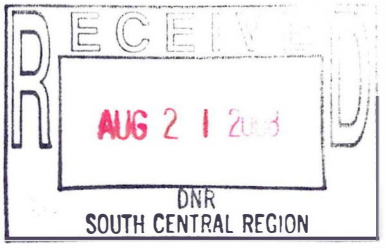
LIESCH
HYDROGEOLOGISTS ■ ENGINEERS ■ ENVIRONMENTAL SCIENTISTS

August 19, 2008




Mr. Hank Kuehling
WDNR
3911 Fish Hatchery Road
Fitchburg, WI 53711

RE: **Annual Operation and Maintenance Report (July 2007 – June 2008)**
Refuse Hideaway Landfill, Town of Middleton, Dane County, Wisconsin
BRRTS #02-13-000849

Dear Mr. Kuehling:

The purpose of this letter report is to summarize operation and maintenance (O&M) activities performed by Liesch Environmental Services, Inc. (Liesch) at the Refuse Hideaway Landfill (RHL) from July 2007 through June 2008. As monthly O&M reports were previously submitted, this Annual Report provides ranges for operating parameters and highlights changing trends or operating conditions.

## SUMMARY

Highlights of O&M activities completed by Liesch during the 2007 – 2008 O&M year included:

- The Blower/Flare System ran approximately 100% of the operating year.
- The Leachate Collection System ran for approximately 96% of the operating year.

## BACKGROUND

Liesch began routine monitoring of RHL systems on July 1, 2003. Prior to Liesch, SCS Field Services and Environmental Sampling Corporation monitored the landfill from July 1, 1997.

### LFG Recovery System

The LFG Recovery System at RHL became operational in 1991. The LFG Recovery System consists of:

- Blower/Flare Station
- Collection System
- Monitoring Locations

The Blower/Flare Station includes one centrifugal LFG blower, an enclosed flare, a candlestick

flare (previously used as a backup combustion unit but now out of service), and associated controls and appurtenances. The Collection System consists of 13 extractions wells, four drip legs, and associated gas and pneumatic header piping. The Monitoring Locations include 11 wells located throughout the site and ambient air monitoring within nearby Speedway buildings. Proper operation of the Collection System is verified through testing of the extraction wells. LFG withdrawal rates at individual well are adjusted based on test results. Testing for subsurface gas migration is done at the monitoring locations. Operation of the Blower/Flare Station provides vacuum necessary to withdraw the gas from the landfill, which helps control surface emissions and subsurface migration. Odors and emissions are controlled by combustion of the gas at the flare.

**Leachate Collection System**

The current leachate collection system was installed in 1996 and is comprised of pneumatic pumps installed in nine of the existing LFG extraction wells (eight wells until GW-10 was added in 2006). A compressor located at the Blower/Flare Station supplies compressed air for the pneumatic pumps. The collected leachate is stored onsite in a 25,000-gallon underground storage tank. Leachate is removed from the tank by a subcontractor and transported to the Madison Metropolitan Sewerage District (MMSD) for treatment and ultimate discharge.

## TESTING EQUIPMENT

A Landfill Monitoring Systems (LMS) Multi-gas analyzer Model LMS 40 is utilized at the site to measure methane, carbon dioxide, and oxygen as percent by volume.

Pressure testing is measured in inches of water using Dwyer magnehelic gauges. LFG flow and temperature are measured with an Extech Model 407123 Hot Wire Thermo-Anemometer. Combustion temperatures were obtained from flare control panel instrumentation.

Leachate level was measured in one of two ways:

- For the gas extraction wells that have a leachate extraction pump, leachate levels were obtained indirectly using a bubbler tube.
- For the gas extractions wells that do not contain a leachate extraction pump, leachate levels were measured using an electric water level meter.

## ON-SITE ACTIVITIES

Site/system activities generally consisted of inspecting, monitoring, maintaining, and/or recording data at or from various valves, meters, or sampling ports.

**Weekly** activities were performed at the following locations:

- Blower/Flare Control Panel
- Blower/Flare Station
- Leachate Tank
- Branch Monitoring Stations
- Flare Inlet Pipe
- Blower Inlet Pipe

**Monthly** activities were performed at the following locations:

- Extraction Wells
- Gas Probes
- Well Pumps/Controls
- Branch Monitoring Stations
- Flare Inlet Pipe
- Buried Control Valves
- Compressor (oil change)
- Pneumatic System (check for leaks)
- Blower Drive Belts (inspect/tighten)
- Landfill Surface (inspect)
- Monthly Report (including summary tables of system operation)

**Quarterly** activities were performed at the following locations:

- CV1, CV2, Branch Valves
- Well Valves, Compressor Valves
- Manual Valve (ground flare)
- Compressed Air Filter (inspect)
- Air Dryer Desiccant (inspect)
- Blower

**Annual** activities were performed at the following locations:

- Well pumps
- Leachate Lines, Driplegs
- Cleanouts
- Tank Loadout Station
- Padlocks

System statistics for the operating year are summarized in **Table 1** and further detailed in **Table**

**2** through **Table 5**:

- The average methane level at the blower was 39.7%.
- The average oxygen level at the blower was 2.7%.
- 226,606 gallons of leachate were removed from the landfill using the Leachate Collection System.
    - Laboratory analysis of leachate samples indicated that all analyzed metal compounds were below permitted discharge levels (see **Table 6**).
    - Laboratory reports were submitted to Madison Metropolitan Sewerage District per permit requirements.

With respect to scheduled repairs and improvements, implementation of recommendations were made and completed during this O&M contract. Included in this scope was the following:

1) Liesch personnel changed the belts on the blower and checked the belts on the compressor. The belts on the compressor were in good condition and Liesch replaced the air filter.

2) Energetics performed a pump up test on the compressor and the compressor functioned properly during the test. Liesch had suspected that the compressor may not be maintaining pressure in the tank or supply enough air to the leachate pumps and this would explain the low number of cycles for the leachate pumps. However, from Energetics pump up test it was determined the compressor is functioning properly.

3) The leachate lines were jetted and cleaned out on October 23, 2007 and there were no issues.

4) On June 4, 2008 the leachate lines were replaced in well GW8. The well was not pumping before the leachate lines were replaced, but immediately upon replacing the pump into the well, the pump began operating. However, the pump was not operating during the monthly O&M activities on June 25. The pump cycles before replacing the leachate lines were 91,086 and the pump cycles after replacing the leachate lines on June 25 were 96,031. This results in a difference of 4,945 pump cycles. In May 2008 the pump operated for 7,129 pump cycles, April 2008 the pump operated for 3 pump cycles, and March 2008 the pump operated for 3 pump cycles.

The following non-scheduled repairs were made during the O&M year:

1) Davis Electric performed a service call for the compressor to repair a loose connection in the electrical panel.

2) A broken air line for GW13 was patched.

The following items were also noted throughout the operating year:

1) Inconsistent flows and/or gas concentrations can fool the flame signal eye resulting in false flame failure alarms. With low gas concentrations (especially those below 20%), the auto-dialer alarm is activated up to four times a day even though the flare typically does not go out.

2) The flare re-start sequence is complicated by a continuously alarming high pilot gas pressure transducer. To restart the flare system, the transducer has to be jumped/bypassed to allow the start-up sequence to proceed.

3) The air compressor is slightly undersized for the environment and workload. However, a technician from Energetics has said that regular oil changes should allow the compressor to operate as needed for the foreseeable future.

4) Visual inspections of the landfill surface did not reveal significant erosion concerns or stressed vegetation, other than the persistent low growth zone along the ridge in the southern portion of the landfill in the vicinity of GW-1, GW-2, and GW-3.

5) Methane detected in the G-1, G-2, and G-11 well nests depended heavily on the time of year. The highest readings were during the summer months with little to no methane detected during the winter months.

6) The leachate pump cycles experienced low numbers during 2007 and 2008. Liesch personnel pulled the pump from well GW7, which was experiencing low pump cycles, and found sediment was blocking the pumping lines. Liesch personnel removed the blockage and then the pump operated properly. It is suspected this problem may be similar throughout all the wells within the system and this could account for the low number of pump cycles for each well.

## CONCLUSIONS / RECOMMENDATIONS

An evaluation of repairs and improvements needed for effectively operating the Blower/Flare System and Leachate Collection System was completed in June 2007 and was successfully implemented during the past operating year. In addition, non-scheduled repairs were made in order to maintain the remedial systems at the landfill. After addressing two remaining issues, the

remedial systems should be poised for many additional years of useful life.

First, a permanent solution is needed to restore flow to all south branch wells. This will involve excavating and re-grading gas header piping from GW-4 to GW-1 at a minimum (in order to pull gas via the central branch). Restoring flow via the south branch as originally designed would also involve repairing the line from GW-1 to DL-1.

Second, the south branch should be jetted at GW-5 to attempt to restore some flow through the south branch. To my knowledge the south branch has never been jetted because of the lack of a cleanout. The 3"x6" reducer between the above-grade piping (3") and the header piping (6") is located at grade for GW-5 instead of the normal below grade elsewhere. This should act as a cleanout and allow normal line jetting equipment to be used.

The system needs to be evaluated to determine the reason for the low pump cycles. The monthly O&M activities have determined that the leachate quantity within the landfill is adequate enough to cause the pumps to operate. However, further analysis is required to define alternate reasons why the pump cycles have decreased.

Feel free to call me at (608) 223-1532, extension 22, if you have any questions.

Sincerely,

LIESCH ENVIRONMENTAL SERVICES, INC.

Joshua D. Davenport, EIT
Environmental Engineer

Mike McCoy, PE
Senior Engineer

Attachments: Table 1 (System Summary)
Table 2 (Methane at Wells)
Table 3 (Velocity at Wells)
Table 4 (System Hours)
Table 5 (Problematic System Components)
Table 6 (Leachate Tank Laboratory Analytical Results)

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# TABLE 1
# REFUSE HIDEAWAY LANDFILL

## OPERATING PARAMETERS SUMMARY
## July 2007 - June 2008
## System Summary

| | Jul-07 | Aug-07 | Sep-07 | Oct-07 | Nov-07 | Dec-07 | Jan-08 | Feb-08 | Mar-08 | Apr-08 | May-08 | Jun-08 | Average | Min. | Max. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % Methane at Blower (average during month) | 42.0 | 40.8 | 45.5 | 40.9 | 39.4 | 37.4 | 33.9 | 37.0 | 35.5 | 37.7 | 44.9 | 41.5 | 39.7 | 33.9 | 45.5 |
| % Oxygen at Blower (average during month) | 1.8 | 0.9 | 0.6 | 2.3 | 2.0 | 2.1 | 4.5 | 3.3 | 5.2 | 5.0 | 2.5 | 2.1 | 2.7 | 0.6 | 5.2 |
| Leachate Collected (gallons) | 9,608 | 19,898 | 15,166 | 15,077 | 9,840 | 9,845 | 9,634 | 9,689 | 19,605 | 34,383 | 39,831 | 34,030 | 18,884 | 9,608 | 39,831 |
| | | | | | | | | | | | **TOTAL Leachate** | | 226,606 | | |

| | | Average | Min. | Max. |
|---|---|---|---|---|
| **% Methane** | GW1 | 52.6 | 44.0 | 58.9 |
| at Extraction Wells | GW2 | 32.3 | 7.6 | 59.4 |
| | GW3 | 50.4 | 2.2 | 66.0 |
| | GW4(1) | 37.6 | 17.0 | 61.0 |
| | GW5(1) | 36.0 | 11.0 | 57.8 |
| | GW6 | 53.8 | 39.5 | 61.9 |
| | GW7(1) | 41.1 | 24.0 | 56.0 |
| | GW8(1) | 51.4 | 9.1 | 69.0 |
| | GW9(1) | 38.4 | 14.5 | 55.6 |
| | GW10(1) | 33.9 | 24.4 | 47.2 |
| | GW11(1) | 52.1 | 11.0 | 71.6 |
| | GW12(1) | 22.9 | 16.0 | 27.0 |
| | GW13(1) | 51.8 | 44.7 | 58.0 |

| | | Average | Min. | Max. |
|---|---|---|---|---|
| **Velocity (fpm)** | GW1 | 106 | 29 | 339 |
| at Extraction Wells | GW2 | 86 | 43 | 186 |
| | GW3 | 156 | 54 | 500 |
| | GW4(1) | 164 | 56 | 629 |
| | GW5(1) | 447 | 123 | 920 |
| | GW6 | 1450 | 273 | 2750 |
| | GW7(1) | 444 | 190 | 1050 |
| | GW8(1) | 312 | 140 | 826 |
| | GW9(1) | 361 | 138 | 800 |
| | GW10(1) | 262 | 150 | 807 |
| | GW11(1) | 691 | 366 | 1370 |
| | GW12(1) | 877 | 651 | 1200 |
| | GW13(1) | 401 | 0 | 1161 |
| | TOTAL | 5756 | | |

| | | Average | Min. | Max. |
|---|---|---|---|---|
| **Flow (cfm)** | | 3.6 | 1.0 | 11.6 |
| | | 2.9 | 1.4 | 6.3 |
| | | 5.1 | 1.8 | 17.6 |
| | | 5.6 | 1.9 | 22.1 |
| | | 15.7 | 4.1 | 33.1 |
| | | 52.5 | 9.3 | 100.2 |
| | | 15.5 | 6.4 | 37.8 |
| | | 10.8 | 4.7 | 29.7 |
| | | 12.5 | 4.6 | 28.8 |
| | | 9.0 | 5.0 | 29.1 |
| | | 24.6 | 12.7 | 49.3 |
| | | 31.5 | 23.0 | 43.2 |
| | | 14.0 | 0.0 | 41.8 |
| | TOTAL | 203.4 | | |

| | Average | Min. | Max. |
|---|---|---|---|
| LFG Blower (%) | 100 | 99 | 100 |
| LFG Hours per month | 704.7 | 531.9 | 855.9 |
| Leachate Compressor (%) | 95.8 | 50 | 100 |

* 9 wells with operational pumps now (previous months only 2 wells)

(1) wells with pneumatic leachate pumps installed.

# TABLE 2
# REFUSE HIDEAWAY LANDFILL

## OPERATING PARAMETERS SUMMARY
## July 2007 - June 2008
## Methane (%) at Wells

| | Jul-07 | Aug-07 | Sep-07 | Oct-07 | Nov-07 | Dec-07 | Jan-08 | Feb-08 | Mar-08 | Apr-08 | May-08 | Jun-08 | Average | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GW1 | 51.0 | 50.0 | 56.7 | 50.0 | 50.0 | 50.0 | 52.0 | 44.0 | 58.9 | 56.4 | 55.9 | 56.0 | 52.6 | 44.0 | 58.9 |
| GW2 | 10.0 | 53.0 | 57.2 | 8.6 | 7.6 | 19.5 | 39.5 | 19.0 | 59.4 | 57.4 | 30.1 | 26.5 | 32.3 | 7.6 | 59.4 |
| GW3 | 52.0 | 60.0 | 58.8 | 2.2 | 51.0 | 8.8 | 60.0 | 61.0 | 66.0 | 61.0 | 61.5 | 62.0 | 50.4 | 2.2 | 66.0 |
| GW4 (1) | 61.0 | 60.0 | 53.1 | 42.0 | 41.0 | 29.5 | 25.0 | 20.0 | 39.0 | 39.7 | 24.4 | 17.0 | 37.6 | 17.0 | 61.0 |
| GW5 (1) | 38.5 | 42.0 | 57.8 | 48.0 | 42.0 | 52.0 | 13.0 | 22.0 | 11.0 | 29.7 | 39.8 | 36.5 | 36.0 | 11.0 | 57.8 |
| GW6 | 55.0 | 51.0 | 57.6 | 50.0 | 55.0 | 49.0 | 39.5 | 54.0 | 61.9 | 58.4 | 58.1 | 56.0 | 53.8 | 39.5 | 61.9 |
| GW7 (1) | 55.0 | 56.0 | 52.5 | 46.0 | 47.0 | 42.5 | 31.0 | ^ | 24.0 | 30.0 | 31.2 | 37.0 | 41.1 | 24.0 | 56.0 |
| GW8 (1) | 48.0 | 58.0 | 50.5 | 40.0 | 59.0 | 48.5 | 50.0 | 9.1 | 69.0 | 67.1 | 52.8 | 65.0 | 51.4 | 9.1 | 69.0 |
| GW9 (1) | 44.0 | 40.0 | 39.1 | 28.5 | 42.0 | 45.0 | 14.5 | 26.0 | 52.5 | 55.6 | 34.7 | 39.0 | 38.4 | 14.5 | 55.6 |
| GW10 (1) | 43.0 | 40.0 | 47.2 | 33.5 | 34.0 | 26.0 | 31.5 | 25.5 | 24.4 | 36.5 | 31.9 | 33.5 | 33.9 | 24.4 | 47.2 |
| GW11 (1) | 41.5 | 53.0 | 53.2 | 59.0 | 56.0 | 48.0 | 11.0 | ^ | 68.9 | 71.6 | 61.1 | 49.5 | 52.1 | 11.0 | 71.6 |
| GW12 (1) | 20.0 | 24.0 | 25.2 | 24.5 | 23.5 | 17.5 | 16.0 | 21.5 | 23.7 | 26.7 | 24.6 | 27.0 | 22.9 | 16.0 | 27.0 |
| GW13 (1) | 56.0 | 46.0 | 44.7 | 58.0 | 56.0 | 55.0 | 48.5 | 54.0 | 55.5 | 47.2 | 53.3 | 47.0 | 51.8 | 44.7 | 58.0 |

(1) wells with pneumatic leachate pumps installed.

# TABLE 3
# REFUSE HIDEAWAY LANDFILL

## OPERATING PARAMETERS SUMMARY
## July 2007 - June 2008
## Velocity (fpm) and Flow (cfm) at Wells

| VELOCITY | Jul-07 | Aug-07 | Sep-07 | Oct-07 | Nov-07 | Dec-07 | Jan-08 | Feb-08 | Mar-08 | Apr-08 | May-08 | Jun-08 | Average | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | | | |
| GW1 | 50 | 51 | 44 | 29 | 44 | 259 | 339 | 120 | 108 | 78 | 90 | 65 | 106 | 29 | 339 |
| GW2 | 43 | 68 | 44 | 49 | 44 | 157 | 186 | 96 | 90 | 98 | 76 | 82 | 86 | 43 | 186 |
| GW3 | 61 | 67 | 113 | 54 | 64 | 148 | 208 | 213 | 145 | 165 | 135 | 500 | 156 | 54 | 500 |
| GW4 (1) | 110 | 73 | 86 | 60 | 63 | 115 | 262 | 180 | 629 | 56 | 218 | 114 | 164 | 56 | 629 |
| GW5 (1) | 141 | 164 | 316 | 332 | 295 | 331 | 500 | 550 | 840 | 123 | 920 | 850 | 447 | 123 | 920 |
| GW6 | 985 | 1150 | 1002 | 1073 | 1184 | 2750 | 2415 | 1264 | 1420 | 273 | 2200 | 1680 | 1450 | 273 | 2750 |
| GW7 (1) | 300 | 190 | 305 | 270 | 471 | 452 | 763 | 330 | 1050 | 285 | 377 | 533 | 444 | 190 | 1050 |
| GW8 (1) | 200 | 256 | 386 | 140 | 826 | 166 | 417 | 148 | 500 | 168 | 278 | 257 | 312 | 140 | 826 |
| GW9 (1) | 138 | 245 | 142 | 260 | 601 | 325 | 300 | 509 | 415 | 144 | 800 | 450 | 361 | 138 | 800 |
| GW10 (1) | 150 | 170 | 169 | 222 | 204 | 239 | 267 | 255 | 807 | 174 | 212 | 277 | 262 | 150 | 807 |
| GW11 (1) | 463 | 655 | 366 | 700 | 926 | 400 | 720 | 1370 | 900 | 400 | 470 | 918 | 691 | 366 | 1370 |
| GW12 (1) | 748 | 902 | 652 | 740 | 1055 | 960 | 1115 | 940 | 1200 | 743 | 651 | 822 | 877 | 651 | 1200 |
| GW13 (1) | 165 | 309 | 461 | 500 | 482 | 0 | 322 | 277 | 300 | 1161 | 660 | 174 | 401 | 0 | 1161 |
| **TOTAL** | **3,554** | **4,300** | **4,086** | **4,429** | **6,259** | **6,302** | **7,814** | **6,252** | **8,404** | **3,868** | **7,087** | **6,722** | | | |
| FLOW | (Calculated) | | | | | | | | | | | | | | |
| GW1 | 1.7 | 1.7 | 1.5 | 1.0 | 1.5 | 8.8 | 11.6 | 4.0 | 3.6 | 2.6 | 3.0 | 2.2 | 3.6 | 1.0 | 11.6 |
| GW2 | 1.4 | 2.3 | 1.5 | 1.6 | 1.5 | 5.3 | 6.3 | 3.2 | 3.0 | 3.3 | 2.5 | 2.7 | 2.9 | 1.4 | 6.3 |
| GW3 | 2.0 | 2.2 | 3.8 | 1.8 | 2.1 | 5.0 | 7.0 | 7.2 | 2.9 | 5.5 | 4.5 | 17.6 | 5.1 | 1.8 | 17.6 |
| GW4 (1) | 3.7 | 2.4 | 2.9 | 2.0 | 2.1 | 3.8 | 8.9 | 6.1 | 22.1 | 1.9 | 7.4 | 3.8 | 5.6 | 1.9 | 22.1 |
| GW5 (1) | 4.7 | 5.5 | 10.8 | 11.4 | 10.1 | 11.3 | 17.6 | 19.3 | 30.2 | 4.1 | 33.1 | 30.6 | 15.7 | 4.1 | 33.1 |
| GW6 | 35.5 | 41.4 | 36.1 | 38.6 | 42.6 | 100.2 | 88.0 | 45.5 | 51.1 | 9.3 | 80.2 | 61.2 | 52.5 | 9.3 | 100.2 |
| GW7 (1) | 10.3 | 6.4 | 10.4 | 9.2 | 16.4 | 15.8 | 27.3 | 11.3 | 37.8 | 9.8 | 13.1 | 18.7 | 15.5 | 6.4 | 37.8 |
| GW8 (1) | 6.8 | 8.7 | 13.4 | 4.7 | 29.7 | 5.6 | 14.4 | 5.0 | 17.6 | 5.6 | 9.5 | 8.7 | 10.8 | 4.7 | 29.7 |
| GW9 (1) | 4.6 | 8.3 | 4.8 | 8.8 | 21.1 | 11.1 | 10.3 | 17.9 | 14.4 | 4.8 | 28.8 | 15.7 | 12.5 | 4.6 | 28.8 |
| GW10 (1) | 5.0 | 5.7 | 5.7 | 7.5 | 6.9 | 8.1 | 9.1 | 8.7 | 29.1 | 5.9 | 7.2 | 9.5 | 9.0 | 5.0 | 29.1 |
| GW11 (1) | 16.1 | 23.1 | 12.7 | 24.9 | 33.3 | 13.9 | 25.6 | 49.3 | 32.4 | 13.9 | 16.5 | 33.0 | 24.6 | 12.7 | 49.3 |
| GW12 (1) | 26.8 | 32.5 | 23.0 | 26.5 | 38.0 | 34.6 | 40.1 | 33.8 | 43.2 | 26.6 | 23.0 | 29.6 | 31.5 | 23.0 | 43.2 |
| GW13 (1) | 5.5 | 10.6 | 16.1 | 17.6 | 16.9 | 0.0 | 11.0 | 9.5 | 10.3 | 41.8 | 23.3 | 5.9 | 14.0 | 0.0 | 41.8 |
| **TOTAL** | **124** | **151** | **142** | **156** | **222** | **223** | **277** | **221** | **298** | **135** | **252** | **239** | **203** | | |

(1) wells with pneumatic leachate pumps installed
*Average velocity (manually with meter)
**Centerpoint velocity
Boxed value indicates minimum (capacity of meter)

# TABLE 4
# REFUSE HIDEAWAY LANDFILL

## OPERATING PARAMETERS SUMMARY
## July 2007 - June 2008
## System Hours

| | Jul-07 | Aug-07 | Sep-07 | Oct-07 | Nov-07 | Dec-07 | Jan-08 | Feb-08 | Mar-08 | Apr-08 | May-08 | Jun-08 | Average | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LFG Blower (%) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 99 | 100 | 99.8 | 99 | 100 |
| Blower Counter end | 19109.6 | 19944.9 | 20476.8 | 21332.7 | 22005.8 | 22730.4 | 23517.1 | 24166.1 | 24839.5 | 25516.0 | 26281.1 | 26971.2 | | | |
| Blower Hours | 594.8 | 835.3 | 531.9 | 855.9 | 673.1 | 724.6 | 786.7 | 649.0 | 673.4 | 676.5 | 765.1 | 690.1 | 704.7 | 531.9 | 855.9 |
| Leachate Compressor (%) | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95.8 | 50 | 100 |
| Compressor Counter end | 260.5 | 76.3 | 229.5 | 440.0 | 507.8 | 595.4 | 668.9 | 745.7 | 849.2 | 966.7 | 1092.3 | 1208.2 | | | |
| Compressor Hours | 33.5 | 148.8 | 153.2 | 210.5 | 67.8 | 87.6 | 73.5 | 76.8 | 103.5 | 117.5 | 125.6 | 115.9 | 109.5 | 33.5 | 210.5 |

# TABLE 5
# REFUSE HIDEAWAY LANDFILL

## OPERATING PARAMETERS SUMMARY
## July 2007 - June 2008
## Problematic System Components

| | Problematic air flow control valve | Problematic counter |
|---|---|---|
| GW1 | | |
| GW2 | | |
| GW3 | | |
| GW4 (1) | | |
| GW5 (1) | | |
| GW6 | | |
| GW7 (1) | | |
| GW8 (1) | | |
| GW9 (1) | | |
| GW10 (1) | | |
| GW11 (1) | | |
| GW12 (1) | | |
| GW13 (1) | | |
| South Branch | | |
| Central Branch | Yes | |
| North Branch | Yes | |
| Compressor Meter | | Yes |
| CV1 and CV2 | | |

(1) wells with pneumatic leachate pumps installed. J:\5905600\Tables\System Averages 2007-2008.xls [Problematic System Components]

**Table 6**
**Leachate Tank Laboratory Analytical Results**
**Refuse Hideaway Landfill**
**Town of Middleton, Wisconsin**

| | PARAMETER | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | Cadmium (ug/L) | Total Chromium (ug/L) | Hexavalent Chromium (ug/L) | Copper (ug/L) | Lead (ug/L) | Mercury (ug/L) | Nickel (ug/L) | Selenium (ug/L) | Silver (ug/L) | Zinc (ug/L) | Cyanide (ug/L) |
| **Permitted Levels** | **250** | **10000** | **500** | **1500** | **5000** | **20** | **2000** | **300** | **3000** | **8000** | **100** |
| 9/30/2003 | <0.88 | 54 | | 8 | <2.2 | <0.030 | 150 | <8.0 | <1.8 | 54 | |
| 10/9/2003 | | | <260,000 | | | | | | | | 5.8 |
| 2/23/2004 | <0.53 | 30 | <270 | 24 | <1.3 | <0.030 | 93 | <4.8 | 6.5 | 40 | 16 |
| 8/5/2004 | <0.17 | 21 | <27 | 4.1 | 1.9 | <0.028 | 54 | 6.5 | 0.21 | 19 | 15 |
| 11/4/2004 | <1.7 | 33 | <2.7 | | 2.8 | <0.30 | | 13 | <0.49 | | 5.4 |
| 12/21/2004 | <1.7 | 52 | <2.7 | 8.6 | 5.4 | <0.028 | 180 | 21 | <0.49 | 36 | 9.1 |
| 3/31/2005 | 0.68 | 15 | <2.7 | 6.9* | 12 | <0.028 | | | | | 5.5* |
| 6/30/2005 | <1.00 | 12.8 | <40 | 6.20 | 1.70 | <0.07 | 40.5 | 16.7 | <1.00 | 458 | 7 |
| 9/21/2005 | <1.00 | 17.8 | <40 | 13.5 | 8.30 | <0.07 | 46.5 | 20.1 | 4.20 | 95.1 | <5 |
| 11/16/2005 | <1.00 | 14.2 | <40 | 3.04 | <1.50 | <0.07 | 44.6 | 31.6 | 5.20 | <10.0 | 10* |
| 2/9/2006 | <1.00 | 16.3 | <40 | <3.00 | <1.50 | <0.07 | 59.3 | 28.8 | <1.00 | 17.9 | 17 |
| 5/18/2006 | <1.00 | 24.4* | <40 | 3.40* | <1.50 | <0.07 | 38.3 | 21.1 | 1.32* | 8.0* | 9* |
| 8/28/2006 | <1.00 | 19.2* | <40 | 5.10* | 2.96* | <0.07 | 32.7 | 28.0 | <1.00 | 36.6 | 6* |
| 11/8/2006 | <1.00 | 11.6* | <20 | <3.00 | <1.50 | <0.07 | 55.2 | 28.0 | 5.81* | 10.9* | 15* |
| 2/21/2007 | <1.00 | 19.1* | <40 | 20.8 | 1.59* | <0.07 | 50.4 | 51.8 | 6.30* | <10 | 12* |
| 6/6/2007 | <1.00 | 10.6* | <40 | <3.00 | 2.92* | <0.07 | 41.3 | 10.2 | 6.77* | 17.2* | 7* |

**Table 6**
**Leachate Tank Laboratory Analytical Results**
**Refuse Hideaway Landfill**
**Town of Middleton, Wisconsin**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/4/2007 | <1.00 | <8.00 | <40 | 3.07* | 2.53* | <0.07 | 49.9 | 4.96* | 7.42* | 19.3* | <5 |
| 1/16/2008 | <1.00 | 17.7* | <40 | 8.80* | 4.83* | <0.07 | 62.2 | 4.73* | 7.30* | 42.7 | 11* |
| 3/31/2008 | <1.00 | 13.4* | <40 | <3.00 | <1.50 | <0.07 | 38.1 | <3.00 | <1.00 | <10.0 | 6* |
| 7/1/2008 | <1.00 | 30.6 | <40 | <3.00 | <1.50 | <0.07 | 64.8 | <3.00 | 1.13* | 10.1* | 19 |

Notes

Results in **bold** indicate levels above permit limitations.
Blank cell indicates parameter not analyzed.
ug/l = micrograms per liter
* = Analyte detected between limit of detection and limit of quantitation.