate conveyance rate for that layer, which is described in subsequent text. Please refer to **III-D.6-A** for the determination of the reduced hydraulic conductivity of the geonet.

Similar to a reduction in performance of the geonet component, the initial permittivity of an installed geotextile (either as a component of the geocomposite or as a stand-alone product such as used in the chimney) will be reduced based on multiple performance factors, which are principally associated with clogging (soil, chemical, and biological clogging). Therefore, it is important to apply performance reduction factors to the geotextile to ensure that is will be able to pass the peak daily leachate generation rate after clogging occurs. The peak daily leachate generation rate determined using the HELP model was used and the required permittivity that a geotextile must meet at the time of installation was back calculated in order to allow comparison to manufacturer specifications. Please refer to **III-D.6-A** for this analysis.

### 4.3 Determination of Peak Leachate Generation Rates

In order to predict the amount of leachate that may be generated during open, intermediate, and closed conditions, the landfill was modeled using the HELP Model program. This program was developed by the US Army Engineer Waterways Experiment Station to assist designers in determining the effectiveness of landfill liner designs. The HELP model is an unsaturated flow, water balance model that uses site-specific climate, soil and design data to predict the leachate generation rates, leachate head on the bottom liner system and percolation through the bottom liner for the proposed landfill design over a specified time period. The HELP Model requires three types of input data including climatological, soil and general design data. The Model will generate (synthetically) a table of precipitation values if actual data are not available. Assumptions used for this model are summarized in **III-D.6-A**.

### 4.3.1 Open Conditions Analysis

The HELP model was first used to simulate open conditions when landfilling begins. The open conditions HELP Model runs estimate the leachate that will be generated from the first lift of waste when it is overlain with 6-inches of daily cover. The leachate generation rate represents the rate at which leachate will reach the leachate collection layer below the waste. The first run was modeled for one year, which is the minimum time increment provided in the model. A thickness of ten feet was selected for the first lift of waste. Complete leachate recirculation was considered, as this creates a higher peak daily leachate generation rate and is conservative when used to size leachate conveyance materials.

Multiple open conditions runs were required to be modeled due to the fact that the liner slopes and drainage lengths will vary between landfill cells. Based on a review of the proposed leachate collection system grades, four different liner configurations were modeled to determine which configuration produces the peak daily leachate generation rate.

**Table D.6-1**
**Liner Configurations**

| Liner Configuration (Used for Model Naming) | Leachate Collection Layer Slope (percent) | Drainage Length (feet) |
|---|---|---|
| A | 2.5 | 461 |
| B | 2.5 | 614 |
| C | 2.0 | 461 |
| D | 2.0 | 614 |

Based on the analyses, it was determined that the peak generation rate was determined to occur for Liner Configuration A, in which the leachate collection system grades are steepest and exhibit the shortest drainage length. Therefore, this liner configuration was used for all other modeling analyses for intermediate and closed conditions, as it has been shown to be the conservative liner configuration. A peak daily leachate generation rate of 8.9 cubic feet per day per acre ($ft^3$/day-acre) was determined for this scenario. Please refer to **III-D.6-A** for additional information on model input parameters and detailed results; see **Attachment B to Appendix III-D.6 (III-D.6-B)** for HELP Model output files for each identified run.

### 4.3.2 Intermediate Conditions Analysis

Intermediate filling conditions were modeled using HELP based on the Liner Configuration A, which produced the greatest leachate generation rate for Open Conditions. The HELP intermediate conditions run estimates the leachate that will be generated when half of the total waste height has been placed (190 feet of waste), assuming 100 percent leachate recirculation. The waste is assumed to be overlain with 12-inches of intermediate cover material. The model was run for a 5-year period. Based on this analysis, approximately 5.9 $ft^3$/day-acre will be generated for the intermediate cover scenario, which is less than the open conditions. Please refer to **III-D.6A** for additional information on model input parameters and detailed results; see **III-D.6-B** for HELP Model output files.

### 4.3.3 Closed Conditions Analysis

Closed conditions were modeled using HELP based on the Liner Configuration A. The intermediate conditions HELP Model runs estimate the leachate that will be generated from when the entire waste column has been placed (380 feet of waste), assuming 100 percent leachate recirculation. The waste is assumed to be overlain with final cover. The model was run for a 30-year period. Based on this analysis, no leachate will be generated. This is anticipated, based on the fact that the incoming waste is at a moisture content lower than the field capacity of the waste and the large amount of evaporation versus the precipitation of the area (see results in **III-D.6A** and the associated model output files in **III-D.6-B**). With the final cover in-place minimal water will enter the landfill, resulting in a negligible leachate generation rate.

### 4.3.4 Introduced Leachate Analysis

In order to provide operational flexibility for the landfill, additional model runs were completed to determine the impact of introducing leachate to the landfill during open and intermediate conditions. It is important to note that the introduced leachate would be applied to the landfill in addition to the assumed 100 percent leachate recirculation. Potential sources of introduced leachate are leachate that is stored in the leachate containment tank(s) and/or the leachate evaporation pond.

Open and intermediate conditions models were developed to assume that 10-inches of leachate per acre per day (744 gal/acre-day) were introduced to the landfill. All were developed based on Liner Configuration A described in **Table III-D.6-1** and run with a model time of one year. Open conditions were run based on a 20-foot waste thickness, while intermediate conditions were run for both 50-foot and 100-foot waste thicknesses.

Based on the introduced leachate analyses, the open conditions run produced a peak daily leachate generation rate of 8.9 $ft^3$/acre-day, while the intermediate conditions runs produced 5.9 $ft^3$/acre-day for both modeled waste thicknesses. It is noted that the leachate generation rate is significantly lower than the introduced leachate rate, which signifies that the waste has not reached field capacity and absorbs the introduced leachate in a sponge-like manner. The landfill is not anticipated to reach field capacity at any point of its operational life. It should also be noted that the HELP model demonstrates that leachate generated with introduced contaminated water is the same at the leachate generated without contaminated water introduced.

Based on the results of these model runs, the operator may introduce additional leachate while also recirculating any leachate generated without impacting leachate generation rates or the hydraulic head on the liner. Please refer to **III-D.6A** for additional information on model input parameters and detailed results and **III-D.6-B** for the associated HELP Model output files.

### 4.3.5 Leachate Head

Based on the HELP model results for all modeled runs discussed in previous text, the maximum leachate head was found to be 0.009 inches, which significantly exceeds Section 330.331 requirements that less than 30-cm head be present over the liner. It is also noted that the maximum head buildup of 0.009 inches is less than the compressed geonet thickness.

### 4.3.6 Leachate Pipe and Sump Sizing

The leachate pipes and sumps have been sized to accommodate the peak daily leachate generation rate determined through HELP modeling described in the previous sections. As noted, the peak leachate generation rate of all modeled operating conditions (including open, intermediate, closed, open with introduced leachate, and intermediate with introduced leachate) is 8.9 $ft^3$/acre-day, which equates to 0.047 cfs when considering a 46 acre cell. This peak daily leachate generation rate is based on open conditions, and is the same whether or not leachate is introduced (see discussion in Section 4.3.4).

Based on the design configuration and parameters for the leachate collection pipe and aggregate, it has been determined that they are appropriately sized to handle these peak flows. Demonstration is provided in **III-D.6A**.

### 4.3.7 Leachate Tank Sizing

Two 15,000 gallon tanks will be located at the facility to store leachate that has been extracted from the landfill. The tanks are appropriately sized to store one week's worth of leachate based on the maximum leachate generation rate determined from the HELP model runs and assumes no leachate recirculation. Secondary containment is provided for 110% of the total tank volume including the 100-year, 24-hour storm without overtopping. Larger tanks may be used as long as the proper containment is provided. Demonstration is provided in **III-D.6A.B**. It is noted that an evaporation pond may also be available for leachate storage, if needed.

## 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 can be pumped out of the excavated area if water accumulation is excessive (does not evaporate within 48 hours).

### 5.3 Leachate Treatment and Disposal

Tanker trucks will collect any leachate that has accumulated and transport it to a permitted WWTP. All leachate transferred to the WWTP will be handled in compliance with TCEQ requirements, as well as any requirements of the WWTP operator.

Leachate may also be recirculated at the landfill. This process involves taking leachate from the sumps, collector pipes, or storage facility and pumping it back into the waste mass. Recirculation may consist of spray application during dry conditions using a portable tank(s) at the active face, injecting leachate through a perforated pipe or well buried in the refuse or discharging leachate in an area excavated into waste and backfilled with highly permeable material, such as gravel or tire chips.

### 5.4 Monitoring and Maintenance

Regular maintenance and monitoring will be performed on the leachate collection, transfer and storage systems throughout the active life of the site and the post-closure maintenance period after closure of the landfill. The following monitoring and maintenance activities will be performed:

- <u>Depth of leachate on liner.</u> An electronic transducer on the leachate pumps or in the sump or cleanout risers will measure the depth of leachate on the liner. The depth of fluid will be recorded at least monthly and after significant rainfall events during the active life of the landfill, and semi-annually during the post-closure care period.
- <u>Pump maintenance/replacement.</u> Portable pumps will be maintained as appropriate. Backup portable pumps will be provided so the primary pumps may be removed and repaired. Maintenance activities on the pumps will occur during the active life of the landfill and during the post-closure care period.
- <u>Cleanout.</u> Cleanouts will be provided on all leachate collection pipes. Cleanout activities will occur as needed during the active life of the landfill as well as during the post-

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.