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January 20, 2023

Ms. Cindy Koepke
Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Refuse Hideaway Landfill
December 2022 Operation Monitoring and Maintenance Activities

Dear Cindy:

TRC completed the following operation, monitoring, and maintenance activities and system troubleshooting at the Refuse Hideaway Landfill in Middleton, WI in December 2022.

- December 5, 2022 – Gas Probe Monitoring
- December 15, 2022 – Monthly Site Inspection

Electrical Upgrades

Based on the initial system start up and output voltage, the system electrical repairs completed in October 2022 were evaluated by a TRC electrical engineer. A summary of the system upgrades, the electrical evaluation, and options for repairing the system was submitted to the WDNR on December 8, 2022. The WDNR selected Option 2 outlined in the submittal as the repair for the electrical system. TRC is working to provide specifications for equipment and to obtain a quote from an electrical subcontractor to conduct the repairs.

Gas Extraction System

The gas extraction system (GES) was restarted in October 2022 and was operated until December 15, 2022 when an overvoltage fault was observed and the system was shut down until the electrical service issue can be resolved.

Perimeter gas probe monitoring was conducted at the site on December 5, 2022.

Field data from system and gas probe monitoring is included as an attachment.

Leachate Extraction System

The leachate extraction system remained off during the month of December. A new pump head was installed on the air compressor system in June 2022, and the air compressor system was restarted in October 2022. The electrical contact for the motor starter failed during the start-up and will need be replaced. Repairs to the compressor were further evaluated and summarized in TRC's December 8, 2022, evaluation submittal. TRC is working with an electrical subcontractor to provide a quote to replace the motor contact and overload relay and to test the electric motor for the system.

The leachate tank level was gauged during the December 15, 2022, Monthly Site Inspection and contained 45.25 inches of leachate.

Cap Inspection

The monthly inspection of the landfill cap and stormwater conveyance features were not conducted in December 2022 due to snow cover.

Monitoring results collected during the site visit completed in December 2022 are attached.

If you have any questions, please contact me at astehn@trccompanies.com or 608-807-8112.

Sincerely,

TRC

Andrew Stehn, PE
Project Manager

Attachments: December 2022 Monitoring Results

December 2022 Monitoring Results

REFUSE HIDEAWAY LANDFILL
GAS PROBE MONITORING FORM

TECHNICIAN(S): J. Roelke

DATE: 12/5/2022
START TIME: 8:18 AM
END TIME: 1:45 PM

GAS/INSTRUMENT TYPE: **GEM 2000**
SERIAL NO.: 11668
DATE LAST CALIBRATED: 12/5/2022
METHOD: Standard Calibration Gases
PRESS INSTRUMENT : Manometer

WEATHER CONDITIONS: cloudly
TEMPERATURE: 32 ^{0}F
BAROMETRIC PRESSURE & TREND: 29.85 in Hg., falling
GROUND CONDITIONS: frozen

GAS PROBE NAME	Time	PRESSURE (in. WC)	METHANE (% LEL)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	COMMENTS
GP-1D	8:59	0.14	0.0	0.0	4.1	16.6	(2) Stable readings at 2 minutes.
GP-1S	9:02	0.0	0.0	0.0	0.1	20.7	(2)
GP-2D	9:06	0.0	0.0	0.0	1.3	19.6	(1)
GP-2S	9:08	0.0	0.0	0.0	1.0	19.9	(1)
GP-3	9:11	0.0	0.0	0.0	2.0	20.0	(1) Stable readings at 2 minutes.
GP-4	9:17	0.0	0.0	0.0	2.2	19.4	(1)
GP-5	9:20	0.0	0.0	0.0	1.5	20.1	(2)
GP-6	9:25	0.0	0.0	0.0	0.7	18.2	(1)
GP-7	9:32	0.0	0.0	0.0	2.6	18.4	(2)
GP-8	9:40	0.0	0.0	0.0	3.9	17.8	(2)
GP-9	9:44	0.0	0.0	0.0	2.4	18.7	(1)
GP-10	9:48	0.0	0.0	0.0	7.3	11.5	(1) Stable readings at 2 minutes.
GP-11D	9:53	-0.07	0.0	0.0	0.3	20.2	(2)
GP-11S	9:55	0.0	0.0	0.0	0.7	19.8	(2)
GP-12D	9:59	-0.03	44	2.2	3.9	16.7	(1)
GP-12S	10:01	0.0	0	0.0	2.4	18.4	(1)
GP-13D	10:07	0.0	12.0	0.6	4.4	14.9	(2)
GP-13S	10:09	0.0	0.0	0.0	1.1	19.3	(2)

GAS PROBE NAME	Time	PRESSURE (in. WC)	METHANE (% LEL)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	COMMENTS
GP-16D	10:30	0.0	0.0	0.0	6.1	12.0	(2)
GP-16S	10:32	0.0	0.0	0.0	0.8	19.9	(2)
GP-17D	10:23	0.0	0.0	0.0	2.2	18.3	(1)
GP-17M	10:25	0.0	0.0	0.0	0.3	20.2	(1)
GP-17S	10:27	0.0	0.0	0.0	0.5	20.1	(1)
GP-18D	10:35	0.0	0.0	0.0	0.4	20.5	(2)
GP-18M	10:37	0.0	0.0	0.0	0.2	20.6	(2)
GP-18S	10:39	0.0	0.0	0.0	0.2	20.6	(2)
GP-19$^{85-100}$	11:22	0.0	0.0	0.0	4.5	15.6	(1)
GP-19$^{50-70}$	11:24	0.0	0.0	0.0	1.7	19.0	(1)
GP-19$^{25-40}$	11:26	0.0	0.0	0.0	2.1	18.9	(1)
GP19$^{2-15}$	11:28	0.0	0.0	0.0	1.3	18.0	(1)
GP-20$^{85-100}$	11:14	0.0	0.0	0.0	0.5	20.2	(2)
GP-20$^{50-70}$	11:16	0.0	0.0	0.0	1.1	19.9	(2)
GP-20$^{25-40}$	11:18	0.0	0.0	0.0	1.5	19.7	(2)
GP-20$^{2-15}$	11:20	0.0	0.0	0.0	1.8	19.5	(2)
GP-21$^{85-100}$	11:05	-0.10	0.0	0.0	0.6	19.9	(2)
GP-21$^{50-70}$	11:07	-0.07	0.0	0.0	1.5	19.3	(2) Stable readings at 2 minutes.
GP-21$^{25-40}$	11:09	0.0	0.0	0.0	2.3	18.5	(2)
GP-21$^{2-15}$	11:11	0.0	0.0	0.0	1.2	19.9	(2)
GP-22$^{85-100}$	11:34	0.0	0.0	0.0	3.8	17.0	(2)
GP-22$^{50-70}$	11:36	0.09	0.0	0.0	2.8	18.3	(2)
GP-22$^{25-40}$	11:38	0.0	0.0	0.0	1.7	19.7	(2)
GP-22$^{2-15}$	11:40	0.0	0.0	0.0	2.2	19.3	(2)

GAS PROBE NAME	Time	PRESSURE (in. WC)	METHANE (% LEL)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	COMMENTS
GP-23$^{85-100}$	11:46	0.0	0.0	0.0	1.5	19.1	(2)
GP-23$^{50-70}$	11:48	-0.03	0.0	0.0	1.0	19.6	(2)
GP-23$^{25-40}$	11:50	0.0	0.0	0.0	5.7	15.2	(2)
GP-23$^{2-15}$	11:52	0.0	0.0	0.0	3.2	17.3	(2)
GP-24$^{85-100}$	11:58	-0.06	0.0	0.0	11.2	8.3	(2)
GP-24$^{50-70}$	12:00	0.00	0.0	0.0	1.8	19.1	(2)
GP-24$^{25-40}$	12:02	0.0	0.0	0.0	5.7	15.2	(2)
GP-24$^{2-15}$	12:04	0.0	0.0	0.0	4.7	15.1	(2)
GPW-1D	13:24	0.44	0.0	0.0	1.9	17.0	(1)
GPW-1M	13:26	0.45	0.0	0.0	1.8	17.3	(1)
GPW-1S	13:28	0.02	0.0	0.0	1.5	18.3	(1)
G-1D	8:46	-0.05	0.0	0.0	0.0	20.8	(1)
G-1S	8:48	-0.03	0.0	0.0	0.4	20.5	(1)
G-2D	10:16	0.0	0.0	0.0	0.1	20.6	(1)
G-2S	10:18	0.0	0.0	0.0	0.2	20.4	(1)
G-5	9:36	0.0	0.0	0.0	3.0	18.4	(1)
G-6	8:40	0.0	0.0	0.0	1.1	19.5	(1)
G-8	10:58	0.0	0.0	0.0	0.0	20.8	(1)
G-9	10:46	0.0	0.0	0.0	1.3	17.4	(1)
G-10	12:10	-0.53	0.0	0.0	0.1	20.6	(1)
Speedway Office	8:51	0.0	0.0	0.0	0.0	20.8	Open to ATM

NOTES:

(1); Locked probe casing.
(2): Probe is above casing and cannot be locked.
(3): No cap for probe casing and cannot be locked.

Key:

Shallow or 2'-15'
Medium or 25'-40'
Deep or 50'-70'
85'-100'

Entered by: J. Roelke 12/6/2022
Checked by: A. Ruetten 12/6/2022

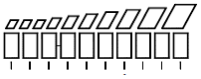
Monthly System Inspection Log
Landfill Gas Extraction and Leachate Pump System
WDNR - Refuse Highway Landfill
Middleton, Wisconsin

TRC Operator Name:	**John Roelke**				
Date:	**12/15/2022**	**Arrival Time:**	**9:15**	**Departure Time**	**9:40**

Site Conditions	**Initial[1]**	**Final[2]**	**Equipment**	
Weather Conditions:	cloudy	-	Gas/Instrument Type:	GEMS 2000
Ground Condition:	4" snow cover	-	Serial Number:	2658
Barometric Pressure:	29.51 in Hg	-	Date Last Calibrated:	12/15/2022
Barometric Pressure Trend:	rising	-	Method:	Standard field calibration
Temperature:	32F	-	Pressure Instrument:	Dwyer Series 475 Manometer

Landfill Gas Extraction System[3]							
System	***Location***	***Tag #***	***Equipment Description***	***Set Point***	***Typical Range***	***Initial Field Reading [1]***	***Final Field Reading [2]***
Blower Motor - Fault 3210	Remote	GHS-BLR-301	Amperage	-	3 - 4 amps	-	
			Speed	-	1800 - 1900 rpm	-	
			Frequency	-	30 - 35 Hz	-	
	HMI		Amperage	-	3 -4 amps	-	
	HMI		Speed	-		-	
	HMI		Hours	-	-	-	
Blower Operating (YES). Note excessive noise or issues observed.							
Blower Inlet	HMI	PT-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	No readings	No readings
	HMI	TE-301	Blower Inlet Temperature	-	50 - 90 °F	-	-
	Local	GHS-PI-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-	-
	Local	GHS-TI-301	Blower Inlet Temperature	-	50 - 90 °F	-	-
	Local	Sample Port	Gas Composition - % Methane	-		-	-
			Gas Composition - % CO2	-		-	-
			Gas Composition - % Oxygen	-		-	-
			Gas Composition - % Balance	-		-	-
Demister	Local	GHS-PDI-301	Demister Differential Pressure	-	1-2 in w.c	-	-
	Local		Slight Glass: Liquid Present	-	-	-	-
	HMI	LS-701	Level Indication	-	-	-	-
Blower Outlet	HMI	PT-302	Blower Outlet Flow Pressure	-	-	-	-
	HMI	TE-302	Blower Outlet Temperature	-	50 - 90 °F	-	-
	HMI	PDT-301	Blower Outlet Flow Differential Pressure	-	1-2 in w.c	-	-
	HMI	-	Blower Outlet Flow Rate	-	180 - 190 scfm	-	-
	Local	GHS-PI-302	Blower Outlet Flow Pressure	-	-	-	-
	Local	GHS-TI-302	Blower Outlet Temperature	-	50 - 90 °F	-	-
	Local	Sample Port	Gas Composition - % Methane	-		-	-
			Gas Composition - % CO2	-		-	-
			Gas Composition - % Oxygen	-		-	-
			Gas Composition - % Balance	-		-	-
Branch Headers	Local	North	North Branch Vacuum	-	6 - 7 in w.c.	-	-
	Local	North	Valve Position	6 turns open /6	6 turns open	-	-
	Local	North Sample Port	Gas Composition - % Methane	-		-	-
			Gas Composition - % CO2	-		-	-
			Gas Composition - % Oxygen	-		-	-
			Gas Composition - % Balance	-		-	-
	Local	Central	Central Branch Vacuum	-	6 - 7 in w.c.	-	-
	Local	Central	Valve Position	-	6 turns open	-	-
	Local	Central Sample Port	Gas Composition - % Methane	-		-	-
			Gas Composition - % CO2	-		-	-
			Gas Composition - % Oxygen	-		-	-
			Gas Composition - % Balance	-		-	-
	Local	South	South Branch Vacuum	-	6 - 7 in w.c.	-	-
	Local	South	Valve Position	-	6 turns open	-	-
	Local	South Sample Port	Gas Composition - % Methane	-		-	-
			Gas Composition - % CO2	-		-	-
			Gas Composition - % Oxygen	-		-	-
			Gas Composition - % Balance	-		-	-

Air Compressor System[3,5,6] - AIR COMPRESSOR SYSTEM OFFLINE								
Operational Settings	Pressure Set Points					Condensate Set Points		
	Tank Low (psi)	Tank High (psi)	Well Field (psi)	On (min.)	Off (min.)	Open (sec.)	Closed (min.)	Test Operation
	NOT OPERATING							(yes/no)

Air Dryer System[4] - AIR DRYER OFFLINE		Electrical Status		HMI Heater/Air Conditioner	
System Operational:		3-Phase Power Indicator:	3 of 3	Operational	
Condensate Drain Operational:		GFI 1 Status:	GREEN	Temperature	
Alarm Indictor:		GFI 2 Status:	GREEN	Filter Cleaned	
Condenser Cleaned[2]:		**Leachate Tank/Loadout**			
Dew Point Indicator:		Liquid Level (inches):	45.25	Visual Check:	
	Indicate which bars are green(G) or red (R) and note (F) if flashing.	***Contact WDNR if level is above***	71 inches	· Evidence of Tank Overflow:	
		Leak Detection Test Completed:	(yes/no)	· Inspect concrete pad and storm sewer for damage or backup	
		Overfill Float Functional[7]	(yes/no)		
		Exhaust Stack			
		Drain Stack Sump (vol. removed)	0.25 gal	Stack Condition[6]:	Good

1. Initial site conditions represents readings collected upon arrival to the site and initial field readings are collected prior to the landfill balancing.

2. Final site conditions represents readings collected upon departure from the site and final field readings are collected following the landfill balancing.

3. Check all air lines and gas extraction lines for leaks during each site visit. Drain inline air filters and replace as needed.

4. Air Dryer - Clean the condenser monthly using an air jet (max. 2 bar / 30 psig) inside out. Make sure not to damage the aluminum lamellae of the cooling package.

5. On a quarterly basis change the oil and check/clean the air filters and intercoolers for the air compressor.

6. Inspect mounting brackets and bolts for the air compressor and effluent stack for tightness.

7. Test overfill float operation on a monthly basis.

Comments/Notes:
NM - Not Measured
Blower offline. Heat trace is working. Drained 0.25 gallons from stack sump. No balancing of gas extraction wells. Blower 301, over voltage fault/3210 on Dec. 15 at 02:53. Shut off breaker to blower 301.

Data Entered By: J. Roelke 1.17.23
Checked By: A. Ruetten 1.17.23