ANNUAL REPORT

1994

Refuse Hideaway Landfill
Town of Middleton
Dane County, Wisconsin

Prepared For:

Wisconsin Department of Natural Resources
101 South Webster Street
Madison, Wisconsin

Prepared by:

Terra Engineering and Construction Corp.
2201 Vondron Road
Madison, Wisconsin

TERRA
▲ ENGINEERING & CONSTRUCTION CORPORATION ▲
ENVIRONMENTAL REMEDIATION
MUNICIPAL & UTILITY CONSTRUCTION
SPECIALTY EARTHWORK

March 7, 1995

Wisconsin Department of
Natural Resources
Environmental Response and
Repair Section
Bureau of Solid and Hazardous
Waste Management
101 South Webster Street,
GEF II, SE/3
Madison, Wisconsin 53707

Attn: Ms. Theresa Evanson

Re: Operation and Maintenance
Summary - Annual Report 1994
Landfill Gas and Leachate
Extraction System
Refuse Hideaway Landfill -
Middleton, Wisconsin
Terra Job # 468

Dear Ms. Evanson:

This report summarizes operation and maintenance (O&M) activities performed by Terra Engineering & Construction Corporation (Terra), during 1994 at the Refuse Hideaway Landfill.

Included in this report are five tables which summarize gas extraction well monitoring, gas probe monitoring, leachate head monitoring, leachate/condensate loadout volumes and monthly alarm conditions encountered. Also included are the leachate analytical results for Quarterly sampling events. The Annual analytical results are pending. A brief discussion of each aspect of the gas and leachate extraction system including notable highlights are presented in the following sections. Previously submitted reports can be referenced for further details.

Gas Extraction Wells

Table 1 is an annual summary of the monthly data collected from the blower/flare and from each of the thirteen (13) gas wells.

The valves on Gas Wells GW-1 and GW-2 remained closed through out the year due to low methane content in the wells.

Vacuum loss alarms began occurring in October, 1994. Small leaks in the electrical junction boxes at gas wells GW-8 and GW-9 were discovered and repaired, however the vacuum loss alarms continued. On November 19, 1994 the Verbatim Autodialer was disarmed as the vacuum loss alarm could not be re-set. The blower and flare remain operational during a vacuum loss alarm.

Inspections of the above ground vacuum switches has been limited to observing if the vacuum sensors have been moved out of position. As of

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December 1994, all vacuum switches appear to be in alignment. Troubleshooting the cause of the vacuum loss alarm will continue. We will keep you updated on this situation. It is suspected that the freeze/thaw characteristic of our typical winter weather sets off the vacuum switches and causes on alarm condition.

Leachate/Condensate Extraction System

The leachate/condensate extraction system consists of an extraction pump with a control panel located at each of the following eight (8) gas extraction wells.

GW-4, GW-5, GW-7, GW-8, GW-9, GW-11, GW-12 and GW-13.

The control panels contain the electrical power switch as well as a pump starter (Franklin Starter), automatic on/off controls (Coyote Control or Motor Minder Control) and a pump hour meter.

The pump panels and leachate heads are monitored on a monthly basis. The leachate head summary is attached as Table 3. If a problem is suspected due to pump hour meter readings or high leachate heads, an inspection of the above ground controls is scheduled.

Through out the year, the pumps and panels have been inspected and in some cases, new control components have been installed. The following is a brief annual summary of the work performed on leachate extraction pumps and controls at each gas well.

GW-4 Date of Installation: October 1993.

Pump and panel were inspected in March of 1994. A broken "pigtail" wire was discovered. The broken wire resulted in a blown pump motor. A replacement motor was purchased and the pump with new pigtail wires was re-installed on March 30, 1994.

GW-5 Date of Installation: October 1993

Pump and panel were inspected in March of 1994. A broken "pigtail" wire was discovered. The broken wire resulted in a blown pump motor. A replacement motor was purchased and the pump with new pigtail wires was re-installed on March 31, 1994.

GW-7 Date of Installation: October 1993

Pump and panel were inspected in March of 1994. A broken "pigtail" wire was discovered. The broken wire resulted in a blown pump motor. A replacement motor was purchased and the pump with new pigtail wires was re-installed on March 30, 1994.

GW-8 Date of Installation: Original Equipment 1991

Pump and panel were inspected in March of 1994. A broken "pigtail" wire was discovered. The broken wire resulted in a blown pump motor. A replacement motor was purchased and the pump with new pigtail wires was re-installed on March 30, 1994.

Pump and panel were inspected in April of 1994. It was discovered that the discharge hose had disconnected from a stab fitting and had fallen deeper into the well. Upon retrieval, broken lead wires at the pump were also discovered. A bench test of the pump showed it to be in working order. Following re-installation of the pump, new discharge hose, lead wires and support cable were installed, the pump was restarted. It was then discovered that the pump experienced "run on". The controls were re-set to a more sensitive control level.

In October 1994, condensate had accumulated in the control panel due to a leaking electrical conduit. The moisture likely was a factor in shorting out the Franklin Starter. Following the installation of a New Franklin Starter and re-sealing the electrical conduit, the Coyote Control was discovered to be faulty and the discharge hose was discovered to have deteriorated. A Motor Minder pump control and new discharge hose were installed in December of 1994.

GW-9 Original Equipment 1991

The pump and controls have operated sporadically throughout the year.

In April 1994 the Coyote pump control was found to be faulty and was replaced with an Integra Motor Minder control unit. The lack of leachate head in the well prevented the restarting of the pump.

In October 1994, following an inspection of the control panel, the pump was removed, bench tested and found to be faulty. A new pump was purchased and installed in November 1994. Following the installation of the new pump, the Integra Motor Minder pump control was found to be faulty. The pump control was replaced under warranty.

In December 1994, an electrical short was discovered in the junction box at GW-9. Repairs required a new electrical junction box and a new Franklin Starter. A torque arrestor was also installed to prevent the tangling of the lead wires, support cable and discharge hose. Further trouble shooting is required, as upon starting the pump, no leachate could be heard in the discharge hose.

GW-11 Date of Installation: Original Equipment 1991

In November 1994 the pump hour meter indicated an elapsed pump time for the month of November to be zero (0.0) hours. An inspection of the pump controls was scheduled after successive readings of zero pump hours were observed. The results of the control inspection are pending.

GW-12 Date Installation October 1993

In March 1994, the pump controls were inspected. The inspection was performed as a result of zero (0.0) pump hour readings. The inspection indicated that the pump has " shorted-out". The pump was removed and broken wires were discovered at the "pig-tail". A replacement motor was purchased and the pump with new pig-tail wires was installed on March 30, 1994.

GW-13 Date of Installation October 1993

No maintenance on the pump or controls at gas well GW-13 was required during 1994.

Blower/Flare System Alarms

The system was down for a total for approximately 1063.25 hours. The majority of down time hours (504 hours) was due to a broken thermocouple which required replacement. The new thermocouple was installed on January 21, 1994. The original thermocouple was rebuilt and as a result of the rebuilding, the thermocouple is approximately 9 inches shorter than the original length.

Flame failures accounted for approximately 321.5 hours of down time. It was thought that the thermocouple was beginning to fail. The rebuilt thermocouple was installed on October 13, 1994. The shorter thermocouple did not extend past the support tube in the flare and therefore the reaction time to temperature fluctuations was slowed, leading to flame failures. On October 31, 1994 the "original" rebuilt thermocouple was replaced with the "new" thermocouple as it was found to be in relatively good condition.

The interior of the flare was inspected in June 1994. the burner spuds and refractory insulations appeared to be in good condition. The belts on the New York Blower were inspected and replaced in June 1994.

Table 5 contains the shut down logs for the year 1994. A summary of shut down causes and the hours of down time is as follows:

Power Failure	Approximately	132	hours
General Alarm	Approximately	67.5	hours
No Alarm	Approximately	34	hours
High Temperature	Approximately	3	hours
Vacuum Loss	Approximately	1.25	hours

Gas Probes

Monthly gas probe readings indicated that the cyclical (May to October) pattern of methane "hits" continued at gas probes GP-11s and GP-11d. All other probes showed 0.0% Methane through-out the year with exception of probe G-6 which showed 0.1% methane in June. Gas probe G-6 is located North-East of the fill area. Refer to the Gas Probe monitoring summary which is attached as Table 2.

Analytical Results

Quarterly Leachate Analytical samples were obtained on the following dates:

March 29, 1994
July 26, 1994
October 10, 1994
January 18, 1995

The results of the above listed sampling events are attached as Appendix 1. Copies of each Quarterly Analytical result were forwarded to Madison Metropolitan Sewerage District (MMSD). The annual VOC sampling event is pending. A request for the renewal of the discharge permit NT05A has been forwarded to MMSD and the renewal is pending.

General Observations

The landfill cap appears to be in good condition with the exception of two (2) localized areas of stressed vegetation located south-west of gas well GW-5. (Refer to November 1994 Monthly Summary). Gas readings from holes punched into the area of stressed vegetation indicated 4.4% to 5.4% Methane by volume. Further opening of the vacuum valves for the lateral wells at GW-5 resulted in increased percent oxygen observed from the Southern branch, and the valves were backed off.

The leachate collection tank alarm system was inspected in April 1994. A power supply circuit board was found to be "shorted-out" and was replaced in May 1994.

The alarm panel was re-inspected in June 1994 due to erroneous tank leak alarms. In August 1994, the interstitial probe lead wires were re-sealed. The electrical power to the panel re-stored and the alarms were re-set.

The annual leachate/condensate conveyance line clean out occurred on October 29, 1994. The clean out was performed by Visu-Sewer of Menomonee Falls, Wisconsin.

The leachate/condensate load out summary (Table 4) contains a report provided by Al's Modern Sewer Service which summarized the volume hauled off-site based on load tickets. The second Table in the load out summary are volumes based upon stick measurements at the collection tank.

If you have any questions or comments regarding this annual summary report, please do not hesitate to contact us.

Sincerely,
TERRA ENGINEERING & CONSTRUCTION CORP.

Kirk Solberg

Kirk Solberg,
Environmental Geologist

TABLE 1

GAS EXTRACTION

MONITORING SUMMARY

REFUSE HIDEAWAY LANDFILL
GROUND FLARE INLET SAMPLE PORT MONITORING

DATE	PRESSURE (in. WC)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	FLOW (cfm)	FLOW (scfm)	METHANE FLOW (cfm)(1)	GAS TEMP. (F)
01/27/94	+6.0	46.8	0.5	31.6	555	576	259.7	56.0
03/01/94	+5.0	43.5	0.8	37.9	555	575	241.4	64.5
03/29/94	+5.5	44.6	0.8	37.1	499	510	222.5	68.0
05/05/94	+5.5	NA	NA	NA	499	503	NA	75.0
05/20/94	+7.0	56.8	0.0	37.5	536	534	304.4	81.3
07/06/94	+5.5	38.7	1.2	46.6	481	463	186.1	97.5
08/05/94	+5.5	36.6	1.5	42.5	388	382	142.0	92.7
09/02/94	+5.0	36.7	2.0	38.4	518	NA	190.1	NA
09/30/94	+3.0	42.2	1.0	34.2	555	539	234.2	91.0
10/28/94	+3.5	46.6	1.5	40.5	407	405	189.7	80.0
11/29/94	+2.5	49.1	1.4	40.1	351	353	172.3	61.8
12/28/94	+2.5	49.3	1.1	37.0	277	276	136.6	78.9

(1) Calculated from (% Methane) x (Flow (cfm))

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-1

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-18.0	-1.0	33.8	6.7	14.3	8.0	NA	<100	<4.5	<0.3
03/29/94	-17.0	0.0	40.6	15.1	17.6	4.3	NA	0	0	0
05/02/94	-17.0	-2.0	60.4	11.4	0.0	23.3	NA	<100	<4.5	<0.5
05/25/94	-16.0	0.0	53.0	13.3	15.1	8.8	NA	<100	<4.5	<0.5
07/06/94	-15.0	0.0	83.1	20.4	0.5	36.4	NA	<100	<4.5	<0.9
08/05/94	-14.0	0.0	68.4	0.3	21.3	0.0	NA	<100	<4.5	<0.01
09/02/94	-14.0	0.0	NA	0.3	22.0	0.0	NA	0	0	0
09/30/94	-16.0	0.0	76.6	0.0	22.1	NA	NA	0	0	0
10/28/94	-15.0	0.0	54.0	0.0	22.1	0.0	77.9	0	0	0
11/29/94	-20.0	0.0	33.0	10.5	16.5	12.4	61.5	0	0	0
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-2

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	<0.1
03/01/94	-20.0	-1.0	32.0	2.3	18.5	2.6	NA	<100	<4.5	0
03/29/94	-17.0	-1.0	42.0	4.2	10.8	12.1	NA	0	0	<0.5
05/02/94	-17.0	-2.0	60.2	13.0	0.0	24.1	NA	<100	<4.5	<0.6
05/25/94	-15.0	-1.0	52.8	14.5	0.9	24.6	NA	<100	<4.5	0
07/06/94	-15.0	0.0	80.7	0.2	22.1	0.0	NA	<100	<4.5	0
08/05/94	-14.0	0.0	69.3	0.2	21.1	0.0	NA	<100	<4.5	0
09/02/94	-14.0	0.0	NA	0.2	21.9	0.0	NA	0	0	0
09/30/94	-16.0	0.0	76.6	20.2	0.4	27.9	NA	0	0	0
10/28/94	-15.0	0.0	54.0	20.2	0.4	27.9	51.5	0	0	0
11/29/94	-20.0	0.0	33.0	9.0	18.3	8.0	64.5	0	0	0
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-3

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-18.0	-6.0	62.5	44.9	0.2	40.0	NA	2500	112.5	50.5
03/29/94	-15.0	-6.0	61.8	47.8	0.0	41.3	NA	2100	94.5	45.2
05/02/94	-16.5	-8.0	62.4	33.6	0.0	31.2	NA	2300	103.5	34.8
05/25/94	-15.0	-5.0	63.6	40.2	0.7	34.5	NA	2100	94.5	38.0
07/06/94	-14.0	-5.0	77.0	40.6	0.5	49.2	NA	2100	94.5	38.4
08/05/94	-14.0	-5.0	69.2	39.6	0.7	45.4	NA	1950	87.8	34.8
09/02/94	-13.0	-5.0	NA	41.2	0.8	43.4	NA	1700	76.5	31.5
09/30/94	-12.5	-3.0	76.6	41.4	0.3	35.1	NA	1500	67.5	27.9
10/28/94	-15.0	-1.0	64.2	53.6	0.8	41.0	3.2	1200	54.2	29.0
11/29/94	-19.0	-3.0	60.9	55.1	1.3	43.4	0.0	1350	60.7	33.5
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-4

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-19.0	-12.0	64.7	41.4	0.5	38	NA	1000	45.0	18.6
03/29/94	-15.0	-15.0	55.7	40.2	0.9	37.5	NA	900	40.5	16.3
05/02/94	-16.5	-16.0	70.7	31.3	0.0	28.8	NA	1050	47.3	14.8
05/25/94	-14.0	-13.0	69.8	34.8	1.6	32.0	NA	1000	45	15.7
07/06/94	-14.0	-13.0	83.0	36.7	1.4	45.8	NA	850	38.3	14.0
08/05/94	-14.0	-12.0	76.5	33.5	1.9	41.1	NA	900	40.5	14.4
09/02/94	-11.0	-10.0	na	33.7	2.2	35.7	NA	750	33.8	12.0
09/30/94	-12.0	-5.0	76.5	46.9	0.8	36.6	NA	450	20.3	9.5
10/28/94	-15.0	-5.0	67.2	46.1	2.2	42.4	10.5	700	31.5	14.5
11/29/94	-19.5	-4.0	40.0	54.4	1.3	44.7	0.0	200	9.0	4.9
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-5

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-19.0	-18.0	67.6	54.4	3.2	41.4	NA	850	38.3	20.8
03/29/94	-15.0	-15.0	59.3	57.1	2.8	43.3	NA	900	40.5	23.1
05/02/94	-17.0	-15.0	83.1	45.4	4.1	33.2	NA	700	31.5	14.3
05/25/94	-15.0	-14.0	86.0	54.1	0.6	44.2	NA	500	22.5	12.2
07/06/94	-14.0	-12.0	86.0	45.8	3.0	49.5	NA	600	27.0	12.4
08/05/94	-14.0	-12.0	78.0	36.4	4.3	38.1	NA	200	9.0	3.3
09/02/94	-11.0	-10.0	NA	47.7	2.7	44.3	NA	1000	44.3	21.1
09/30/94	-10.0	-9.0	74.6	48.2	2.3	36.6	NA	200	9.0	4.3
10/28/94	-14.0	-13.0	69.9	47.7	3.7	44.1	5.6	400	18.0	8.5
11/29/94	-19.0	-13.0	78.6	45.1	5.0	39.0	11.5	600	27.0	12.2
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-6

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-21.0	-3.0	51.2	21.9	0.0	31.9	NA	700	31.5	6.9
03/29/94	-20.0	-2.5	73.4	25.9	0.0	33.2	NA	900	40.5	10.5
05/02/94	-24.0	-5.0	79.5	19.4	0.0	23.7	NA	450	20.3	3.9
05/25/94	-21.0	-3.0	81.5	24.0	0.0	28.0	NA	425	19.1	4.6
07/06/94	-18.0	-2.0	84.0	29.8	0.5	40.4	NA	600	27.0	8.0
08/05/94	-19.0	-2.5	80.2	19.2	9.1	25.1	NA	600	27.0	5.2
09/02/94	-18.0	-1.0	NA	29.6	0.0	37.0	NA	500	22.5	6.7
09/30/94	-22.5	-2.0	80.0	32.6	1.5	31.0	NA	200	9.0	2.9
10/28/94	-25.0	0.0	53.2	58.7	0.0	41.3	0.0	<100	<4.5	2.6
11/29/94	-28.0	0.0	35.4	1.2	22.0	1.4	74.7	0	0	0
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

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REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-7

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-22.0	-20.0	82.5	48.3	0.0	38.9	NA	1450	65.3	31.5
03/29/94	-20.0	-20.0	68.0	51.4	0.0	39.0	NA	1100	49.5	25.4
05/02/94	-23.5	-23.0	81.0	47.4	0.0	34.1	NA	1150	51.8	24.5
05/25/94	-21.0	-21.0	84.5	47.0	0.0	37.0	NA	1150	51.8	24.3
07/06/94	-18.0	-17.0	86.5	48.1	0.4	48.2	NA	1100	49.5	23.8
08/05/94	-18.5	-18.0	86.3	46.9	0.5	44.5	NA	1000	45.0	21.1
09/02/94	-18.0	-18.0	NA	47.8	0.0	44.5	NA	1000	45.0	21.5
09/30/94	-22.5	-22.5	82.5	50.2	0.1	37.2	NA	600	27.0	13.5
10/28/94	-25.0	-23.0	83.3	53.9	0.0	42.4	3.5	1200	54.0	29.1
11/29/94	-27.0	-27.0	80.9	53.2	0.4	44.9	0.9	1200	54.0	28.7
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-8

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-22.0	-21.0	81.1	62.8	1.3	46.9	NA	1050	47.3	29.7
03/29/94	-20.0	-19.0	75.9	65.8	0.5	48.7	NA	1000	45.0	29.6
05/02/94	-15.0	+2.0	88.2	59.2	0.0	41.6	NA	200	9.0	5.3
05/25/94	-21.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
07/06/94	-18.0	-15.0	88.1	53.1	1.0	45.8	NA	1400	63.0	33.5
08/05/94	-18.5	-17.0	96.9	53.1	0.9	46.0	NA	950	42.8	22.7
09/02/94	-18.0	-17.0	NA	53.4	0.9	45.7	NA	800	36.0	19.2
09/30/94	-22.0	-19.0	98.6	41.7	2.8	28.6	NA	<100	<4.5	1.8
10/28/94	-25.0	-20.0	97.2	55.0	0.9	44.1	0.0	800	36.0	19.8
11/29/94	-27.5	-25.0	74.5	56.7	1.2	41.8	0.0	800	36.0	20.4
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-9

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%O2)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-20.0	-20.0	76.1	68.5	0.1	49.4	NA	600	27.0	18.5
03/29/94	-20.0	-20.0	78.9	68.4	0.1	50.0	NA	700	31.5	21.5
05/02/94	-20.0	-20.0	88.7	57.9	0.0	40.8	NA	300	13.5	7.8
05/25/94	-21.0	-21.0	89.0	55.5	0.6	42.8	NA	600	27.0	14.9
07/06/94	-17.0	-17.0	115.5	54.5	0.6	45.5	NA	1500	67.5	36.8
08/05/94	-19.0	-19.0	90.0	47.8	0.5	48.8	NA	200	9.0	4.3
09/02/94	-18.0	-17.0	NA	55.1	0.5	44.5	NA	300	13.5	7.4
09/30/94	-26.0	-26.0	91.5	54.5	0.4	38.6	NA	NA	NA	NA
10/28/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/29/94	-26.5	-26.0	81.5	58.9	0.5	40.2	0.0	600	27.0	15.9
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-10

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%O2)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-18.0	-10.0	107.7	33.8	0.3	34.5	NA	1750	78.8	26.6
03/29/94	-16.0	-10.0	109.4	35.3	0.0	35.8	NA	1600	72.0	25.4
05/02/94	-18.0	-12.0	115.5	33.1	0.0	30.3	NA	1350	60.8	20.1
05/25/94	-17.0	-12.0	117.3	33.9	0.3	32.8	NA	1300	58.5	19.8
07/06/94	-16.0	-10.0	95.5	34.1	0.6	44.9	NA	400	18.0	6.1
08/05/94	-17.0	-11.0	117.0	32.7	0.6	43.2	NA	1190	53.5	17.5
09/02/94	-15.0	-10.0	NA	34.1	0.3	39.3	NA	1500	67.5	23.0
09/30/94	-19.0	-15.0	119.8	30.9	0.2	30.8	NA	900	40.5	12.5
10/28/94	-22.0	-1.0	109.0	56.6	0.0	43.5	0.0	400	18	10.1
11/29/94	-27.0	-3.0	82.3	48.9	0.3	45.0	5.2	350	15.8	7.7
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-11

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-15.0	-12.0	84.9	69.2	0.0	45.7	NA	450	20.3	14.0
03/29/94	-17.0	-16.5	79.3	70.5	0.2	46.7	NA	500	22.5	15.9
05/02/94	-17.5	-17.0	88.0	59.5	0.0	39.5	NA	400	18.0	10.7
05/25/94	-17.0	-17.0	86.9	56.2	0.5	40.8	NA	200	9.0	5.0
07/06/94	-15.0	-15.0	95.5	56.1	0.6	43.9	NA	700	31.5	17.7
08/05/94	-16.0	-16.0	90.0	51.0	0.6	46.4	NA	450	20.2	10.3
09/02/94	-15.0	-15.0	NA	58.4	0.5	41.5	NA	450	20.2	11.8
09/30/94	-25.0	-25.0	93.5	57.5	0.4	38.2	NA	<100	<4.5	2.5
10/28/94	-22.0	-21.0	76.4	60.5	0.2	39.5	0.0	400	18.0	11.0
11/29/94	-26.0	-26.0	81.6	62.5	0.4	37.5	0.0	800	36.0	22.5
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-12

DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%02)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-16.0	-14.0	106.3	41.4	0.0	37.7	NA	2400	108.0	44.7
03/29/94	-15.0	-14.0	100.2	41.6	0.0	36.9	NA	1800	81.0	33.7
05/02/94	-17.0	-15.0	111.3	37.0	0.0	31.1	NA	2100	94.5	35.0
05/25/94	-16.0	-15.0	113.7	35.4	0.1	32.6	NA	2000	90.0	31.9
07/06/94	-15.0	-13.0	114.8	35.6	0.5	45.1	NA	2100	94.5	33.6
08/05/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/02/94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/30/94	-20.0	-17.0	117.6	35.2	0.4	32.6	NA	1150	51.8	18.2
10/28/94	-22.0	-11.0	115.3	41.4	1.3	40.0	18.3	2000	90.0	37.0
11/29/94	-27.0	-4.0	108.3	41.7	0.5	38.7	19.6	500	22.5	9.4
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

REFUSE HIDEAWAY LANDFILL GAS EXTRACTION SYSTEM-WELL HEAD MONITORING

WELL NUMBER: GW-13

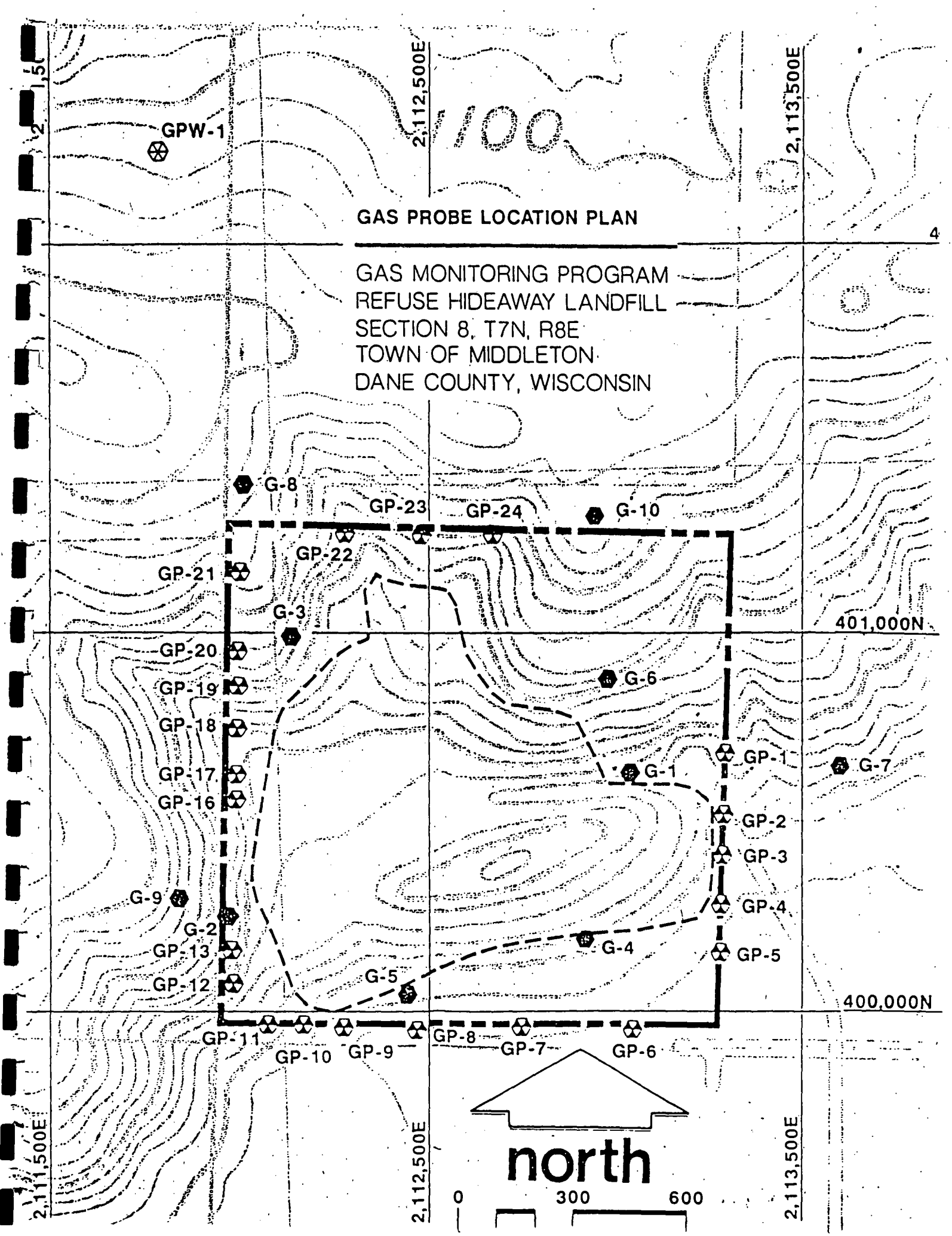
DATE	HEADER PRESSURE (IN W.C.)	WELL PRESSURE (IN W.C.)	GAS TEMP. (F)	METHANE (%CH4)	OXYGEN (%O2)	CARBON DIOXIDE (%CO2)	BALANCE (%)	VELOCITY (FT/MIN)	CALCULATED FLOW (CFM)	METHANE FLOW (CFM)
01/27/94	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
03/01/94	-16.0	-14.0	76.2	58.0	0.0	45.7	NA	2000	90.0	52.2
03/29/94	-16.0	-15.0	82.5	60.3	0.0	45.7	NA	1000	45.0	27.1
05/02/94	-17.0	-16.5	80.5	50.4	0.0	37.6	NA	900	40.5	20.4
05/25/94	-16.0	-16.0	83.6	49.9	0.3	40.0	NA	1000	45.0	22.4
07/06/94	-15.0	-15.0	87.0	49.8	0.5	49.8	NA	900	40.5	20.2
08/05/94	-15.0	-15.0	85.0	48.6	0.6	50.4	NA	1000	45.0	21.9
09/02/94	-14.0	-14.0	NA	50.3	0.2	46.6	NA	100	4.5	2.3
09/30/94	-20.0	-20.0	85.8	49.4	0.2	38.2	NA	850	38.3	18.9
10/28/94	-22.0	-21.0	84.3	50.0	0.9	43.5	5.5	1200	54.0	27.0
11/29/94	-26.0	-26.0	64.9	49.0	0.5	45.7	3.9	700	31.5	15.4
12/28/94	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

(1) Blower/Flare system shut down due to thermocouple. No gas well readings available.
(2) December Monthly Monitoring Omitted.
NA: Not Available

REFUSE\kaj04.tab

TABLE 2

GAS PROBE MONITORING SUMMARY


GAS PROBE LOCATION PLAN
GAS MONITORING PROGRAM
REFUSE HIDEAWAY LANDFILL
SECTION 8, T7N, R8E
TOWN OF MIDDLETON
DANE COUNTY, WISCONSIN
GPW-1
G-8
GP-23
GP-24
G-10
GP-22
GP-21
G-3
GP-20
GP-19
GP-18
GP-17
GP-16
G-9
G-2
GP-13
GP-12
G-6
G-1
GP-1
G-7
GP-2
GP-3
GP-4
GP-5
G-4
G-5
GP-11
GP-10
GP-9
GP-8
GP-7
GP-6
2,111,500E
2,112,500E
2,113,500E
401,000N
400,000N
north
0
300
600

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-1S

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	20.9
03/01/94	0.0	0.0	0	20.5
03/29/94	0.0	0.0	0	20.8
05/10/94	0.0	0.0	0	20.2
05/25/94	0.0	0.0	0	19.8
06/06/94	0.0	0.0	0	18.4
08/05/94	0.0	0.0	0	22.6
09/02/94	0.0	0.0	0	22.5
09/30/94	0.0	0.0	0	21.0
10/31/94	0.0	0.0	0	23.3
11/29/94	0.0	0.0	0	22.8
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-1D

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	20.8
03/01/94	0.0	0.0	0	20.7
03/29/94	0.0	0.0	0	20.9
05/10/94	0.0	0.0	0	20.3
05/25/94	0.0	0.0	0	19.9
07/06/94	0.0	0.0	0	20.4
08/05/94	0.0	0.0	0	22.7
09/02/94	0.0	0.0	0	22.5
09/30/94	0.0	0.0	0	21.1
10/31/94	0.0	0.0	0	23.4
11/29/94	0.0	0.0	0	22.8
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-6

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	20.2
03/01/94	0.0	0.0	0	20.5
03/29/94	0.0	0.0	0	20.6
05/10/94	0.0	0.0	0	20.4
05/25/94	0.0	0.0	0	19.0
06/06/94	0.0	0.1	2	18.8
08/05/94	NA	NA	NA	NA
09/02/94	0.0	0.0	0	22.4
09/30/94	0.0	0.0	0	22.3
10/31/94	0.0	0.0	0	23.3
11/29/94	0.0	0.0	0	22.6
(2)				

Not Available

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-8

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	19.3
03/01/94	0.0	0.0	0	20.2
03/29/94	0.0	0.0	0	20.5
05/10/94	0.0	0.0	0	20.4
05/25/94	0.0	0.0	0	20.3
06/06/94	0.0	0.0	0	22.4
08/05/94	0.0	0.0	0	22.4
09/02/94	0.0	0.0	0	22.2
09/30/94	0.0	0.0	0	21.3
10/31/94	0.0	0.0	0	23.3
11/29/94	0.0	0.0	0	22.8
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-9

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	18.2
03/01/94	0.0	0.0	0	19.9
03/29/94	0.0	0.0	0	20.6
05/10/94	0.0	0.0	0	20.3
05/25/94	0.0	0.0	0	20.3
07/06/94	0.0	0.0	0	22.7
08/05/94	0.0	0.0	0	22.5
09/02/94	0.0	0.0	0	22.2
09/30/94	0.0	0.0	0	21.0
10/31/94	0.0	0.0	0	23.1
11/29/94	0.0	0.0	0	22.7
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE G-10

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	-1.0	0.0	0	19.7
03/01/94	0.0	0.0	0	20.5
03/29/94	-0.5	0.0	0	20.8
05/10/94	-1.0	0.0	0	20.1
05/25/94	0.0	0.0	0	20.4
07/06/94	0.0	0.0	0	22.7
08/05/94	-1.0	0.0	0	22.6
09/02/94	0.0	0.0	0	22.4
09/30/94	0.0	0.0	0	21.2
10/31/94	0.0	0.0	0	23.3
11/29/94	-1.0	0.0	0	22.7
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE GP-11S

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	17.5
03/01/94	0.0	0.0	0	20.9
03/29/94	0.0	0.0	0	20.6
05/10/94	0.0	0.0	0	21.4
05/25/94	0.0	16.9	>100	0.0
07/06/94	0.0	45.9	>100	0.5
08/05/94	0.0	0.0	0	18.6
09/02/94	0.0	17.7	>100	2.6
09/30/94	0.0	2.2	44	13.6
10/31/94	0.0	0.0	0	21.1
11/29/94	0.0	0.0	0	22.5
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE GP-11D

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	17.5
03/01/94	0.0	0.0	0	20.9
03/29/94	0.0	0.0	0	20.5
05/10/94	0.0	0.0	0	21.3
05/25/94	0.0	32.0	>100	0.0
07/06/94	0.0	52.7	>100	0.3
08/05/94	0.0	35.7	>100	3.6
09/02/94	0.0	35.6	>100	4.1
09/30/94	0.0	22.7	>100	6.9
10/31/94	0.0	6.8	>100	14.3
11/29/94	0.0	0.0	0	22.5
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE GPW-1S

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	19.5
03/01/94	0.0	0.0	0	19.8
03/29/94	0.0	0.0	0	20.3
05/10/94	0.0	0.0	0	20.4
05/25/94	0.0	0.0	0	19.4
07/06/94	0.0	0.0	0	22.0
08/05/94	0.0	0.0	0	21.8
09/02/94	0.0	0.0	0	23.3
09/30/94	0.0	0.0	0	19.7
10/31/94	0.0	0.0	0	20.6
11/29/94	0.0	0.0	0	22.3
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE GPW-1M

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	18.6
03/01/94	0.0	0.0	0	19.5
03/29/94	-1.0	0.0	0	19.2
05/10/94	-1.0	0.0	0	20.5
05/25/94	0.0	0.0	0	17.3
06/06/94	0.0	0.0	0	22.6
08/05/94	-0.5	0.0	0	22.5
09/02/94	0.0	0.0	0	24.3
09/30/94	0.0	0.0	0	20.6
10/31/94	+0.25	0.0	0	21.3
11/29/94	-0.5	0.0	0	22.5
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

GAS PROBE GPW-1D

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	0.0	0.0	0	19.0
03/01/94	0.0	0.0	0	19.9
03/29/94	0.0	0.0	0	20.2
05/10/94	-1.0	0.0	0	20.5
05/25/94	0.0	0.0	0	18.0
07/06/94	0.0	0.0	0	22.7
08/05/94	-0.5	0.0	0	22.6
09/02/94	0.0	0.0	0	21.2
09/30/94	0.0	0.0	0	18.3
10/31/94	+0.5	0.0	0	20.5
11/29/94	-0.5	0.0	0	22.5
(2)				

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

SPEEDWAY SCALE HOUSE

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	NA	0.0	0	21.1
03/01/94	NA	0.0	0	20.7
03/29/94	NA	0.0	0	20.6
05/10/94	NA	0.0	0	20.4
05/25/94	NA	0.0	0	19.9
07/06/94	NA	0.0	0	22.8
08/05/94	NA	0.0	0	22.6
09/02/94	NA	0.0	0	22.3
09/30/94	NA	0.0	0	21.4
10/31/94	NA	0.0	0	23.5
11/29/94	NA	0.0	0	22.9
(2)				

NA: Not Applicable

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING SUMMARY 1994

SPEEDWAY MECHANICS SHOP

DATE	PRESSURE (in. WC)	METHANE (%CH4)	METHANE (%LEL)[1]	OXYGEN (%02)
02/09/94	NA	0.0	0	21.0
03/01/94	NA	0.0	0	20.7
03/29/94	NA	0.0	0	20.6
05/10/94	NA	0.0	0	20.3
05/25/94	NA	0.0	0	19.9
06/06/94	NA	0.0	0	22.6
08/05/94	NA	0.0	0	22.7
09/02/94	NA	0.0	0	22.4
09/30/94	NA	0.0	0	21.3
10/31/94	NA	0.0	0	23.5
11/29/94	NA	0.0	0	22.9
(2)				

NA: Not Applicable

[1] Percent of lower explosive limit of Methane (100% LEL = 5% CH4 by volume)

[2] December Monthly Monitoring Omitted

REFUSE\gaspro94.tbl

TABLE 3

LEACHATE HEAD SUMMARY

REFUSE HIDEWAY LANDFILL
LEACHATE HEAD MONITORING
SUMMARY 1994

DATE	LEACHATE HEAD (FEET)												
	GW-1	GW-2	GW-3	GW-4 (1)	GW-5 (1)	GW-6	GW-7 (1)	GW-8 (1)	GW-9 (1)	GW1-10	GW-11 (1)	GW-12 (1)	GW-13 (1)
02/06/94	3.2	4.4	0.0	0.0	12.3	0.2	8.0	17.7	0.0	4.8	1.4	20.9	7.0
02/28/94	3.0	4.5	0.6	9.8	11.9	0.3	8.5	17.5	20.3	5.7	14.3	21.6	9.5
03/29/94	2.3	4.0	0.7	14.3	13.2	0.5	9.4	19.0	NR	5.8	2.0	21.5	6.5
05/02/94	3.0	4.3	0.4	6.0	9.0	0.4	0.0	NR	0.0	5.8	2.0	0.0	7.0
05/24/94	3.1	4.6	0.7	2.0	10.8	0.0	7.0	NA	0.0	5.3	2.2	0.0	0.0
07/06/94	2.7	4.4	0.2	8.1	12.8	NR	NR	NR	NR	1.6	1.9	6.1	6.9
08/05/94	0.1	2.4	0.3	6.1	11.7	NR	NR	NR	NR	2.5	3.5	NR	4.4
09/13/94	0.5	0.5	1.8	8.6	13.3	0.6	NR	NR	NA	6.6	10.7	NA	6.8
09/28/94	3.0	4.5	1.1	7.4	18.8	1.1	0.0	19.2	0.0	7.6	8.8	NA	6.1
10/28/94	3.1	4.4	0.8	6.4	13.1	0.3	7.6	15.7	23.0	5.1	16.3	8.6	5.6
11/29/94	2.8	4.4	1.0	8.4	15.3	0.5	NR	18.5	15.1	6.7	19.6	NR	6.2

(1) Wells with permanent pumps
(2) December 1994 Monthly Monitoring Omitted
N/A: Not Available
N/R: No Response

TABLE 4

LEACHATE / CONDENSATE

LOAD OUT SUMMARY

PUMPING REPORT

Property Owner: Terra Engineering - Refuse Hideaway Landfill

Owner Mailing Address: 2201 Vondron Rd

Madison WI ZIP 53704-6795

Holding Tank Location:
Street Address: Hwy 14

Township: Middleton Section

CSM/Subdiv: Lot #

Tax Parcel Number:

Pumper's Name: Al's Modern Sewer Service License # 5154

Disposal Site: Dane Springs - Madison Metro Sewerage

PUMPING INFORMATION

Give date of pumping and volume pumped.

JAN	5, 13	GAL	9000	JUL	1, 15	GAL	14219
FEB	11, 28	GAL	21617	AUG	2, 9, 11, 24, 31, 17	GAL	26,217
MAR		GAL		SEP	9, 7, 13, 14, 16, 21, 23, 28	GAL	39,072
APR	11, 15, 25, 29	GAL	27000	OCT	4, 5, 13, 20	GAL	18166
MAY	9, 10, 16, 17, 24	GAL	36000	NOV	9, 10, 15, 30	GAL	23038
JUN	1, 2, 3, 13, 16, 20, 29	GAL	32242	DEC	5, 6, 9, 28	GAL	13818

RECEIVED
JAN 31 1995
TERRA ENGINEERING

COMMENTS:

This form completed by: Lisa M Thompson

NOTE: REPORTS ARE DUE NO LATER THAN JULY 10 AND JANUARY 10

RETURN REPORTS TO: Dane County Environmental Health, 1206 Northport Drive, Rm. 107, Madison, WI., 53704-2088. If you have any questions call us at (608) 242-6515.

REFUSE HIDEAWAY LANDFILL
LEACHATE LOADOUT SUMMARY FOR 1994

DATE	GALLONS	MONTHLY TOTAL (Gals)
01/11/94	2,634	JANUARY 2,634
02/15/94	4,023	FEBRUARY 4,023
03/03/94	16,617	MARCH 16,617
04/07/94	4,367	
04/08/94	4,897	
04/11/94	4,822	
04/22/94	4,827	
04/22/94	4,760	
04/28/94	3,482	
04/29/94	4,272	
04/29/94	4,243	APRIL 35,652
05/06/94	5,099	
05/13/94	4,930	
05/13/94	4,901	
05/16/94	4,691	
05/19/94	4,693	
05/23/94	3,910	
05/27/94	4,910	MAY 33,134
06/01/94	4,019	
06/02/94	3,869	
06/11/94	2,199	
06/15/94	5,257	
06/17/94	4,524	
06/22/94	4,751	
06/23/94	2,878	
06/30/94	5,006	JUNE 32,503
07/15/94	9,213	JULY 9,213
08/02/94	2,444	
08/09/94	3,261	
08/12/94	3,141	
08/17/94	2,597	

REFUSE HIDEAWAY LANDFILL
LEACHATE LOADOUT SUMMARY FOR 1994

DATE	GALLONS	MONTHLY TOTAL (Gals)
08/24/94	3,200	
08/31/94	5,200	AUGUST 19,843
09/13/94	8,929	
09/14/94	3,571	
09/16/94	4,000	
09/22/94	4,500	
09/23/94	4,192	
09/28/94	4,435	SEPTEMBER 29,627
10/05/94	4,324	
10/13/94	4,579	
10/20/94	4,878	OCTOBER 13,781
11/10/94	10,165	
11/22/94	5,129	
11/30/94	5,124	NOVEMBER 20,418
12/05/94	3,801	
12/06/94	4,741	
12/09/94	4,000	
12/29/94	4,111	DECEMBER 16,653
TOTAL = 234,098		

TABLE 5

ALARM CONDITION

SUMMARY

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: January, 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
12/25/1993	Thermocouple failure, refer to December Monthly Report.	Repaired and replaced thermocouple - re-start flare on January 21, 1994. (approximatley 665.75 hrs
01/31/1994	General Alarm condition false high leachate alarm due to loose connection at the tank panel	Re-set alarm after securing the electrical connections at the tank panel. Flare operational

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: FEBRUARY 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
02/04/94 11:22 A.M.	GENERAL ALARM - ERRONEOUS HIGH LEACHATE ALARM	RE-SET LEACHATE ALARM 02/05/94 FLARE OPERATIONAL
02/05/94 10:00 A.M.	GENARAL ALARM ERRONEOUS HIGH LEACHATE ALARM	RE-SET LEACHATE ALARM 02/06/94 FLARE OPERATIONAL
02/20/94 10:42 A.M.	GENERAL ALARM VACUUM LOSS	RE-SET ALARM 02/21/94 FLARE OPERATIONAL
02/21/94	GENERAL ALARM ERRONEOUS HIGH LEACHATE ALARM	ALARM COULD NOT BE RE-SET, FLARE OPERATIONAL (15,371 GALLONS IN TANK)
02/28/94	GENERAL ALARM FLAME FAILURE DUE TO VACUUM LOSS WHILE MONITORING LEACHATE HEADS	RE-START FLARE (1.0 HRS.)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: MARCH 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
03/04/94 7:00 A.M.	GENERAL ALARM - DUE TO A POWER FAILURE AT SPEEDWAY SAND AND GRAVEL.	MG & E RESTORES POWER TO THE SITE. RESTART BLOWER AND FLARE ON 03/07/94. (74.5 HRS)
03/07/94 11:30 A.M.	GENERAL ALARM - DUE TO ERRONEOUS HIGH LEACHATE ALARM. TANK CONTAINED 1403 GALLONS.	BLOWER/FLARE OPERATIONAL. COULD NOT RE-SET ALARM. LED READ OUT ON TANK TELEMETRY BOARD IS BLANK.
03/08/94 9:00 P.M.	GENERAL ALARM - DUE TO VACUUM LOSS.	RE-SET VACUUM LOSS 03/09/94 FLARE OPERATIONAL
03/10/94 6:45 P.M.	GENERAL ALARM DUE TO VACUUM LOSS.	COULD NOT RE-SET VACUUM LOSS ALARM INITIALLY. FLARE OPERATIONAL RE-SET VACUUM LOSS ALARM 03/17/94
03/24/94 11:30 A.M.	GENERAL ALARM - CAUSE NOT DETERMINED	RE-START BLOWER/FLARE ON 03/25/94 (20 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: APRIL 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
04/10/94 11:50 A.M.	FLAME FAILURE, CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 04/10/94. (0.5 HRS)
04/11/94 1:50 A.M.	FLAME FAILURE, CAUSE UNDETERMINED.	RE-START BLOWER AND FLARE AFTER CLEANING OPTIC SENSOR. (11.0 HRS)
04/14/94 2:40 P.M.	HIGH TEMPERATURE ALARM, POSSIBLY DUE TO TEMPERATURE CONTROL DAMPERS STICKING PARTIALLY CLOSED.	RE-START BLOWER AND FLARE (3.0 HRS)
04/14/94 11:45 P.M.	GENERAL ALARM CONDITION, POSSIBLY DUE TO POWER LOSS DURING THUNDERSTORMS.	RE-START BLOWER AND FLARE ON 4/15/94. (7.5 HRS)
04/25/94 2:50 A.M.	FLAME FAILURE POSSIBLE DUE TO POWER LOSS DURING THUNDERSTORM.	RE-START BLOWER/FLARE ON 03/25/94 (5.5 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: MAY 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
05/12/94 5:00 A.M.	FLAME FAILURE, CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 05/12/94. (13.0 HRS)
05/16/94 5:00 A.M.	FLAME FAILURE, CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 05/12/94 (4.5 HRS)
05/19/94 5:00 P.M.	FLAME FAILURE, CAUSE NOT DETERMINED	RE-START BLOWER AND FLARE ON 05/20/94 (15.5 HRS)
05/27/94 8:15 P.M.	FLAME FAILURE, POSSIBLY DUE TO NORTH CONTROL DAMPERS BEING OUT OF SYNCH.	RE-START BLOWER AND FLARE ON 05/28/94. (18.0 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: JUNE 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
06/02/94 3:30 A.M.	FLAME FAILURE, CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/02/94. (5.5 HRS)
06/03/94 7:00 P.M.	FLAME FAILURE, CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/04/94. (15.75 HRS)
06/07/94 9:30 P.M.	GENERAL ALARM POSSIBLY DUE TO THUNDERSTORMS IN THE AREA.	RE-START BLOWER AND FLARE ON 06/08/94. (11.25 HRS)
06/10/94 9:30 A.M.	GENERAL ALARM CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/10/94. (9.0 HRS)
06/15/94 8:50 A.M.	FLAME FAILURE POSSIBLY DUE TO VACUUM LOSS WHILE PERFORMING WEEKLY MONITORING.	RE-START BLOWER AND FLARE ON 06/15/94. (0.25 HRS)
06/16/94 3:10 P.M.	FLAME FAILURE CAUSED NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/17/94. (17 HRS)
06/19/94 2:40 P.M.	FLAME FAILURE CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/19/94. (1.0 hrs)
06/21/94 9:00 P.M.	FLAME FAILURE CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/23/94. FOLLOWING INSPECTION OF BLOWER BELTS THERMOCOUPLE, BURNER SPUDS AND U.V. SENSOR. (36.5 HRS)
06/23/94 4:00 P.M.	GENERAL ALARM CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 06/24/94. (21 HRS)
07/04/94 1:00 A.M.	GENERAL ALARM POSSIBLE DUE TO HEAVY RAINS.	RE-START BLOWER AND FLARE ON 07/04/94. (16.25 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: JULY 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
07/07/94 2:37 A.M.	GENERAL ALARM LIKELY DUE TO STORMS IN THE AREA	RE-START BLOWER AND FLARE ON 07/08/94. (17.0 HRS)
07/09/94 4:00 P.M.	GENERAL ALARM, CAUSE NOT DETERMINED	RE-START BLOWER AND FLARE ON 07/10/94. (17.5 HRS)
07/28/94 11:00 P.M.	FLAME FAILURE CAUSE NOT DETERMINED	RE-START BLOWER AND FLARE ON 07/29/94. (9.25 HRS)
08/02/94 1:58 P.M.	FLAME FAILURE CAUSE NOT DETERMINED.	RE-START BLOWER AND FLARE ON 08/03/94. CLEANED UV SENSOR (17.5 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: AUGUST 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
08/12/94 ~2:00 A.M.	FLARE DOWN UPON ARRIVAL TO SITE. NO ALARM CONDITION OBSERVED	RE-START BLOWER AND FLARE ON 08/12/94. (~12.0 HRS)
08/28/94 5:06 P.M.	GENERAL ALARM DUE TO A LEACHATE TANK ALARM. FLARE OPERATIONAL	RE-SET LEACHATE TANK ALARM. (0.0 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: SEPTEMBER 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
09/11/94 11:00 P.M.	GENERAL ALARM CONDITION DUE TO LEACHATE TANK ALARM	ATTEMPT TO RESET ALARM ON 9/12/94 CALL AL'S TO PUMP OUT COLLECTION TANK. FLARE OPERATIONAL (0.0 HRS)
09/20/94 7:00 P.M.	GENERAL ALARM DUE TO A FLAME FAILURE	RE-START BLOWER AND FLARE 9/21/94 (14.0 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: OCTOBER 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
10/01/94 3:45 pm	GENERAL ALARM CONDITION DUE TO FLAME FAILURE CAUSE NOT DETERMINED	RE-START BLOWER AND FLARE ON 10/02/94 (17.75 HRS)
10/04/94 5:45 AM	GENERAL ALARM DUE TO A FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/04/94 (1.75 HRS)
10/05/94 4:30 AM	GENERAL ALARM CONDITION DUE TO A FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/05/94 (8.0 HRS)
10/10/94 4:20 PM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE POSSIBLY DUE TO A FAULTY THERMOCOUPLE.	RE-START BLOWER AND FLARE ON 10/10/94 (1.0 HRS)
10/11/94 7:00 PM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/12/94 (18.5 HRS)
10/13/94 7:00 AM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	REPLACE SUSPECT THERMOCOUPLE. RE-START BLOWER AND FLARE ON 10/13/94 (7.75 HRS)
10/16/94 6:00 AM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/16/94 (5.5 HRS)
10/20/94 12:05 PM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/20/94 (3.5 HRS)
10/20/94 7:45 PM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/21/94 VACUUM LOSS LIGHT ILLUMINATED (13.0 HRS)
10/21/94 12:20 PM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE ON 10/22/94 (22.0 HRS)
10/22/94	GENERAL ALARM CONDITION DUE TO VACUUM LOSS	VISITED SITE, FLARE OPERATIONAL RE-SET VACUUM LOSS ALARM (0 HRS)
10/30/94 7:00 AM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	RE-START BLOWER AND FLARE 10/30/94 (7.75 HRS)
10/31/94 7:00 AM	GENERAL ALARM CONDITION DUE TO FLAME FAILURE	REPLACE THERMOCOUPLE WITH ORIGINAL. RE-START BLOWER AND FLARE 10/31/94 (5.0 HRS)

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: NOVEMBER 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
11/14/94 2:25 pm	GENERAL ALARM CONDITION DUE TO VACUUM LOSS.	FLARE OPERATIONAL. COULD NOT IDENTIFY VACUUM LOSS OR RE-SET ALARM. DISARMED ALARMS.
11/16/94 ~3:30 AM	GENERAL ALARM DUE TO A FLAME FAILURE. CAUSE NOT DETERMINED.	RE-START FLARE AT 2:45 11/16/94. RE-ARMED ALARMS) (~11.0 HRS)
11/19/94 12:45 AM	GENERAL ALARM CONDITION DUE TO VACUUM LOSS.	FLARE OPERATION COULD NOT RESET ALARM DISARMED ALARMS.

TABLE 5

REFUSE HIDEAWAY LANDFILL
MONTHLY SUMMARY OF SYSTEM ALARM LOG
Date: DECEMBER 1994

Alarm Dates	Alarm Cause	Solution (hours flare not operational)
12/08/94 ~4:00 PM	FLAME FAILURE NO ALARM CONDITION RECEIVED. ALARMS HAD BEEN DISARMED.	RESTART BLOWER/FLARE RE-SET ALARMS. ALARMS RE-ARMED 12/09/94. (~22 HRS)
12/09/94 5:20 PM	GENERAL ALARM CONDITION DUE TO VACUUM LOSS.	VISIT SITE ON 12/10/94 TO OBSERVE FLARE. FLARE OPERATIONAL, ALARMS COULD NOT BE RE-SET. DISARMED ALARMS.

APPENDIX 1

LEACHATE ANALYTICAL RESULTS

FILE COPY

File for correspondence Analytical

TERRA
▲ ENGINEERING & CONSTRUCTION CORPORATION ▲

ENVIRONMENTAL REMEDIATION
MUNICIPAL & UTILITY CONSTRUCTION
SPECIALTY EARTHWORK

June 20, 1994

Mr. Paul H. Nehm
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, Wisconsin 53713-3398

Re: Refuse Hideaway Landfill,
Middleton, Wisconsin
Quarterly Leachate Analytical
Results for Period Ending
March 1994
Wastewater Discharge Permit
No. NTO-5A
Terra Job No. 468

Dear Mr. Nehm:

Enclosed you will find the analytical results for a leachate sample collected March 29, 1994, at the Refuse Hideaway Landfill, in compliance with Madison Metropolitan Sewerage District's Discharge Permit No. NTO-5A. The sample was analyzed for quarterly monitoring requirements.

A brief review of the analytical results does not indicate any exceedance of the wastewater's permitted effluent limits. The detection limit for Total low level Silver is elevated due to matrix interferences.

If you have any questions concerning the enclosed laboratory results, please feel free to contact us.

Sincerely,
TERRA ENGINEERING & CONSTRUCTION CORP.

Kirk Solberg

Kirk J. Solberg
Environmental Geologist

Enclosures: Analytical Results Dated, 03/29/94

cc: Ms. Theresa Evanson

KIRK94\kaj14

2201 VONDRON ROAD
MADISON, WI 53704-6795
608/221-3501 PHONE
608/221-4075 FAX

MSA
MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

TERRA ENGINEERING

ANALYTICAL REPORT

TERRA ENGINEERING & CONSTRUCT.
KIRK SOLBERG
2201 VONDRON ROAD
MADISON, WI 53704

Client I.D. No.:1184
Work Order No.:9403000619
Project Name:REFUSE HIDEAWAY
Project Number:468
Report Date: 06/15/94
Date Recieved: 03/30/94
Arrival Temperature:ON ICE

Comments for entire Work Order:

Sample I.D. #:57389 **Sample Description:**LEACHATE-REFUSE HIDEAWAY **Date Sampled:**03/29/94

Analyte	Result	Units
pH (Lab)	7.91	S.U.'s
Metals Sample Preparation	4/5/94	
Hexavalent Chromium	423	ug/L
Chromium, Total, Low Level (Cr6+ Confirmation)	110	ug/L
Oil and Grease-- EPA 413.1	15	mg/L
Sample pH was 8.		
Cyanide, Total	5	ug/L
Cadmium, Total	10	ug/L
Chromium, Total	110	ug/L
Copper, Total	20	ug/L
Lead, Total	<20	ug/L
Mercury, Total, Low Level	<0.2	ug/L
Nickel, Total	110	ug/L
Selenium, Total, Low Level	<0.2	ug/L
Zinc, Total	33	ug/L
Silver, Total, Low Level	<0.5	ug/L
Elevated detection limit due to matrix interference.		

Submitted By: [signature]

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

Refuse Hideaway Qtrly Leachate Sample

MID-STATE ASSOCIATES, INC.
ENVIRONMENTAL AND ANALYTICAL SERVICES
1230 LANGE COURT
BARABOO, WI 53913
(608) 356-1777 FAX: (608) 356-7340

Project#:

Proj. Name: JOB 468
Refuse Hideaway L.F.

Client Name/Number:
Terra Engineering & Const.

FILL IN ANALYSIS NEEDED BELOW

Remarks:

Date	Time	Comp	Grab	Sample Description	Sample#	Number of Containers	Oil & Grease	pH	Cr + Co	Metals	Cl	Space Below For Laboratory Use: Pres.	Sample I.D. #'s:
			X	Refuse Hideaway Leachate		4							57355

DNR

Sampled By: James A. Falbo

Relinquished By: | Date: | Time:

Received By: | Date: | Time:

Received By Lab: | Date: 3/30/94 | Time: 10:55

Results to: Kirk Solberg @ Terra Engineering & Const.
2201 Vondron Rd
MADISON WI 53704

(Refuse Qtrly Sample)

Date Sample Disposed of:

Sample Shipped Via: ___UPS ___Fed. Exp. ___Hand ___U.S. Mail

Sample Status:
Dec. C. pH:

TERRA
▲ ENGINEERING & CONSTRUCTION CORPORATION ▲

ENVIRONMENTAL REMEDIATION
MUNICIPAL & UTILITY CONSTRUCTION
SPECIALTY EARTHWORK

FILE COPY
468 Analytical

September 1, 1994

Mr. Paul H. Nehm
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, Wisconsin 53713-3398

Re: Refuse Hideaway Landfill,
Middleton, Wisconsin
Quarterly Leachate Analytical
Results for Period Ending
June 1994
Wastewater Discharge Permit
No. NTO-5A
Terra Job No. 468

Dear Mr. Nehm:

Enclosed you will find the analytical results for a leachate sample collected July 26, 1994, at the Refuse Hideaway Landfill, in compliance with Madison Metropolitan Sewerage District's Discharge Permit No. NTO-5A. The sample was analyzed for quarterly monitoring requirements.

A review of the analytical results indicates an exceedance of the wastewater's permitted effluent limit for cyanide. The effluent limitation for cyanide is 0.1 milli-grams per liter (mg/l). The quarterly analytical results from the sampling event of July 26, 1994 indicate 0.37 mg/l of cyanide. The detection limit for Total low level Silver is elevated due to matrix interferences.

I spoke with Mr. John Schellpfeffer at MMSD on September 1, 1994 to inform him of an exceedence, he informed me that MMSD would review previous results and likely follow-up with a review of future quarterly analytical results. The next sampling event is scheduled to occur during the month of October 1994.

If you have any questions concerning the enclosed laboratory results, please feel free to contact us.

Sincerely,
TERRA ENGINEERING & CONSTRUCTION CORP.

Kirk Solberg

Kirk J. Solberg
Environmental Geologist

Enclosures: Analytical Results Dated, 07/26/94

cc: Ms. Theresa Evanson

KIRK94\kaj23

2201 VONDRON ROAD
MADISON, WI 53704-6795
608/221-3501 PHONE
608/221-4075 FAX

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

TERRA ENGINEERING

ANALYTICAL REPORT

TERRA ENGINEERING & CONSTRUCT.
KIRK SOLBERG
2201 VONDRON ROAD
MADISON, WI 53704

Client I.D. No.:1184
Work Order No.:9407000639
Project Name:REFUSE HIDEAWAY
Project Number:468
Report Date: 08/29/94
Date Recieved: 07/27/94
Arrival Temperature:ON ICE

Sample I.D. #:78209 **Sample Description:**LEACHATE TANK (LEACHATE TANK only)

Date Sampled:07/26/94

Analyte	Result	Units
Metals Sample Preparation	08/08/94	
Chromium, Total, Low Level (Cr6+ Confirmation)	120	ug/L
Hexavalent Chromium	97	ug/L
Mercury, Total, Low Level	<0.4	ug/L
Metals Sample Preparation	08/08/94	
Nickel, Total	130	ug/L
Oil and Grease-- EPA 413.1	10	mg/L
Zinc, Total	7	ug/L
pH (Lab)	7.82	S.U.'s
Cadmium, Total	<5	ug/L
Chromium, Total	150	ug/L
Copper, Total	20	ug/L
Lead, Total	<20	ug/L
Selenium, Total, Low Level	0.8	ug/L
Silver, Total Recoverable, Low Level Elevated detection limit due to matrix interference.	<0.5	ug/L
Cyanide, Total	0.37	mg/L

Comments for entire Work Order: None

Submitted By:

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

Refuse Hideaway Dirty Analyses 839

MID-STATE ASSOCIATES, INC.
ENVIRONMENTAL AND ANALYTICAL SERVICES
1230 LANGE COURT
BARABOO, WI 53913
(608) 356-1777 FAX: (608) 356-7340

Project#:	Proj. Name:
468	Refuse Hideaway Landfill

Client Name/Number: Terra Engineering & Construction

FILL IN ANALYSIS NEEDED BELOW

Date	Time	Comp	Grab	Sample Description	Sample#	Number of Containers	Oil & Grease	pH	Cr+6	CN	Cadmium, Chromium Hex	Copper, Lead	Mercury (or inslu...),	Nickel, Selenium (tot. ...)	Zinc, Silver		
7-26-94	9:50am		X	Leachate TANK	1	4											
				Temp BLANK		1											

Remarks:

Space Below For Laboratory Use

Pres.	Sample I.D. #'s:
	78209

Sampled By: Kirk Solberg	Relinquished By: Kirk Solberg	Date: 7-27-94	Time: 9:00
Received By: Bill Krueger	Date: 7/27/94	Time: 10:15	Received By Lab: [signature]	Date: 7/27/94	Time: 3:00

Remarks: Results to Kirk Solberg
Terra Engineering
...1 Vondron Road Madison WI 53704

Date Sample Disposed of:

Sample Shipped Via: __UPS __Fed. Exp. X Hand __U.S. Mail

Sample Status:
Deg. C: On Ice pH:

TERRA
▲ ENGINEERING & CONSTRUCTION CORPORATION ▲
ENVIRONMENTAL REMEDIATION
MUNICIPAL & UTILITY CONSTRUCTION
SPECIALTY EARTHWORK

LETTER OF TRANSMITTAL

DATE: November 29, 1994 *JOB* 468

ATTENTION: Mr. Paul Nehm

RE: Refuse Hideaway Landfill
Quarterly Analytical
Results

TO: Madison Metropolitan Sewage
District
1610 Moorland Road
Madison, WI 53713-3398

WE ARE SENDING THE FOLLOWING:

1 Copy of the Quarterly Leachate Analytical Results from Refuse Hideaway Landfill. Sample was obtained on October 10, 1994.

REMARKS:

Dear Mr. Nehm:

If you have any questions or concerns regarding these results, please do not hesitate to contact us.

Copy to: File

Signed: Kirk J. Solberg
Kirk J Solberg
Environmental Geologist

If enclosures are not as noted, kindly notify us at once.

2201 VONDRON ROAD
MADISON, WI 53704-6795
608/221-3501 PHONE
608/221-4075 FAX

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

TERRA ENGINEERING
KIRK SOLBERG
2201 VONDRON RD.
MADISON, WI 53704

Client I.D. No.:LT2000000010
Work Order No.:9410000218
Project Name:REFUSE HIDEAWAY
Project Number:468
Report Date: 11/21/94
Date Received: 10/11/94
Arrival Temperature:6.2

Sample I.D. #:86095 **Sample Description:**REFUSE HIDEAWAY LEACHATE **Date Sampled:**10/10/94

Analyte	Result	Units
Cyanide, Total	0.010	mg/L
Matrix spike recovery was low. Sample concentration may also be biased low.		
Metals Sample Preparation	10/13/94	
Chromium, Total, Low Level (Cr6+ Confirmation)	70	ug/L
Hexavalent Chromium	111	ug/L
Mercury, Total, Low Level	<0.4	ug/L
Elevated detection limit due to matrix interference.		
Metals Sample Preparation	10/13/94	
Nickel, Total	10	ug/L
Oil and Grease-- EPA 413.1	8	mg/L
Result should be considered estimated with possible high bias, analyte detected in method blank.		
Selenium, Total, Low Level	0.7	ug/L
Spike limits not met on this sample, due to matrix interference. Unable to reanalyze due to insufficient sample volume.		
Silver, Total, Low Level	0.5	ug/L
Zinc, Total	9	ug/L
pH (Lab)	7.39	S.U.'s
Cadmium, Total	<5	ug/L
Chromium, Total	80	ug/L
Copper, Total	20	ug/L
Lead, Total	<20	ug/L

Comments for entire Work Order: None

Submitted By: DD

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

LYTICAL REPORT

Mid State Associates
1230 Lange Court
Baraboo, WI 53913

CUST NUMBER: TERRA
SAMPLED BY: Client
DATE REC'D: 10/14/94
REPORT DATE: 10/24/94
PREPARED BY: BMS 10-24
REVIEWED BY:

Attn: Alice Chenoweth

Sample ID	Cyanide EPA 335.3	Qualifiers	Analytical No.
86095	0.010	MSL	23295
86193	X	MSL	23296
Detection Limit	0.010		
Units	mg/l		
Date Analyzed:	10/20/94		

X = Analyzed but not detected.

Qualifier Descriptions

MSL — Matrix spike recovery was low. Sample concentration may also be biased low.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

MID-STATE ASSOCIATES, INC.
ENVIRONMENTAL AND ANALYTICAL SERVICES
1230 LANGE COURT
BARABOO, WI 53913
(608) 356-2760 FAX: (608) 356-2766

Project#: 468 | Proj. Name: Refuse Hideaway C.F.

Client Name/Number:
Terra Engineering & Construction

FILL IN ANALYSIS NEEDED BELOW

Remarks: 218

Date	Time	Comp	Grab	Sample Description	Sample#	Number of Containers	Oil & Grease	pH	Cr+6 for low level	Chromium (Hex)	Mercury, Nickel	Zinc, Cadmium	Chromium, Copper	Lead, Selenium	Silver, [illegible]	Cyanide	Shaded Area For Lab Use: Pres.	Sample I.D. #'s:
10-10-94	2000		X	Refuse Hideaway Leachate	1	8	/	/	/	/	/	/	/	/	/	/		86095

Only had ONE (1) VIAL of HCL. Preserved for marked (written) corrosive in question please call. Kirk Solberg 221-3501

Sampled By: Kirk Solberg

Relinquished By: K. Solberg

Received By: L. Olson #298 Dunham | Date: 10-11 | Time: 10:32

Received By Lab: D. Ou | Date: 10-11-94 | Time: 3:00

Remarks: Results to Terra Engineering & Const.
2201 Vondron Rd
Madison WI 53704
ATTN: Kirk Solberg

Refuse Qtrly Leachate Sample

Sample Shipped Via: ___UPS ___Fed. Exp. X Hand ___U.S. Mail

Sample Status: Deg. C: 6.2 pH:

FILE COPY

TERRA
▲ ENGINEERING & CONSTRUCTION CORPORATION ▲
ENVIRONMENTAL REMEDIATION
MUNICIPAL & UTILITY CONSTRUCTION
SPECIALTY EARTHWORK

LETTER OF TRANSMITTAL

DATE: February 24, 1995 *JOB* 468

ATTENTION: Mr. Paul Nehm

RE: Refuse Hideaway Landfill
Quarterly Analytical
Results

TO: Madison Metropolitan Sewage
District
1610 Moorland Road
Madison, WI 53713-3398

WE ARE SENDING THE FOLLOWING:

1 Copy of the Quarterly Leachate Analytical Results and Chain of Custody from Refuse Hideaway Landfill.

REMARKS:

The sample was obtained on January 18, 1995.

LOD is the Limit of Detection
LOQ is the Limit of Quantitation

If you have any questions regarding these results, please do not hesitate to contact us.

Copy to: File
Ms. Theresa Evenson - WDNR

Signed: Kirk Solberg
Kirk J. Solberg
Environmental Geologist

If enclosures are not as noted, kindly notify us at once.

2201 VONDRON ROAD
MADISON, WI 53704-6795
608/221-3501 PHONE
608/221-4075 FAX

MID-STATE ASSOCIATES, INC.

Laboratory Services
1230 Lange Ct.
Baraboo, WI 53913
608-356-2760

ANALYTICAL REPORT

TERRA ENGINEERING
KIRK SOLBERG
2201 VONDRON RD.
MADISON, WI 53704

Client I.D. No.:LT2000000010
Work Order No.:9501000323
Project Name:REFUSE HIDEAWAY
Project Number:468
Report Date: 02/21/95
Date Received: 01/19/95
Arrival Temperature:10.1

Sample I.D. #:92970 **Sample Description:**LEACHATE TANK **Date Sampled:**01/18/95

Analyte	Result	Units	LOD	LOQ
Cyanide, Total	141	ug/L		
Matrix spike recovery of this sample was low. Result for sample may also be biased low.				
Metals Sample Preparation	1/23/95			
Hexavalent Chromium	93	ug/L	5	17
Mercury, Total	<0.8	ug/L	0.2	0.7
Elevated detection limit due to matrix interference.				
Metals Sample Preparation	1/23/95			
Nickel, Total	100	ug/L	10	33
Oil and Grease-- EPA 413.1	<1	mg/L		
Selenium, Total	0.4	ug/L	0.2	0.7
Silver, Total	0.2	ug/L	0.1	0.3
Zinc, Total	15	ug/L	5	17
pH (Lab)	7.69	S.U.'s		
Lead, Total	<20	ug/L	20	67
Cadmium, Total	<5	ug/L	5	17
Copper, Total	20	ug/L	10	33
Chromium, Total	60	ug/L	50	167

Comments for entire Work Order:
None

Submitted By: DS

Wisconsin DNR Laboratory Certification Number: 157066030
DHSS Certification Number: MW0289

MONTGOMERY WATSON
Analytical Testing Services

University Research Park
One Science Court
Madison, Wisconsin 53711
Tel: 608 231 4747 • Fax: 608 231 4777

INORGANIC REPORT
MID-STATE ASSOC./TERRA
BARABOO WI
Project Number: 4014.0280

Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L10083-001	92970	Oil and Grease	< 1	1	GroundH2O	mg/L	18-JAN-95	31-JAN-95

Chk'd: DSK App'd: CAW
Date App'd: 2-6-95

WI Lab Certification ID#: 113138300

LYTICAL REPORT

Mid State Associates
1230 Lange Court
Baraboo, WI 53913

CUST NUMBER: REFUSEHDWY
SAMPLED BY: Client
DATE REC'D: 01/24/95
REPORT DATE: 01/31/95
PREPARED BY: BMS BMS
REVIEWED BY:

Attn: Alice Chenoweth

	Units	Detection Limit	92970 01/18/95	Qualifiers	Date Analyzed
EPA 335.3					
Cyanide	µg/l	10.	141.	S1L S2L	01/30/95
Analytical No.:			31272		

Qualifier Descriptions

S1L Matrix spike recovery of this sample was low. Result for sample may also be biased low.

S2L Matrix spike duplicate recovery of this sample was low. Result for sample may also be biased low.

* The spike recoveries were 60.% and 56.%.

SAMPLE LOG-IN PROBLEMS

CLIENT/ID #: Jerry Eng. / JT20-10

Page 1 of 1

PROJECT NAME: Refuse Hideaway L.F.

SAMPLING DATE: 1/18/95

PROJECT NUMBER: 4168

RECEIVED BY: T Hansen

LOG-IN DATE/TIME: 1/19/95 3:10

W.O #/SUBMMISSION #: 95/01-000323

Remarks:

CHAIN OF CUSTODY
1. Not completed
2. Missing
3. Unreadable
4. _____

SAMPLES
5. Sample missing
6. Broken container
7. Wrong container
8. Over temp
9. No temp blank/possible
10. Past holding time
11. Incorrectly preserved
12. Insufficient amount
13. Labels missing/unreadable/incorrect
14. Air bubble in VOC container

ACTION
15. Client called
16. Supervisor, notified
17. _____
99. Verbal

REMARKS # CODE	Corresponding Test	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
10	Hex	92970	Sample for Hexachrome received Past hold time

Sample Transfer					
Fraction	Fraction				
Area	Area				
By	By				
On	On				

Contract (Name, Date, Time, Outcome)

MID-STATE ASSOCIATES, INC.
ENVIRONMENTAL AND ANALYTICAL SERVICES
1230 LANGE COURT
BARABOO, WI 53913
(608) 356-2760 FAX: (608) 356-2766

Project#: 468 Proj. Name: Refuse Hideaway L.F.

Client Name/Number: Terra Engineering & Const.

FILL IN ANALYSIS NEEDED BELOW

Remarks: 323

Date	Time	Comp	Grab	Sample Description	Sample#	Number of Containers	Oil & Grease	pH	Cr+6	Chromium (Hex)	Mercury, Nickel	Zinc, Cadmium	Chromium, Copper	Lead, Selenium	Silver, Cyanide	Pres.	Sample I.D. #'s:
1-18-95	2pm		X	LEACHATE TANK	1	5	✓	✓	✓	✓	✓	✓	✓	✓	✓		92970

Shaded Area For Lab Use

Leachate for test Cr+6 passed hold time. TH

Sampled By: Kirk Solberg

Relinquished By: Kirk Solberg Date: 1-18-95 Time: 5pm

Received By: Ron Dieckhoff Date: 1/18/95 Time: 12:30

Received By Lab: Date: 1/19/95 Time: 3:10

Remarks: Refuse Hideaway L.F. Qtrly LEACHATE SAMPLE

Results to: Terra Engineering & Const
3201 Vondron Rd
Madison WI 53704
ATTN: KIRK SOLBERG

CHECKED

Sample Shipped Via: ___UPS ___Fed. Exp. X Hand ___U.S. Mail

Sample Status:
Deg. C: 10.1 pH: