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June 28, 2021

Ms. Erin Endsley
Hydrogeologist Program Director
Wisconsin Department of Natural Resources
1701 North 4th Street
Superior, WI 54880

Subject: 2021 Semi-annual Inspection Report – First Report
Stoughton City Landfill, Stoughton, Dane County, Wisconsin
USEPA ID #WID980901219; WDNR BRRTS #02-13-000880

Dear Ms. Endsley:

TRC completed the first semi-annual inspection of two for the 2021 calendar year for the Stoughton City Landfill (Site). Inspection tasks were completed in concurrence with the December 9, 2019 City of Stoughton Landfill Operation and Maintenance Bidding Documents, follow up correspondences between TRC and the Wisconsin Department of Natural Resources (WDNR), and the April 2020 Quality Assurance/Quality Control Plan (Revision 0) (TRC, 2020). This letter summarizes inspection and monitoring activities completed between December 2020 and April 2021. A separate report submittal will be completed discussing the groundwater monitoring completed at the Site in April of 2021.

Bimonthly Site Monitoring

Gas Probe Monitoring

Currently the Site contains three gas monitoring probes (GMP-1, GMP-2, and GMP-3) along the southern perimeter of the landfill to evaluate if off site landfill gas migration is occurring. TRC mobilized to the site on December 4, 2020, February 17, 2021 and April 28, 2021 to monitor gas concentrations and collect pressure reading at each of these gas monitoring probes. Each probe was field monitored using a Landtec GEM 2000 meter for methane (percent lower explosive limit and percent by volume), carbon dioxide, and oxygen. Volatile organic compounds (VOCs) were field monitored using a Rae Systems MiniRae 3000 and a pressure reading was collected using a Dwyer 475 Series Manometer. Field measurements from these three events are included in Attachment 1.

Field data indicates that methane was detected in GMP-2 and GMP-3 during the April 2021 monitoring event, however the levels were recorded at 0.1% by volume and 2% LEL indicating that it's unlikely that any significant landfill gas migration is occurring along the southern perimeter. Additionally, VOC migration from the landfill in that area is unlikely since all detectable PID readings were below 1 parts per million. Oxygen levels varied by probe and inspection event but were generally below ambient air levels of 20.9%. Low concentrations of carbon dioxide were detected at select probes with the highest reading of 4.8% by volume at GMP-3 during the December 2020 event, all other detectable readings at the site were below 1.7%.

Flow Prevention Monitoring

During each bimonthly site visit the flow prevention devices at monitoring wells MW-7I, MW-8I and MW-10I were inspected. The devices include expandable well caps previously installed at MW-7I and MW-8I and a mechanical packer installed at MW-10I due to artesian conditions present at these wells. During all site inspections the expandable caps and packer were in place and preventing flow out of the well.

During the August 2021 inspection event new packers will be installed at wells MW-7I and MW-8I to ensure a more competent flow prevention. This work will be detailed more in the second semi-annual inspection report for the 2021 calendar year.

April Semi-annual Site Inspection

The semi-annual site inspection included a visual evaluation of the landfill cover, storm sewer management system, gas venting system, monitoring well network, security fencing/entrance gate, signage, and the access road (Site features). TRC completed a site walk on April 28, 2021, completing an inspection of the Site features and a summary of the inspection is included in Attachment 2. A photographic log is also included in Attachment 2.

Landfill Cover

No issues were observed with the landfill cover that require immediate maintenance. Some large vegetation was observed to be growing around the MW-11 well nest and should be removed as time allows. A small depression/gully was noted between gas vents GV-4 and GV-8 and has not changed in size since the 2020 inspections. There were a number of small animal burrowing (less than 4-inches) at various spots around the landfill, including some large clusters around the concrete pads of the gas vents.

Storm Sewer Management System

The storm sewer management system appeared to be functioning as constructed and no significant erosion damage or lack of vegetation was observed. Slight accumulation of water was observed at portions of the landfill. Based on weather conditions during and prior to the inspection, minor water accumulation is to be expected.

Landfill Gas Vents

The Site contains 21 gas vents throughout the limits of the landfill. Each vent was inspected by TRC and no issues were noted. Woody vegetation identified near GV-11, gas vent was unobstructed during the inspection event, however it may become obstructed once the plants leaf out in the spring.

Monitoring Well Network

There are currently 37 monitoring, extraction, or observation wells installed surrounding and in close proximity to the landfill. Each well was inspected, and the following observations were found:

- During the April 2020 monitoring event TRC was unable to open monitoring wells MW-1S, MW-1D, MW-2S, MW-2D, MW-6S, MW-6D, MW-11S, MW-11I, MW-11D, and OW-4 either due to weathered locks not functioning or the proper key had not been provided at the time. During the April 2021 event all locks at these wells were removed and replaced with new locks (master lock key #(3807).
- MW-7I is an artisan well and the expandable cap at the time of this inspection was working and will continue to be monitored on a bi-monthly basis. The installation of a mechanical packer is planned at this monitoring well in August 2021.

- MW-8I is an artisan well and the expandable cap at the time of this inspection was working and will continue to be monitored on a bi-monthly basis. The installation of a mechanical packer is planned at this monitoring well in August 2021.
- MW-10I is an artisan well and the packer at the time of this inspection was working and will continue to be monitored on a bi-monthly basis.
- OW-2 has a packer installed and is preventing possible artisan conditions. TRC attempted to remove the packer to check if artisanal flow is still occurring at this location, however the packer appeared to be stuck in place and unable to be removed by normal hand tools. If removal of this packer is required at any time in the future it may require additional effort.
- OW-4 is an artisan well and the expandable cap at the time of this inspection was working and will continue to be monitored on a bi-monthly basis.
- EW-01 is an artisan well and the expandable cap at the time of this inspection was working and will continue to be monitored on a bi-monthly basis.

Security - Fencing/Gate

The chain link fence that surrounds a portion of the landfill was in good condition. The gate was in good condition and the lock was functioning.

Signage

Signs are located along the exterior of the fence surrounding the landfill. The signs were in good condition and labels were visible.

Access Road

No issues were observed with the Site access road during this inspection.

Recommendations

TRC recommends the clearing of the woody vegetation around the MW-11 nest and GV-11 gas vent, as well as reassessing animal burrows following the 2021 mowing event to ensure gas vent seals have not been compromised. Per the request for proposal document, TRC can assist with these issues or the City of Stoughton can be notified to address the issues. .

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

Sincerely,

TRC

Andrew M. Stehn

Andrew Stehn, PE
Project Manager

Attachments: 1. Bi-monthly Gas Probe Monitoring Forms (December 2020 and February and April 2021)

2. Semi-annual Site Inspection Form – April 2021

cc: Giang Van Nguyen – USEPA Region V

References

TRC Environmental Corporation. 2020. Quality Assurance/Quality Control Plan. Stoughton City Landfill. Stoughton, Dane County, Wisconsin. April 13, 2020.

Attachment 1

Bi-monthly Gas Probe Monitoring Forms (December 2020 and February and April 2021)

PROJECT NAME:	Stoughton Landfill
PROJECT NUMBER:	375007
PROJECT MANAGER:	Andrew Stehn
SITE LOCATION:	Stoughton, Wisconsin
DATES OF FIELDWORK:	12/4/2020
PURPOSE OF FIELDWORK:	Bi-monthly Gas Monitoring
WORK PERFORMED BY:	John Roelke

John Roelke **6/28/2021**

SIGNED DATE

Andrew M. Stehn **6/28/2021**

CHECKED BY DATE

PID FIELD CALIBRATION LOG

PROJECT NAME:	Stoughton City Landfill	MODEL:	MiniRae 3000
PROJECT NUMBER.:	375007	LAMP VOLTAGE:	10.6
SAMPLER NAME:	John Roelke	SERIAL NO.:	RENTAL

PID CALIBRATION CHECK

	DATE: 12/4/21 TIME: 7:16 INITIALS: JR	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:
BATTERY CHECK	☑	☐	☐	☐	☐
ZERO GAS	0.0/ 0.0	/	/	/	/
SPAN GAS	101.6/ 100.0	/	/	/	/
AUDIBLE FAN MOTOR CHECK	☑	☐	☐	☐	☐
RESPONSE CHECK	☑	☐	☐	☐	☐

NOTES

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION

John Roelke — 6/28/2021

SIGNED — DATE

Andrew M. Stohn — 6/28/2021

CHECKED — DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE: 12/4/2020	
PROJECT NUMBER:	375007.0000.0000	TECHNICIAN: John Roelke	
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED: YES: ☑	NO: ☐

WEATHER

WEATHER: Clear
SKY CONDITIONS: Overcast
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☑ NO: ☐
VISIBILITY: Clear TIME: 7:15

TEMPERATURE: 27 °F
WIND SPEED: 0-5 MPH DIR: SW
RELATIVE HUMIDITY (%): 75
DEW POINT °F 22
BAROMETRIC PRESS (in.Hg): 29.91 TREND: UP

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	7:52		0.0	0.0	0.0	19.7	1.7	0.0	
GMP-2	7:26		0.0	0.0	0.0	20.0	0.5	0.0	
GMP-3	7:33	-	3.68	0.0	0.0	17.7	4.8	0.0	

John Roelke — SIGNED — 6/28/2021 DATE

Andrew M. Stohn — CHECKED BY — 6/28/2021 DATE

PROJECT NAME:	Stoughton Landfill
PROJECT NUMBER:	375007
PROJECT MANAGER:	Andrew Stehn
SITE LOCATION:	Stoughton, Wisconsin
DATES OF FIELDWORK:	2/17/2021
PURPOSE OF FIELDWORK:	Bi-monthly Gas Monitoring
WORK PERFORMED BY:	John Roelke

John Roelke — **6/28/2021**

SIGNED — DATE

Andrew M. Stehn — **6/28/2021**

CHECKED BY — DATE

PID FIELD CALIBRATION LOG

PROJECT NAME:	Stoughton City Landfill	MODEL:	MiniRae 3000
PROJECT NUMBER.:	375007.0001.0001	LAMP VOLTAGE:	10.6
SAMPLER NAME:	John Roelke	SERIAL NO.:	RENTAL

PID CALIBRATION CHECK

	DATE: 2/17/2021 TIME: 9:47 INITIALS: JAR	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:
BATTERY CHECK	☑	☐	☐	☐	☐
ZERO GAS	0.0/ 0.0	/	/	/	/
SPAN GAS	100.7/ 100.0	/	/	/	/
AUDIBLE FAN MOTOR CHECK	☑	☐	☐	☐	☐
RESPONSE CHECK	☑	☐	☐	☐	☐

NOTES

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION

John Roelke — 06/28/2021
SIGNED — DATE

Andrew M. Stohn — 06/28/2021
CHECKED — DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE: 2/17/2021	
PROJECT NUMBER:	375007.0001.0000	TECHNICIAN: John Roelke	
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED: YES: ☑	NO: ☐

WEATHER

WEATHER: Cloudy
SKY CONDITIONS: Cloudy/ partly cloudy
GROUND CONDITIONS: SNOW: YES: ☑ NO: ☐
FROZEN GROUND/FROST: YES: ☑ NO: ☐
VISIBILITY: 10 mi. TIME: 9:45

TEMPERATURE: 7 °F
WIND SPEED: 3 MPH DIR: S
RELATIVE HUMIDITY (%): 73
DEW POINT °F 0.2
BAROMETRIC PRESS (in.Hg): 30.42 TREND: falling

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	9:54	-	0.64	0.0	0.0	18.5	1.6	0.0	
GMP-2	10:03		0.0	0.0	0.0	18.1	1.4	0.1	
GMP-3	10:12		0.0	0.0	0.0	16.4	4.0	0.0	

John Roelke — SIGNED — 6/28/2021 DATE

Andrew M. Stohm — CHECKED BY — 06/28/2021 DATE

PID FIELD CALIBRATION LOG

PROJECT NAME:	Stoughton City Landfill	MODEL:	MINIRAE 2000
PROJECT NUMBER.:	375007.0001	LAMP VOLTAGE:	11.7
SAMPLER NAME:	Wesley Braga	SERIAL NO.:	RENTAL

PID CALIBRATION CHECK

	DATE: 4/28/2021 TIME: INITIALS: WB	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:	DATE: TIME: INITIALS:
BATTERY CHECK	☑	☐	☐	☐	☐
ZERO GAS	0.0 / 0.0	/	/	/	/
SPAN GAS	100.9 / 100.0	/	/	/	/
AUDIBLE FAN MOTOR CHECK	☑	☐	☐	☐	☐
RESPONSE CHECK	☑	☐	☐	☐	☐

NOTES

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION

Wesley J Braga 06/28/2021

SIGNED DATE

Andrew M. Stohn 06/28/2021

CHECKED DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE: 4/28/2021	
PROJECT NUMBER:	375007.0001.0000	ECHNICIAN: Wesley Braga	
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED: YES: ☑	NO: ☐

WEATHER

WEATHER: Sunny
SKY CONDITIONS: Clear/Overcast
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☐ NO: ☑
VISIBILITY: Clear TIME: 15:00

TEMPERATURE: 58 °F
WIND SPEED: 5-10 MPH DIR: N
RELATIVE HUMIDITY (%): 0
DEW POINT °F 34
BAROMETRIC PRESS (in.Hg): 30.18 TREND: Down

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	15:00		0.0	0.0	0.0	19.8	0	0.0	
GMP-2	15:15		0.0	2.0	0.1	19.8	0.1	0.0	
GMP-3	15:30		0.0	2.0	0.1	19.2	1	0.6	

Wesley J Braga 06/28/2021
SIGNED DATE

Andrew M. Stohn 06/28/2021
CHECKED BY DATE

Attachment 2

Semi-annual Site Inspection Form
April 2021

Operation and Maintenance Semi-Annual Inspection Report

Stoughton City Landfill

Stoughton, Wisconsin

INSPECTOR: WES BRAGA	LOCATION: STOUGHTON CITY LANDFILL - STOUGHTON, WI
COMPANY: TRC	DATE/TIME: 4/28/2021
PROJECT: STOUGHTON CITY LANDFILL O&M	PROJECT NUMBER : 375007

WEATHER

WEATHER	(CLEAR)	PARTLY CLOUDY	CLOUDY	FOG
TEMPERATURE	HIGH	56°F	---	---
WIND	(CALM)	MEDIUM	HIGH	---
PRECIPITATION	RAIN	LIGHT	MODERATE	HEAVY
	SNOW	LIGHT	MODERATE	HEAVY

INSPECTION ITEMS

TYPE OF INSPECTION	ROUTINE	SPECIAL
	☑	☐

PERSONS/EQUIPMENT PRESENT: Wesley Braga

GENERAL DESCRIPTION OF SITE CONDITIONS: Site is in good condition. Cap is dry.

Vegetation is well established and does not look stressed. All gas vents look to be in good condition.

SPECIAL INSPECIAL ITEMS	POTENTIAL PROBLEM AREA	STATUS	NOTES
PERIMETER SECURITY FENCING	BROKEN OR MISSING WOOD SLATS, TORN CHAIN LINK FABRIC	ACCEPTABLE	All slats fixed from 2020 inspection
ENTRANCE GATE AND LOCKING MECHANISM	LOCK BROKEN/MISSING, MECHANISM INOPERATIVE	ACCEPTABLE	
MONITORING WELLS AND WELLHEAD COVERS	SIGNS OF TAMPERING, CASING DAMAGED, LOCK MISSING.	ACCEPTABLE	Locks for well nests MW-6, MW-11, MW-2, MW-1, and OW-4 were removed and replaced with new locks (#3807). Well MW-10I flow prevention working properly.
FINAL COVER VEGETATION	BARE SPOTS, STRESSED VEGETATION, DEEP ROOTED VEGETATION	ACCEPTABLE	Large vegetation growing around MW-11 Well nest.
FINAL COVER SLOPE (EXPLAIN BELOW)	GULLIES, LACK OF VEGETATION, SUBSIDENCE, PONDING	ACCEPTABLE	4" deep by 10' gullie between GV-8 and GV-4, less noticeable during 2021 inspection due to dry conditions.
EVIDENCE OF BURROWING ANIMALS	DAMAGE TO FINAL COVER, EVIDENCE OF WASTE	ACCEPTABLE	burrowing seen at various spots around the cap.
STORMWATER DRAINAGE CHANNELS	GULLIES, EROSION, DEBRIS, CULVERT BLOCKED	ACCEPTABLE	
LANDFILL GAS VENTING SYSTEM	DAMAGED OR BLOCKED VENT RISERS, STRESSED VEGETATION	ACCEPTABLE	
ACCESS ROAD	PONDING, RUTTING, EROSION	ACCEPTABLE	
COVER MOWING AND TALL VEGETATION REMOVAL (OCTOBER INSPECTION ONLY)	MOWING AND TALL VEGETATION REMOVAL DONE TO SPECIFIED VEGETATION HEIGHT, ANY MISSED AREAS		

* (1)ACCEPTABLE - NO MAINTENANCE REQUIRED. (2) NOT ACCEPTABLE - IDENTIFY REQUIRED MAINTENANCE

SUMMARY OF DEFICIENCIES AND/OR CORRECTIVE ACTIONS:

SIGNATURE OF INSPECTOR: Wesley J Braga DATE: 06/28/2021

Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Stoughton City Landfill	375007

Photo No.	Date
1	4/28/2021

Time: 11:19

Weather: Sunny/ 58°F

Description:
Animal burrow on landfill cap near GV-9.

Photographer:
Wes Braga

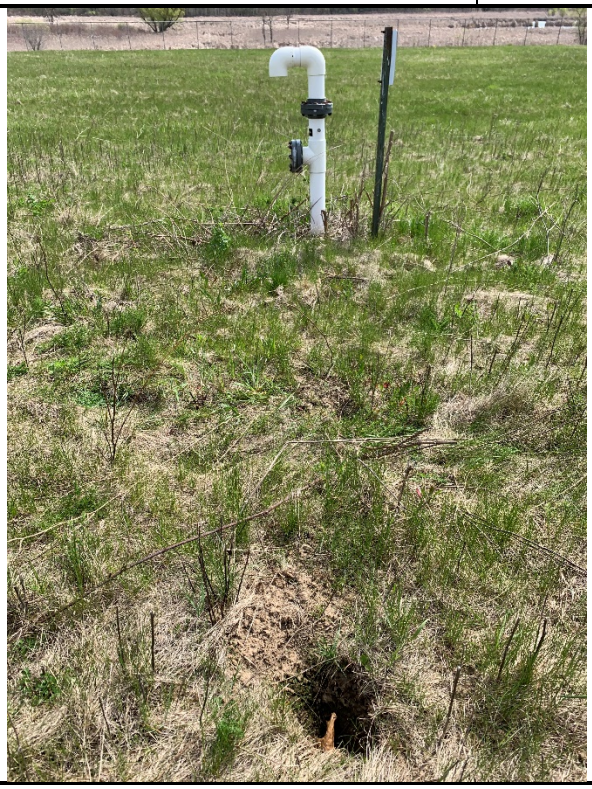


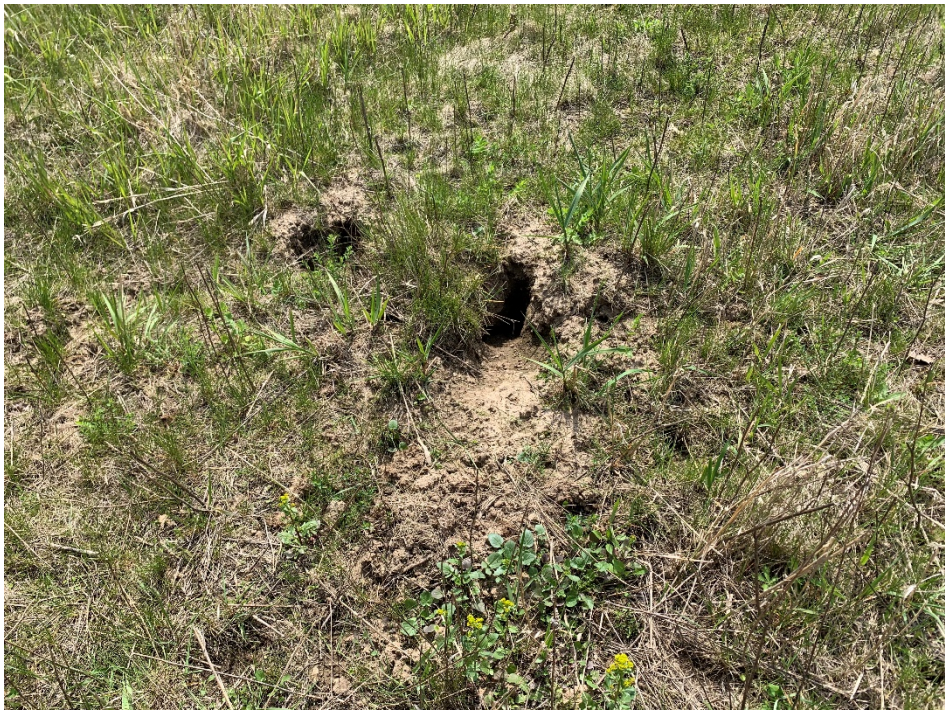
Photo No.	Date
2	4/28/2021

Time: 11:27

Weather: Sunny/ 58°F

Description:
Animal burrow on landfill cap.

Photographer:
Wes Braga



Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Stoughton City Landfill	375007

Photo No.	Date
3	4/28/2021

Time: 11:12

Weather: Sunny/ 58°F

Description:
Woody vegetation near GV-11. May become obstructed once plant leaf out.

Photographer:

Wes Braga