SCS ENGINEERS

Discontinuation of Contingency Monitoring Report for MP-8F St. Bernard Landfill

Prepared for:
Village of St. Bernard

110 Washington Avenue
St. Bernard, Ohio 45217
(513) 242-7770

Prepared by:
SCS Engineers
2060 Reading Road, Suite 200
Cincinnati, OH 45202
(513) 421-5353

December 22, 2015
File No. 23212007.03

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1.0 INTRODUCTION

The monthly monitoring event for the month of December 2015 was performed December 2, 2015. An exceedance of the combustible gas threshold limit (5 percent by volume) was measured in compliance probe MP-8F. The location of MP-8F is shown on Figure 1. The combustible gas concentration for both the initial and sustained readings for both the first monitoring and the verification monitoring was approximately 10 percent. Compliance monitoring was implemented with the required immediate (within 24 hours) notifications to the Village of St. Bernard, the St. Bernard Fire Department, the St. Bernard Police Department, the Hamilton County Health Department, and the Ohio EPA. A copy of the notification is included in Appendix B. The required 7-day report was prepared and submitted to the Village, the Health Department, and the Ohio EPA. This report is being submitted in accordance with OAC 3745-27-12 (E)(5)(g)(iii) to document that the requirements for the discontinuation of contingency monitoring have been met and, as a result, regular monitoring per the EGMP will resume.

2.0 MONITORING RESULTS

The monitoring data forms for the exceedance event and subsequent contingency monitoring events are presented in Appendix A. The first contingency monitoring event was performed on December 8, 2015. The combustible gas concentration in MP-8F was zero percent. Subsequent monitoring events were performed on December 11, December 15, and December 18, 2015. All the contingency monitoring readings at MP-8F were zero percent combustible gas. These data provided the basis for submitting this Discontinuation Report, 4 rounds of readings below the threshold limit over a period of not less than 2 weeks per OAC 3734-12 (E)(5)(e).

3.0 PATHWAY EVALUATION

The description of the site setting and site geology has been summarized from the EGMP. With respect to regional geology, the site is situated on the southeast edge of the Mill Creek Valley. The regional geology reflects multiple glacial advances and is consistent with a glacial outwash valley. Generally, regional geologic sequences consist of glacial valleys incised within Ordovician bedrock formations. These valley fills consist of highly variable interbedded sands, gravels, clays, silts, boulders, and cobbles.

With respect to site specific geology, the most significant feature includes a glacial till/outwash sequence which appears to form the base of the site. This unit is predominated by low permeability clays and or silts interbedded with silty sands within the areas investigated. Both oxidized and non-oxidized native materials have been found at depth, suggesting deposition in multiple sequences.

Although interbedded sands represent a potential zone of migration, those materials examined via borings were saturated and included a high percentage of silt (estimated at 40 percent or higher). As such, although classified as granular material, the potential for large scale gas transmission is seen as limited.

Along the northern perimeter of the site, the former landfill property is contiguous with several residential properties along Bank Avenue. Essentially, this area consists of a flat terrace, projecting out from the toe of the landfill slope and transitioning into the back yards of the Bank Avenue residences. This terrace was raised to its current elevation by the placement of two generations of fill. A cross section along this northern perimeter is presented as Figure 2. The boring logs used to prepare the cross section are presented in the EGMP. Only logs in the vicinity of MP-8F are included in this report. The fill soils, in particular the lower fill, contain hard fill and miscellaneous debris. As a result, the near surface geologic profile of this terrace is quite varied. Recent water level measurements show that the fill soil in the vicinity of MP-8F is saturated at approximately 8 feet below the ground surface. MP-8F is screened within a sand backfilled trench installed as part of a previous remedial program. The location and extent of the trench is shown on Figure 1. The boring log for MP-8F is presented in Appendix C. The materials encountered prior to the installation of the trench are shown on the boring log for the abandoned MP-8. As part of the delineation investigation a test pit, TP-8, was excavated in the vicinity of MP-8F. The log for TP-8 is included in Appendix C.

The unsaturated, porous sand backfill in the trench is assumed to be the primary pathway in the immediate vicinity of MP-8F. Outside the trench, the unsaturated portion of the gray fill layer is the primary pathway. Geotechnical testing of this material as part of the delineation investigation showed that it can be classified as silty sand with gravel. Porosity of the soil matrix of the fill is considered to be moderate. The presence of large pieces of concrete debris within the fill results in the potential for isolated, unconnected open void space, depending on the location and orientation of the concrete debris.

4.0 EVALUATION OF POTENTIAL CAUSES

No specific cause for the threshold concentration exceedance at MP-8F was identified. The gas control system appears to have been in continuous operation and an interruption in the operation of the gas control system does not appear to have been a potential cause. Probes at the site have shown seasonal variation on the past. Figure 3 shows that these variations have typically occurred in the late summer through late fall. As shown on Figure 3, the last threshold exceedance at MP-8F occurred in November 2013.

It is noted that prior to the December monthly monitoring event, there had been sufficient rain events to keep the surface soil moist and possibly thereby reducing the vertical migration of the gas to the air. If this were the case, it would have been likely that some of the other probes would have shown increased combustible gas concentrations. Short term variations could be related to barometric pressure changes, which are reported to affect subsurface gas movement.

5.0 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The steps taken on behalf of the Village of St. Bernard at the closed St. Bernard Landfill to ensure the protection of human health and the environment include:

- The gas extraction system was checked to ensure it was working.
- The vacuum was increased in the EW-6S segment of the collection system. The EW-6S segment is the segment immediately adjacent, to the east of, the EW-5S segment that is adjacent to MP-8F, which is located near the east end of the EW-5S segment. (The extraction system segment locations are shown on Figure 1.) The maximum available vacuum had already been applied to the EW-5S segment. The vacuum on the EW-6S segment was increased to attempt to capture any gas that was originating from east of the EW-5S segment.

No additional permanent monitors (probes or bar punch locations) are proposed at this time. Adjacent residences are equipped with combustible gas alarms. None of the alarms that have occurred in any of the residences have been shown to be due to combustible gas from the landfill. The existing permanent monitor probes are sufficiently closely spaced that additional monitors are not needed.

6.0 CONCLUSION

The contingency monitoring at MP-8F has satisfied the requirements to return to regular monitoring per OAC 3745-27-12 (E)(5)(e), specifically four readings below the threshold limit over a period of the minimum two weeks were recorded. The monthly monitoring will recommence in January 2016. Per the EGMP, MP-8F will be monitored on a monthly schedule until the criteria to implement quarterly monitoring as described in the EGMP is achieved, one year of monitoring without a threshold limit exceedance.

FIGURES

SAN MH
RIM=509.33
INV=489.23-8" E/NW
501.93-8" SW

INV 6"CPP=506.79

448 Bank Ave.
Thomas, Kathy
Parcel ID 582-0007-0261-00
Gas Monitoring Alarm Installed

426 Bank Ave.
Craddock, Robert L.
Parcel ID 582-0007-0271-00
Gas Monitoring Alarm Installed

City of St. Bernard
Parcel ID 582-0007-0262-00

EX. SAN C.O.
RIM=504.78
INV=497.25
N: 431802.5182
E: 1400321.6611

SUPPLEMENTAL VACUUM LATERAL FOR FUTURE USE IF NEEDED (BURIED AND SEALED).

1,500 GALLON CONDENSATE COLLECTION TANK (BURIED). CONDENSATE IS REMOVED VIA VACUUM TANKER.

MP-1

2" PVC

4" PVC

24"

EX. SAN C.O.
RIM=507.94
INV=497.39
N: 431781.5612
E: 1400293.2903

MP-16

441 Bank Ave.
Ziegler, Gregg M. & Molly E.
Parcel ID 582-0007-0263-00
Gas Monitoring Alarm Installed

437 Bank Ave.
Kistner, Marian L.
Parcel ID 582-0007-0264-00
Gas Monitoring Alarm Installed

433 Bank Ave.
Shrader, Jan
Parcel ID 582-0007-0265-00
Gas Monitoring Alarm Installed

429 Bank Ave.
Schrenk, Robert W. & Sandra
Parcel ID 582-0007-0266-00
Gas Monitoring Alarm Installed

425 Bank Ave.
Hackney, Tim
Parcel ID 582-0007-0267-00
Gas Monitoring Alarm Installed

421 Bank Ave.
Ramsey, Michael
Parcel ID 582-0007-0268-00
Gas Monitoring Alarm Installed

EW-14S

EX. SAN C.O.
RIM=508.38
INV=497.87
N: 431713.1779
E: 1400288.4885

PARK RESTROOM FACILITY

CONDENSATE FLOW TO COLLECTION TANK

EW-2S

2" SCH. 40 PVC SLOTTED VACUUM EXTRACTION LATERAL. EACH LATERAL MAY BE ISOLATED AND OPERATED INDEPENDENTLY VIA VALVE ADJUSTMENTS.

MP-17

MP-10

MP-9

MP-8F

TP-8

EX. CONDENSATE VACUUM BREAK
RIM=502.48
INV=498.84
N: 431649.6338
E: 1400506.0296

ISOLATES VACUUM FROM CONDENSATE GRAVITY DRAIN. MAINTAIN CHAMBER IN FLOODED CONDITION AT ALL TIMES

MP-7E

EX. SAN C.O.
RIM=504.34
INV=499.42
N: 431652.5277
E: 1400611.8807

CUT OFF TRENCH

MP-7H

EX. 12" CMP
INV=502.89

EX. 12" CMP
INV=503.34

CONDENSATE FLOW TO VACUUM BREAK

SS-8 STORM MH
RIM=517.27
INV=492.69

2" SCH. 40 PVC CONDENSATE GRAVITY DRAIN FLOWS WEST TO EAST, DISCHARGING TO THE CONDENSATE TANK. CLEANOUTS LOCATED AS SHOWN. CLEANOUTS ARE BURIED APPROXIMATELY 12" BELOW GRADE AND ARE MARKED WITH A STEEL/CAST IRON CAP FOR LOCATING PURPOSES.

EX. SAN C.O.
RIM=508.63
INV=497.95
N: 431669.2468
E: 1400330.0247

EW-3S &
SP-3R (FORMER EW-3R)

2" SCH. 40 PVC LATERAL (SOLID) FROM VALVE VAULT TO PERFORATED VACUUM LATERAL. (TYPICAL OF SIX).

VACUUM HEADER VALVE VAULT (FLUSH MOUNT). INCLUDES VACUUM VALVING AS WELL AS SAMPLING PORTS (TYPICAL OF SIX).

EX. SAN C.O.
RIM=505.67
INV=498.12
N: 431656.2388
E: 1400356.4814

EW-4S

EW-5S

EW-6S &
SP-6R (FORMER EW-6R)

EXISTING SOIL/BENTONITE CUT-OFF WALL (APPROXIMATE LIMITS SHOWN)

2" PVC

6" CPE DRAIN TILE (APPROXIMATE LOCATION)

COLLECTED CONDENSATE FLOWS THROUGH TO VACUUM BREAK TO SANITARY SEWER.

VACUUM BREAK ISOLATION VALVE

ABANDONED CONDENSATE TANK

COLLECTED GAS FLOWS TO VACUUM BLOWER

3" SCH. 80 PVC VACUUM HEADER SLOPED TO VACUUM BREAK. HEADER PIPING IS CENTERED UNDER VALVE VAULTS FOR LOCATION AND ACCESS.

SS-6
STORM MH RIM=518.19
INV=509.21 - 12"
514.19 - 6"

PLAY SET

3" HDPE GAS EXTRACTION VACUUM HEADER

MATCH LINE

12" EXTENSION TO SPRING HEADWALL (ASSUMED - DIRECT CONNECTION COULD NOT BE CONFIRMED IN FIELD)

SPRING (APPROXIMATE LOCATION)

VACUUM EXTRACTION BLOWER ASSEMBLY AND DISCHARGE (FENCE-LOCKED NO. 204-REQUEST ACCESS VIA VILLAGE OF ST. BERNARD). SHUTOFF VALVES, POWER DISCONNECT AND PRESSURE GAUGES LOCATED IN ENCLOSURE.

MATCH LINE

LEGEND

- 500 — EXISTING CONTOUR
- PROPERTY/LOT LINES
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY CLEANOUT
- 24" — EXISTING STORM SEWER
- EXISTING STORM MANHOLE
- EXISTING STORM CATCH BASIN
- EXISTING DRAINAGE TILE
- MP-11 — EXISTING MONITORING PROBE
- EW-4S — EXISTING EXTRACTION WELL
- EXISTING FENCE
- 4" PVC — EXISTING 4" SANITARY SEWER
- 2" PVC — EXISTING 2" SLOTTED EXTRACTION PIPING
- VACUUM HEADER
- MP-11 — MONITORING PROBE ABANDONED DURING REMEDIATION AT 441 BANK AVENUE

NOTES:
1. BASE MAP SOURCE CEC DRAWING 2B, DATED MARCH 31, 2011

NORTH
SCALE IN FEET
0 20 40

REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: MONITORING NETWORK

PROJECT TITLE: ST. BERNARD LANDFILL
VILLAGE OF ST. BERNARD, OHIO

CLIENT: VILLAGE OF ST. BERNARD
110 WASHINGTON AVENUE
ST. BERNARD, OHIO 45217

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
250 E. 5th St., Suite 1000, Cincinnati, OH 45202
PH: (513) 421-4353 FAX: (513) 421-2847

PROJ. NO. 23212007.02
DSN. BY: CES
DWN. BY: FDB
CHK. BY: RCM
QA RVW BY: JJW
APP. BY:

CADD FILE: FIG 5

DATE: SEPTEMBER 2014

SCALE: AS SHOWN

DRAWING NO.

FIG 1

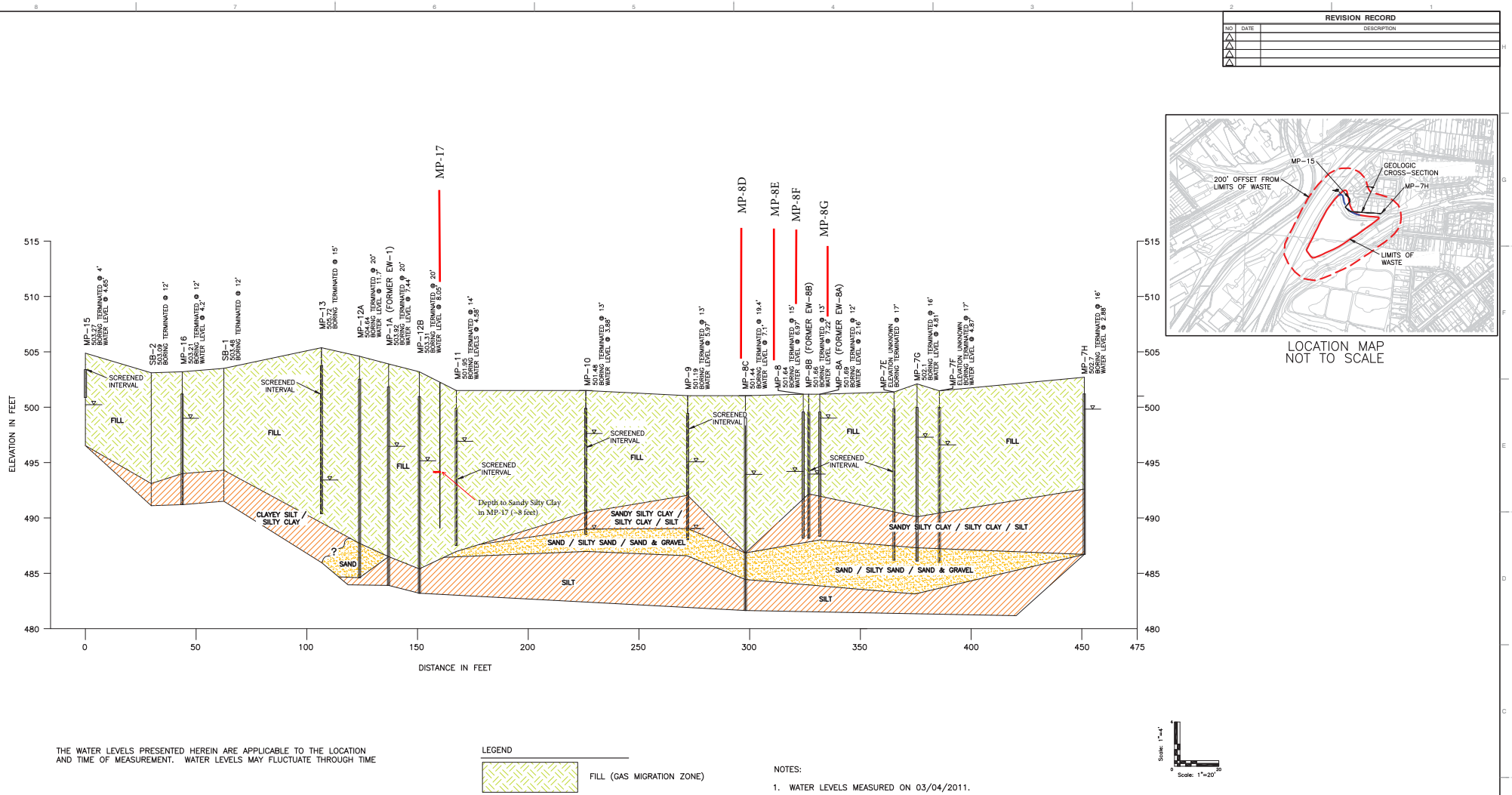
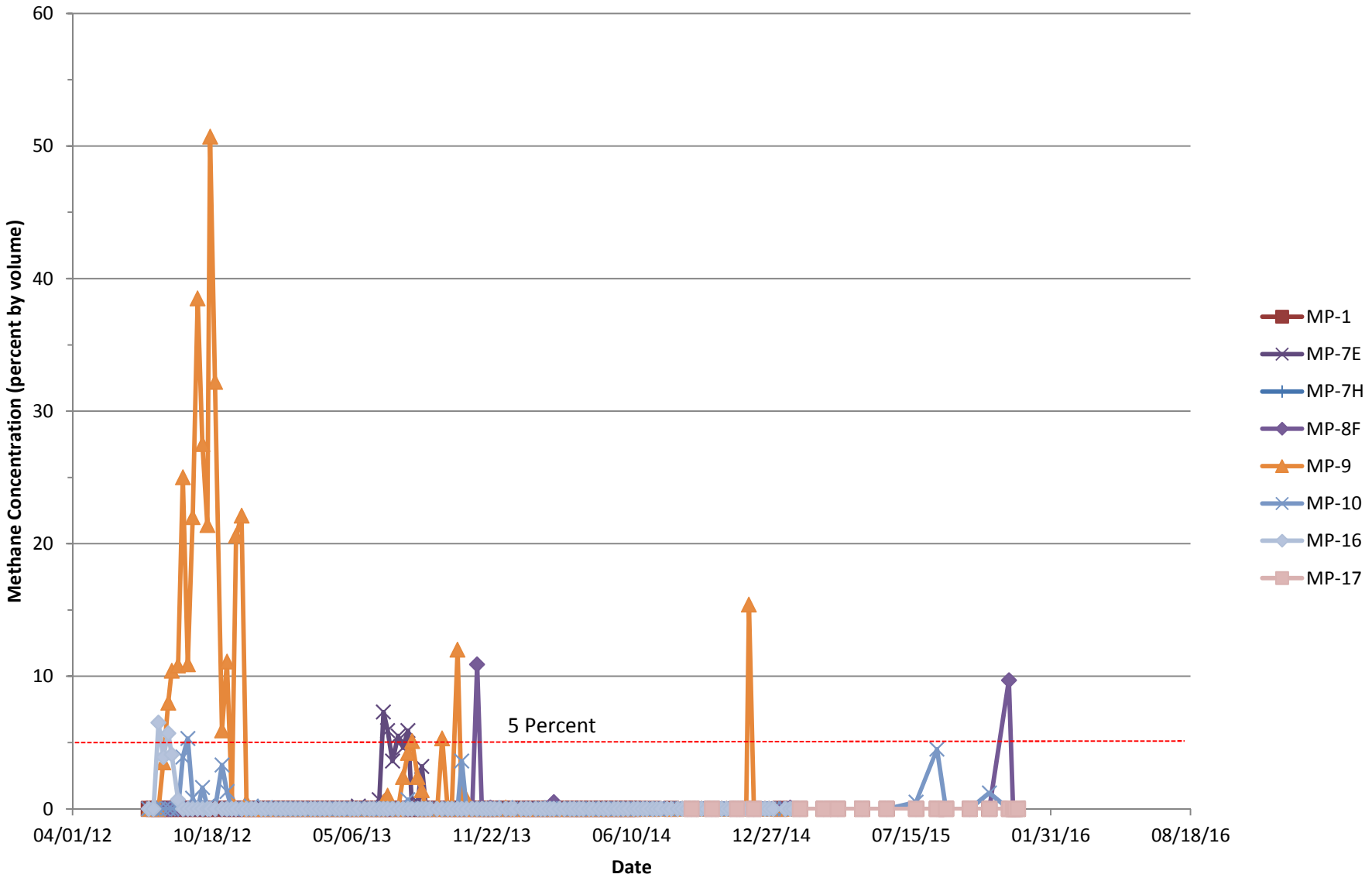


FIGURE 2. CEC 2011 Northern Geologic Cross Section

Figure 3. Combustible Gas Concentration in Compliance Probes
St. Bernard Landfill



APPENDIX A

MONITORING REPORTING FORMS

Compliance Probe Monitoring Form for St. Bernard Landfill

Date:	12/8/2015	Sampler:	Randall Mills
Instrument	GEM 5000	Weather:	partly cloudy, light breeze
Calibration Prior to Sampling:	Yes	Ambient Air Temperature (^{o}F):	56
Calibration Gas:	CH_4 15%, CO_2 15%, O_2 4%	Barometric Pressure (in Hg):	30.02
Recalibration:	No	Relative Humidity (%):	47

Probe ID	Start Time	Stop Time	Gas Pressure (inches water)	Initial CH_4 (% by Volume)	Sustained CH_4 (% by Volume)	Depth to Water Level (feet below ground surface)	Depth to Top of Screen (feet below ground surface)	Open Screen[#] (feet)
MP-1							not known	
MP-7E							3	
MP-7H							2	
MP-8F	15:15	15:16	0.00	0	0	8.50	4	4.5
MP-9							2	
MP-10							2	
MP-16							2	
MP-17							2	

Notes:

Signature: Randall C. Mills

[#] A zero or negative value indicates that the probe is watered in.

Compliance Probe Monitoring Form for St. Bernard Landfill

Date:	12/11/125	Sampler:	Randall Mills
Instrument	GEM 5000	Weather:	cloudy, calm
Calibration Prior to Sampling:	Yes	Ambient Air Temperature (^{o}F):	63
Calibration Gas:	CH_4 15%, CO_2 15%, O_2 4%	Barometric Pressure (in Hg):	29.22
Recalibration:	No	Relative Humidity (%):	70

Probe ID	Start Time	Stop Time	Gas Pressure (inches water)	Initial CH_4 (% by Volume)	Sustained CH_4 (% by Volume)	Depth to Water Level (feet below ground surface)	Depth to Top of Screen (feet below ground surface)	Open Screen[#] (feet)
MP-1							not known	
MP-7E							3	-3.0
MP-7H							2	-2.0
MP-8F	14:17	14:18	0.01	0	0	8.65	4	4.6
MP-9							2	-2.0
MP-10							2	-2.0
MP-16							2	-2.0
MP-17							2	-2.0

Notes:

Signature: Randall C. Mills

[#] A zero or negative value indicates that the probe is watered in.

Compliance Probe Monitoring Form for St. Bernard Landfill

Date:	12/15/125	Sampler:	Randall Mills
Instrument	GEM 5000	Weather:	cloudy, light breeze
Calibration Prior to Sampling:	Yes	Ambient Air Temperature (^{o}F):	49
Calibration Gas:	CH_4 15%, CO_2 15%, O_2 4%	Barometric Pressure (in Hg):	29.79
Recalibration:	No	Relative Humidity (%):	69

Probe ID	Start Time	Stop Time	Gas Pressure (inches water)	Initial CH_4 (% by Volume)	Sustained CH_4 (% by Volume)	Depth to Water Level (feet below ground surface)	Depth to Top of Screen (feet below ground surface)	Open Screen[#] (feet)
MP-1							not known	
MP-7E							3	-3.0
MP-7H							2	-2.0
MP-8F	12:45	13:46	0	0	0	8.75	4	4.7
MP-9							2	-2.0
MP-10							2	-2.0
MP-16							2	-2.0
MP-17							2	-2.0

Notes:

Signature: Randall C. Mills

[#] A zero or negative value indicates that the probe is watered in.

Compliance Probe Monitoring Form for St. Bernard Landfill

Date:	12/18/125	Sampler:	Randall Mills
Instrument	GEM 5000	Weather:	cloudy, windy, snow flurries
Calibration Prior to Sampling:	Yes	Ambient Air Temperature (^{o}F):	36
Calibration Gas:	CH_4 15%, CO_2 15%, O_2 4%	Barometric Pressure (in Hg):	29.88
Recalibration:	No	Relative Humidity (%):	48

Probe ID	Start Time	Stop Time	Gas Pressure (inches water)	Initial CH_4 (% by Volume)	Sustained CH_4 (% by Volume)	Depth to Water Level (feet below ground surface)	Depth to Top of Screen (feet below ground surface)	Open Screen[#] (feet)
MP-1							not known	
MP-7E							3	-3.0
MP-7H							2	-2.0
MP-8F	14:16	14:17	-0.03	0	0	8.82	4	4.8
MP-9							2	-2.0
MP-10							2	-2.0
MP-16							2	-2.0
MP-17							2	-2.0

Notes:

Signature: Randall C. Mills

[#] A zero or negative value indicates that the probe is watered in.

APPENDIX B

NOTIFICATION LETTER

Environmental Consultants
and Contractors

2060 Reading Road
Suite 200
Cincinnati, OH 45202-1497

513 421-5353
www.scsengineers.com

SCS ENGINEERS

December 2, 2015
File No. 23212007.03

Ms. Tracy Buchanan
Ohio EPA Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Subject: Village of St. Bernard Landfill
Probe Monitoring Results, December 2, 2015

Dear Ms. Buchanan:

Enclosed please find the results of the gas monitoring performed on behalf of the Village of St. Bernard at the closed St. Bernard Landfill on December 2, 2015.

Combustible gas concentrations above the compliance threshold were detected at MP-8F. MP-8F had an initial concentration of 9.1 percent and a sustained concentration of 9.7 percent. The immediate verification sample at MP-8F had an initial concentration of 10.0 percent and a sustained concentration of 9.8 percent. None of the other compliance probes had combustible gas concentrations above the threshold limit. This threshold exceedance will trigger the implementation of Contingency Monitoring as described in the EGMP. It is anticipated that the next monitoring event will be performed during the week of December 7th.

Should you have any questions or comments, please contact the undersigned.

Sincerely,

Randall C. Mills, P.G.
Senior Project Professional
SCS ENGINEERS

James J. Walsh, P.E.
Principal
SCS ENGINEERS

cc: Chuck DeJonckheere, Hamilton County Public Health
Nick Schapman, GHD
Bill Burkhardt, Mayor, Village of St. Bernard

Enclosures

Compliance Probe Monitoring Form for St. Bernard Landfill

Date:	12/2/2015	Sampler:	Randall Mills
Instrument	GEM 5000	Weather:	clear to partly cloudy, calm
Calibration Prior to Sampling:	Yes	Ambient Air Temperature (°F):	41
Calibration Gas:	CH_4 15%, CO_2 15%, O_2 4%	Barometric Pressure (in Hg):	29.81
Recalibration:	No	Relative Humidity (%):	100

Probe ID	Start Time	Stop Time	Gas Pressure (inches water)	Initial CH_4 (% by Volume)	Sustained CH_4 (% by Volume)	Depth to Water Level (feet below ground surface)	Depth to Top of Screen (feet below ground surface)	Open Screen[#] (feet)
MP-1	8:37	8:38	0	0.1	0	9.30	not known	
MP-7E	9:18	9:19	0	0	0	5.59	3	2.6
MP-7H	9:25	9:26	-0.32	0	0	4.40	2	2.4
MP-8F	9:08	9:09	0.01	9.1	9.7	8.17	4	4.2
MP-9	9:03	9:04	-1.26	0	0	4.83	2	2.8
MP-10	8:57	8:58	3.52	0	0	4.24	2	2.2
MP-16	8:42	8:43	0	0	0	4.82	2	2.8
MP-17	8:49	8:50	-0.16	0	0	>11.74	2	9.7
MP-8F	9:11	9:12	0	10.0	9.8			
MP-8F	10:31	10:32	-0.02	9.2	9.4			

Notes:

Signature: Randall C. Mills

[#] A zero or negative value indicates that the probe is watered in.

Mills, Randall

From: Mills, Randall
Sent: Wednesday, December 02, 2015 3:44 PM
To: Nick Schapman - GHD (nicholas.schapman@ghd.com); 'bburkhardt@cityofstbernard.org'; Elaine Sipe; 'Buchanan, Tracy'
Cc: Walsh, Jim (JWalsh@SCSEngineers.com); 'firechief@cityofstbernard.org'; 'smoeller@stbernardpolice.org'; DeJonckheere, Chuck
Subject: 23212007.03 St Bernard LF - probe monitoring report for 12/2/15
Attachments: 12-2-15 Probe Monitoring Report.pdf

Attached please find an electronic copy of the hard copy letter and attachment that were sent to the OEPA via regular mail. This transmittal will serve as your cc copy of the probe monitoring report for the monitoring performed on 12/2/15.

Randall C. Mills, P.G.
Senior Project Scientist

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rmills@scsengineers.com
www.scsengineers.com

"Ownership Makes A Difference"

APPENDIX C

BORING LOGS

Civil & Environmental Consultants, Inc.
4274 Glendale Milford Road
Cincinnati, Ohio 45242

BORING NUMBER MP-8F

CLIENT St. Bernard
PROJECT NAME MP Install
CEC PROJECT NUMBER 100-194
PROJECT LOCATION Former St. Bernard Landfill
DATE STARTED 6/29/12 **COMPLETED** 6/29/12
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR Jersey West
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING ---
LOGGED BY CHW **CHECKED BY** RH
AT END OF DRILLING ---
LOCATION 3' West of MP-8B, 3' South of fence
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				0.7 Brown CLAY, little fine to coarse sand, little gravel, hard, dry (FILL)	Concrete
				Fine to coarse SAND, dry to saturated (FILL)	Bentonite Seal
5					
				9.5	Sand Pack
10	DP 1	88		Gray clayey SILT, fine to coarse sand, very moist to saturated, soft (NATURAL)	1" Sch. 40 slotted PVC pipe
				13.0	
15	DP 2	88		Gray to brown fine to coarse SAND and GRAVEL, saturated, dense (NATURAL)	Bentonite and Sand
				17.0	
				Bottom of hole at 17.0 feet	

Civil & Environmental Consultants, Inc.
Cincinnati, OH (513) 985-0226 • (800) 759-5814
Pittsburgh, PA (412) 921-3402 • (800) 365-2324

CITY OF ST. BERNARD

St. Bernard, Ohio

JOB NO.: 200610

LOG OF MP-8

Sheet 1 of 1

LOGGED BY: PCS

GROUND SURFACE ELEVATION:

DRILLER: Jersey West Drilling

TOP OF CASING ELEVATION:

DATE DRILLED: 08/14/00

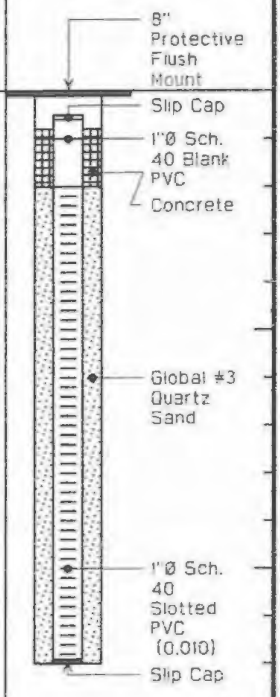
INITIAL WATER LEVEL: 9 ft. BGS DATE: 08/14/00

DRILL METHOD: 4 1/4 IN. HSA

STATIC WATER LEVEL: DATE:

HNu (ppm)	Recovery (in.)	Blow Counts	Elevation, MSL	Depth (ft.)	Graphic Log	Materials Description
						No sample
	21	5-8 12-15		5		Dark brown to gray silty CLAY w/ fine to medium sand, moist, very stiff (FILL) Light brown fine SAND, moist, medium dense (FILL)
	N/A	4-3 4-3				Dark brown to gray silty CLAY w/ fine to medium sand, concrete, wood, brick, plastic, and rubber, moist, very stiff (FILL) No recovery
	18	1-1 1-1		10		Dark brown to gray sandy silty CLAY, wet, very soft Brown oxidized seam at 12.5 feet
	18	0-1 1-1				
				15		Boring terminated at 13 feet
				20		
				25		

Well Completion



Project Name: St. Bernard Landfill	SCS Project Number: 23212007.01	**Test Pit No.: 8 & "T"**	
Project Location: St. Bernard, Ohio	Date Started: 4/16/2013	Page 1 of _1__	
Logged By: R. Mills	Date Completed: 4/16/2013	GW Depth: 8.5	Date: 4/16/13
Excavated By: Petro	Sampling Method:		
Excavation Method: Cat 308E	Weather:		
Backfill: excavated and off-site soil			
Total Test Pit Depth:			

Depth (ft.)	Sample No.	Methane Reading (%vol)	PID Scan (ppm)	PID Headspace (ppm)*	Description
0--					Approximately 12 inch landscaping mound adjacent to fence.
--					Brown to tan soil fill: CLAY & SILT, little Sand, little Gravel, moist
1--				1	Less than 5% non-soil debris.
--					At 1.5 feet becoming grey brown SILT & CLAY, and Sand, little Gravel with brick
2--					fragments, piece of clay tile, wood.
--					
3--				2.6	
--					
4--		0	0.4		Amount of debris increased to 5 to 10 % below 4 feet, mostly concrete.
--					
5--					
--					
6--					At 6 to 7 feet, olive grey Clayey SILT, little fine Sand. Debris included tire, tire tube,
--					and conveyor belt roller.
7--					
--					At 7. 5 feet, native soil: olive grey Clayey SILT, little to some fine Sand, moist, some
8--					organic material. Water coming into pit at bottom.
--					
9--					Bottom of test pit at 8.5 feet.
--					
10--					TP-8 "T" extended to depth of 8 feet where further excavation blocked by large concrete
--					slab. No in place native material encountered, but native soil mixed with debris was
11--					encountered. Headspace readings from TP-8"T", 0.2 and 0.1 ppm.

* Unless otherwise indicated, headspace samples were collected from excavated soil fill stockpile prior to backfilling.

APPENDIX D

(RESERVED FOR) CERTIFICATION REPORT

No additional permanent monitors were installed.