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SCS ENGINEERS

August 10, 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
Certification Report for Probe Abandonment

Dear Ms. Buchanan:

On behalf of the Village of St. Bernard, SCS is submitting the attached final CERTIFICATION REPORT, EXPLOSIVE GAS MONITORING PROBE ABANDONMENT for the closed St. Bernard Landfill for your use. As requested, two hard copies are attached.

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

Sincerely,

Randall C. Mills

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

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

cc: Nick Schapman, GHD
Bill Burkhardt, Mayor, Village of St. Bernard

Enclosures

SCS ENGINEERS

CERTIFICATION REPORT
EXPLOSIVE GAS MONITORING PROBE ABANDONMENT
ST. BERNARD LANDFILL

Presented to:

Village of St. Bernard

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

Presented by:

SCS ENGINEERS
2060 Reading Road, Suite 200
Cincinnati, Ohio
(513) 421-5353

July 24, 2015
Revised August 10, 2015
File No. 23212007.03

CERTIFICATION REPORT
EXPLOSIVE GAS MONITORING PROBE ABANDONMENT
ST. BERNARD LANDFILL

Presented To:

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Appendices

CERTIFICATION REPORT
EXPLOSIVE GAS MONITORING PROBE ABANDONMENT

1 INTRODUCTION

In accordance with paragraph F of the OAC Rule 3745-27-12, this report and accompanying drawings document the abandonment of existing permanent monitors at the St. Bernard Landfill. The list of probes to be abandoned was included in the approved Explosive Gas Monitoring Plan dated December 2014, as revised June 2015. The abandonment of old monitors was completed by Jersey West Drilling under the direction of SCS Engineers. The field program occurred on July 7, 8 and 10, 2015. The boring logs and as-built construction diagrams for those abandoned probes for which they are available, are presented in Appendix A. The tables from the EGMP that have been revised to reflect the abandonment are presented in Appendix B. The Figures from the EGMP that have been revised to reflect the abandonment are presented in Appendix C. Photos taken during the abandonment are presented in Appendix D.

2 SUMMARY OF FIELD ACTIVITIES

Permanent Monitoring Probe Abandonment

The probe abandonment was performed by Jersey West Drilling under the supervision of SCS Engineers. The probes were abandoned in accordance with Section 1.8.4, Probe Abandonment, with certain exceptions that resulted from conditions encountered in the field.

The following procedures were followed for the abandonment of the probes.

- The protective casings were opened and the probe numbers were confirmed.
- The casings were carefully filled with bentonite chips. Water was added to the casings to hydrate the bentonite. The bentonite chips were added so as to avoid introducing fines that could potentially cause bridging at the water surface.
- A small excavator was used to remove the concrete pad (if present) and the protective casing, severing the probe casing below the ground surface in the process.
- Where the removal of the concrete pad and protective casing inadvertently removed the probe casing and screen, the remaining hole was filled with bentonite. Water was added to hydrate the bentonite.
- The tops of the probe casings were excavated and cut off a minimum of 3 feet below the ground surface.
- A slip cap was placed on the top of the filled casing. The cap was then glued in place.
- Where the excavation of the protective casing removed the annular seal, a minimum of 1 foot of hydrated bentonite chips was placed as a seal above the capped probe casing. For most of the locations, a 5-gallon plastic bucket with the bottom cut out was used to contain the bentonite chips above the probe. When soil had been placed around the bucket, the bucket was removed, leaving a minimum 1-foot plug of bentonite chips above

the abandoned probe. Where the excavation of the protective casing did not remove the annular seal, a replacement seal was not added.

- The remaining hole made when the protective casing was removed was backfilled with the soil excavated. Clean fill soil was then added as required to return the surface to grade. The areas of disturbed soil were seeded and mulched with straw to reestablish grass in those areas.

The exceptions to this procedure are described below.

MP-15 – During excavation, the entire casing pulled out. The annulus was filled with bentonite chips and hydrated.

SP-14 – After removal of the concrete surface pad and excavation to a depth of approximately 2.5 feet, a second concrete pad was encountered. The surface in this vicinity had been regraded and SP-14 had been extended. Removal of this second concrete surface pad would have resulted in a large excavation. The second concrete pad will protect the remaining probe casing. A cap placed on the probe casing within the lower concrete pad. It was inadvertently not glued, but was forced on. The opening of the second concrete pad was filled with bentonite before backfilling. Because the surface seal was not compromised, the 1-foot of bentonite above the capped casing was not required.

SP-2 and SP-2R – Part of one of the casings pulled up during excavation. The annulus was filled with bentonite chips. The other casing was capped. It was inadvertently not glued, but was forced on and then covered with bentonite chips and hydrated.

SP-12 – During excavation, large pieces of concrete were encountered at each end of the excavation. The pieces were large enough that it was not practical to remove them with the small excavator. The excavation could not be extended below approximately 2.5 feet. Additional topsoil was mounded above this location after backfilling to attempt to provide the 3 foot isolation distance.

MP-7T – Upon excavation, this probe was found to be constructed with perforated 3/8-inch tubing.

MP-7F – Upon excavation of MP-7F, as second 1-inch PVC casing was exposed. This second casing was filled with bentonite chips before completing the remaining abandonment steps.

MP-7G – during the removal of the concrete pad, it was noted that MP-7G had a "T" with a horizontal 1-inch PVC pipe connected to the riser. When the pad was completely excavated, the horizontal pipe was also excavated and it was noted that the horizontal pipe had been capped off approximately 2 feet away from the probe.

MP-8G – During the excavation, all of the probe casing pulled out of the ground. The remaining annulus was filled with bentonite chips.

Hillside probe – the hillside probe was less than 4 feet deep. It was removed from the ground by hand and the remaining annulus was filled with bentonite chips which were hydrated.

Site Restoration

All soils removed were used to backfill the excavations. The concrete pads, protective casings, and any probe casings excavated were disposed of as C&DD or solid waste. Clean topsoil was used to fill any remaining depression and to provide improved growing conditions for grass. The soil was mounded slightly over the center of the excavations in anticipation of minor settlement. Grass seed was applied and the topsoil and seed were covered with loose straw. Photos of the excavated areas after the placement of straw are included in Appendix D. Further settlement, if it occurs, will be addressed by the Village as needed.

3 CONCLUSION AND CERTIFICATION

The explosive gas permanent monitors referenced in this report were abandoned in substantial compliance with the EGMP as revised in June 2015 and with the OAC Rule 3745-27-12. The enclosed Figure 5 shows the locations of the existing explosive gas monitors for the St. Bernard Landfill.

APPENDIX A

BORING LOGS, AND PERMANENT MONITORING PROBE CONSTRUCTION DIAGRAMS OF ABANDONED PROBES

Note: Boring logs do not exist for the following probes:

- MP-1 & SP-2: Installed by Foppe Thelen. Boring logs were not provided in the Foppe Thelen produced reports.

- MP-7E, MP-7F, MP-8A and MP-8B: These probes were installed by direct push methods in close vicinity to existing probes and as such, soil was not removed in order to log the geologic profile.

- Hillside probe: This probe was installed by an unknown party.

- Unknown probe adjacent to MP-7F (MP-7T?): Likely installed by CEC, but log not available in any recent reports.

BORING NUMBER EW-2

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

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/2/10 **COMPLETED** 6/2/10
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY MJM **CHECKED BY** RH
LOCATION See Map

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA **HOLE SIZE** 4 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING ---
AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) T=Torvane	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Bentonite	0.0					
0		Brown silty CLAY, trace coarse sand below 2.6' and increased silt and gray mottling, noted iron staining, moist, medium stiff		DP 1	88			
0								
0		Brown becoming gray silty CLAY, few brick fragments at 4.5', noted iron staining, moist, stiff	5.0					
0		Black clayey SILT, trace gravel, few concrete fragments, moist, medium stiff		DP 2	65			
0		Black clayey SILT, trace gravel, few cinders and wood fragments, moist, medium stiff						
0								
0		Brown and gray silty CLAY, moist, stiff						
0		Black clayey SILT, some coarse sand, trace gravel, few brick and wood fragments, moist to very moist, soft to medium stiff	10.0	DP 3	63			
0								
0		Black clayey SILT, some coarse sand, trace gravel, noted sheet plastic, moist to very moist and wet at bottom, soft to medium stiff		DP 4	50			
0			15.0					
0		Black clayey SILT, some coarse sand, trace gravel, noted large wood fragment at about 18.0', very moist to wet, soft to medium stiff		DP 5	80			
0		Silty clay, noted large piece of wood and rubber, noted sand present in the shoe	20.0	DP 6	23			
0				DP 7	20			
0		Bottom of hole at 24.0 feet.						

CEC CUSTOM LOG 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/8/10

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

BORING NUMBER MP-7G

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 5/27/10 **COMPLETED** 5/27/10
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY MJM **CHECKED BY** RH
LOCATION See Map

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA **HOLE SIZE** 4 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING ---
AFTER DRILLING DTW 6.17 feet bgs

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) T=Torvane
0		Topsoil	0.0				
0		Mottled brown and gray clayey SILT, few medium to coarse sand, trace brick and charred wood pieces, very moist, soft		DP 1	38		
0							
0		Brown to gray clayey SILT, trace coarse sand, trace gravel, trace brick and wood pieces, moist, medium stiff	5.0				
0		Brown medium SAND, moist, loose		DP 2	70		
0		Gray medium SAND, wet, loose					
0		Gray SILT, trace becoming some clay, trace roots and wood pieces; moist, soft	10.0	DP 3	95		
0		Gray clayey SILT, moist, medium stiff		DP 4	95		
0			15.0				
0		Gray fine and medium SAND, trace gravel, moist becoming wet below 15.3', loose					
0		Bottom of hole at 16.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

CEC CUSTOM LOG 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/8/10

BORING NUMBER MP-8AR

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

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 11/17/11 COMPLETED 11/17/11
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY RJS CHECKED BY RH
LOCATION 16' East of MP-8R and 14' South of fence

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA HOLE SIZE 3 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING Dry
▼ .5 hours AFTER DRILLING 12.3 ft / Elev 0.0 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0	DP 1	75		Brown silty CLAY, few brick fragments
				3.0
	DP 2	75		3.8 GRAVEL
5				Olive with reddish mottling silty CLAY, stiff
	DP 3	90		Noted piece of pottery at 7'.
				7.0 Grayish-green clayey SILT, very soft
	DP 4	90		9.0 Grayish-green silty CLAY
10				
	DP 5	100		▼ Noted 2" peat layer at 12.5'.
				13.0 Bottom of hole at 13.0 feet

Initial methane reading = 0%, 3:40-3:42 PM 11/17/2011.

WELL DIAGRAM: Concrete; Bentonite Seal; Sand Pack

GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 12/5/11

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

BORING NUMBER MP-8BR

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 11/17/11 COMPLETED 11/17/11
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY RJS CHECKED BY RH
LOCATION 16' East of MP-8CR, 15.5' South of fence

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA HOLE SIZE 3 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING 14.8 ft / Elev 0.0 ft
AT END OF DRILLING ---
2.5 hours AFTER DRILLING 2.9 ft / Elev 0.0 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Brown silty CLAY, noted layers of pea gravel
	DP 1	75		Noted corrugated pipe at 3'.
				3.0 ▽
				3.5 Concrete
5				Olive silty CLAY, noted glass and pottery
				Noted brick from 5' to 8'. Noted wood pieces at 5.5' and 6'.
	DP 2	80		8.0
				Grayish-green clayey SILT with fine sand
10				Wet, very soft from 9' to 10'.
	DP 3	75		
				14.3
15				14.8 ▽ PEAT
				15.0 SAND and GRAVEL, wet
				Bottom of hole at 15.0 feet

Initial methane reading = 0%, 12:42-12:45 PM 11/17/2011. Initial vacuum = -0.37" water.

WELL DIAGRAM: Concrete; Bentonite Seal; Sand Pack

GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 12/5/11

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

BORING NUMBER MP-8CR

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 11/17/11 COMPLETED 11/17/11
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY MJM CHECKED BY RH
LOCATION 15.5' South of fence, 5' West of MP-8C

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA HOLE SIZE 3 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING 7.0 ft / Elev 0.0 ft
4 hours AFTER DRILLING 3.7 ft / Elev 0.0 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0	DP 1	60		Brown silty CLAY, some pea gravel
	DP 2	60		
5				Concrete from 4.5' to 5', wet on top of concrete.
	DP 3	10		5.0 Pushed concrete in tip, wood noted
10				10.0
	DP 4	80		Gray silty CLAY, soft
				12.5
	DP 5	80		Grayish-green clayey SILT, wet, soft
				Becoming silty fine sand at 14'. Noted 0.5" of wood at 14'.
15				14.5
				15.0 Grayish-green silty SAND, noted coarse sand and gravel at 15'
				Bottom of hole at 15.0 feet

Initial methane reading = 0%, 11:30 AM 11/17/2011 and 0%, 12:24-12:26 AM. Vacuum = 0.1" water

WELL DIAGRAM: Concrete; Bentonite Seal; Sand Pack

GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 12/5/11

BORING NUMBER MP-8R

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

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 11/17/11 COMPLETED 11/17/11
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY RJS CHECKED BY RH
LOCATION 16' East of MP-8BR, 14.5' South of fence, 5' West of VB

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA HOLE SIZE 3 inch
GROUND WATER LEVELS:
▽ AT TIME OF DRILLING 10.0 ft / Elev 0.0 ft
▼ AT END OF DRILLING 3.0 ft / Elev 0.0 ft
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0				Brown silty CLAY, minor brick noted
	DP 1	60		2.0
				2.3 Asphalt fragments
				▼ Brown silty CLAY, noted shingles at 3'
5				Noted asphalt fragments at 4.5'. Very soft from 4.5' to 5'.
	DP 2	75		6.0 Brownish-gray silty fine SAND
				7.0 Olive silty CLAY, soft
10				9.5 ▽ Grayish-green clayey SILT, wet, very soft
	DP 3	75		Some fine sand and wet from 10' to 14'.
				14.0 Bottom of hole at 14.0 feet

Initial methane reading = 0%, 2:30-2:32 PM 11/17/2011

WELL DIAGRAM: Concrete; Bentonite Seal; Sand Pack

GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 12/5/11

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

BORING NUMBER MP-8D

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/29/12 **COMPLETED** 6/29/12
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY CHW **CHECKED BY** RH
LOCATION 7' West of MP-8C, 3' South of fence

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION _____ **HOLE SIZE** _____
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
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, dry, hard (FILL)	Concrete
				Fine to coarse SAND, dry to saturated (FILL)	Bentonite Seal
5					
				9.0	Sand Pack
10	DP 1	83		Dark gray to green clayey SILT and silty CLAY, trace fine to coars sand, saturated, soft (NATURAL)	
				11.5 Light gray clayey SILT, some fine to coarse sand, some gravel, saturated, soft (NATURAL)	1" Sch. 40 slotted PVC pipe
				14.0	
15	DP 2	96		Fine to coarse SAND and GRAVEL, saturated, dense (NATURAL)	Bentonite
				Trace peat layer (less than 1' thick) at 15.3'	
				16.0 Bottom of hole at 16.0 feet	

GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/9/12

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

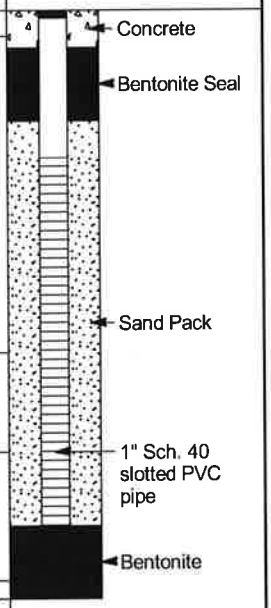
BORING NUMBER MP-8E

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/29/12 **COMPLETED** 6/29/12
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY CHW **CHECKED BY** RH
LOCATION 8' East of MP-8C, 3' South of fence

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION _____ **HOLE SIZE** _____
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
0.7				Brown CLAY, little fine to coarse sand, little gravel, dry, hard (FILL)
				Fine to coarse SAND, dry to saturated (FILL)
9.3				
10	DP 1	94		Gray clayey SILT, trace fine to coarse sand, saturated, soft (NATURAL)
12.0				
	DP 2	81		Gray clayey SILT, some fine to coarse sand, some gravel, saturated, soft (NATURAL)
15				
15.5				
16.0				Very dark brown to black fine to coarse SAND and GRAVEL, saturated, dense (NATURAL)
				Bottom of hole at 16.0 feet

WELL DIAGRAM



GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/9/12

BORING NUMBER MP-8G

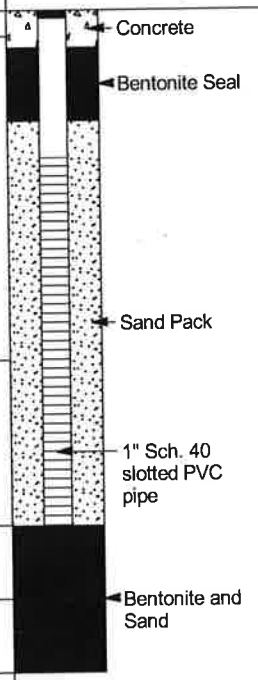
Civil & Environmental Consultants, Inc.
4274 Glendale Milford Road
Cincinnati, Ohio 45242

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/29/12 **COMPLETED** 6/29/12
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY CHW **CHECKED BY** RH
LOCATION 4' East of MP-8A, 3' South of fence

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION _____ **HOLE SIZE** _____
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	GRAPHIC LOG	MATERIAL DESCRIPTION
0				0.7 Brown CLAY, little fine to coarse sand, little gravel, dry, hard (FILL)
				Fine to coarse SAND, dry to saturated (FILL)
5				
				9.5
10	DP 1	68		Gray to grayish-green clayey SILT, little fine to coarse sand, saturated, soft (NATURAL)
				14.0
15	DP 2	96		Gray clayey SILT, little to some fine to coarse sand, trace fine gravel, peat fragment at 15.5', saturated, soft (NATURAL)
				16.0
				Fine to coarse SAND and GRAVEL, saturated, dense (NATURAL)
				18.0
				Bottom of hole at 18.0 feet

WELL DIAGRAM



GENERAL BH / TP / WELL 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/9/12

Current Designation SP-12

BORING NUMBER MP-12A

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

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/8/10 **COMPLETED** 6/8/10
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY MJM **CHECKED BY** RH
LOCATION See Map

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA **HOLE SIZE** 4 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING ---
AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) T=Torvane
0		Topsoil	0.0				
0		Brown clayey SILT, trace sand, trace gravel, few brick, concrete, and glass fragments, slightly moist, medium stiff		DP 1	83		
0		Black clayey SAND, few concrete and metal fragments, moist, loose					
0		Black clayey SAND, noted concrete and carpet, strong odor, moist, loose	5.0	DP 2	10		
0		Dark gray and black clayey SILT, few brick fragments, noted tar-like material, soft	10.0	DP 3	8		
0		Dark gray and black clayey SILT, few brick fragments, noted tar-like material and strong odor, very moist, soft		DP 4	28		
0		*sample retained from 12' to 12.3'*	15.0				
0		Gray clayey SAND, few gravel, noted copper tubing, wet, medium stiff		DP 5	43		
0		Gray SAND, trace gravel, wet, loose	20.0				
0		Bottom of hole at 20.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

CEC CUSTOM LOG 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/8/10

SHEET 1 OF 1

LOG OF BORING NO. MP-15

Civil & Environmental Consultants, Inc.

Client CITY OF ST. BERNARD | Project No. 210158

Location ST. BERNARD LANDFILL

Date Started 12-22-2003 | Date Completed 12-22-2003

Field Geologist PCS | Checked By DGS | GWL: Depth NA / NA | Date/Time NA / NA

Driller CEC

Drilling Method HAND AUGER

HNU (ppm)	RECOVERY	BLOW COUNTS	DEPTH (ft.)	GRAPHIC LOG	MATERIALS DESCRIPTION	WELL/PIEZOMETER CONSTRUCTION DETAIL	ELEVATION (FEET, MSL)
						PROTECTIVE FLUSH MOUNT STEEL CASING W/ PVC SKIRT	
			2		Backfill	CONCRETE (8")	
						1" I.D. SCH 40 SOLID PVC (1 ft.)	
					Trace Clay	SAND PACK (No. 3 Silica, 3'-4")	
			4		Boring terminoted at 4 feet.	4 1/4" DIA. BORING	
						SLIP CAP W/ SCREWS	
			6			1" I.D. SCH 40 PERFORATED PVC (3 ft.) ~1/8" DIA. PERFORATIONS EVERY 1/2"	

MP-15 installation log.dwg

BORING NUMBER SB-1

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

CLIENT St. Bernard
CEC PROJECT NUMBER 100-194
DATE STARTED 6/8/10 **COMPLETED** 6/8/10
DRILLING CONTRACTOR Jersey West
DRILLING METHOD Direct Push
LOGGED BY MJM **CHECKED BY** RH
LOCATION See Map

PROJECT NAME MP Install
PROJECT LOCATION Former St. Bernard Landfill
GROUND ELEVATION NA **HOLE SIZE** 4 inch
GROUND WATER LEVELS:
AT TIME OF DRILLING None
AT END OF DRILLING ---
AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) T=Torvane	▲ SPT N VALUE ▲ 20 40 60 80 / PL MC LL 20 40 60 80 / ☐ FINES CONTENT (%) ☐ 20 40 60 80
0		Topsoil	0.0					
0		Brown clayey SILT, trace gravel, few brick and charred wood fragments, moist, medium stiff		DP 1	73			
0		Brown silty CLAY, trace gravel, few brick and concrete pieces at depth, moist, medium stiff						
0		Brown becoming grayish-green to dark gray silty CLAY, trace gravel, few brick and concrete pieces at depth, moist, medium stiff	5.0					
0		Black and dark gray clayey SAND, trace gravel, few wood pieces, trace concrete, glass, and foam, noted odor, moist, soft		DP 2	80			
0		*sample retained from 5' to 7.2'*						
0		Black and dark gray clayey SAND, trace gravel, many wood pieces and trace glass, moist, soft						
0		Gray becoming light gray silty CLAY, moist, soft to medium stiff	10.0	DP 3	100			
0		Bottom of hole at 12.0 feet.						

CEC CUSTOM LOG 100-194 ST BERNARD MP INSTALL.GPJ GOOD TEMPLATE.GDT 7/8/10

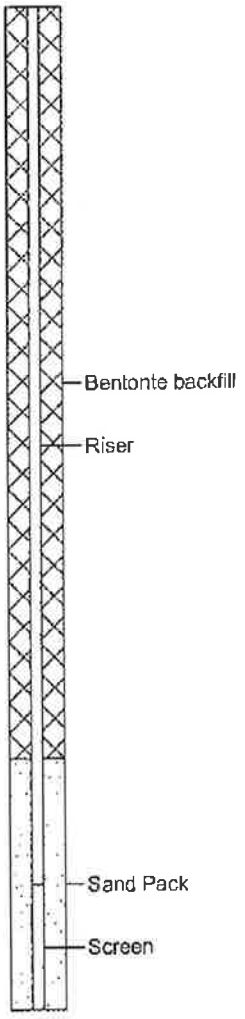
SCS ENGINEERS

LOG OF Peat Probe A

SCS Project Number: 23212007.00
Probe Installation
Closed Landfill
St. Bernard, Ohio

Logged By:	R. Mills	Date Started:	3/9/12
Drilled By:	Jersey West	Date Completed:	3/9/12
Boring Method:	direct push	G. S. Elevation:	
Total Boring Depth:	16 feet	Northing	
Sampling Method:	direct push	Easting	

Depth in feet	Surf. Elev.	Samples	Recovery (in.)	Headspace (ppm)	Blow Count	GRAPHIC	USCS	DESCRIPTION
0								FILL brown SILT & CLAY, brick fragments
2		1	40					~3 in. of concrete fragments at 1.5 ft becoming grey to dark grey soil mixed with wood, cinders, moist
4								greenish grey SILT & CLAY, moist
6		2	40					at ~6 ft, dark grey soil with concrete, becoming saturated
8								7.8 ft Native Soil grey SILT & CLAY, varved
10		3	39					grading to Clayey SILT grading to fine SAND and Clayey Silt, saturated
12								grey medium SAND, little Clayey Silt
14		4	18					grading to SAND and Gravel, little Clayey Silt, saturated
16		5	18					15 ft dark grey organic layer 15.3 ft SAND and Gravel, some Clayey Silt, saturated
18								
20								



03-15-2012 I:\PROJECTV2012 Projects\23212007 00 St Bernard LF\Data\Pear Probe A.bor

SCS ENGINEERS

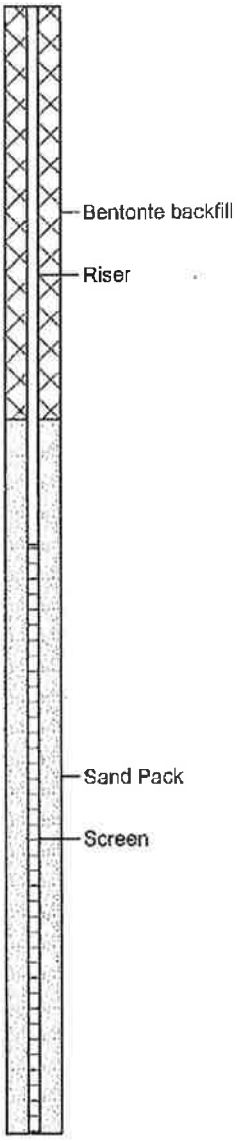
LOG OF Drift Probe C

SCS Project Number: 23212007.00
Probe Installation
Closed Landfill
St. Bernard, Ohio

Logged By:	R Mills	Date Started:	3/9/12
Drilled By:	Jersey West	Date Completed:	3/9/12
Boring Method:	direct push	G. S. Elevation:	
Total Boring Depth:	16 feet	Northing	
Sampling Method:	direct push	Easting	

Depth in feet	Surf. Elev.	Samples	Recovery (in.)	Headspace (ppm)	Blow Count	GRAPHIC	USCS	DESCRIPTION
0								FILL Brown SILT & CLAY, little to some Sand, trace Gravel, moist.
2		1	40					A ~2 ft, olive grey SILT & CLAY, little Sand, little Gravel, brick fragments, pieces of concrete, shingle, moist.
4								
6		2	40					6.6 ft Native Soil Olive grey massive SILT & CLAY to CLAY & SILT, trace f Sand, old root channels, saturated.
8								
10		3	39					alternating in approximately 7 in. layers with Clayey SILT, little fine Sand, saturated
12		4	18					
14		5	18					fine SAND grading to coarse to fine SAND, little Gravel, many small shells, disperse pieces of wood, saturated
16		6	24					Clayey SILT to SILT and fine Sand, saturated
18								
20								

Peat Probe C



03-15-2012 I:\PROJECT\2012 Projects\23212007.00 St Bernard LF\Data\Peat Probe C.bor

SCS ENGINEERS

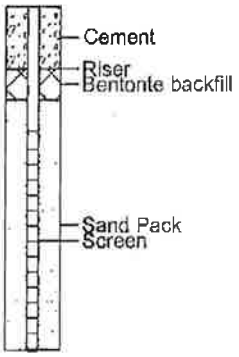
LOG OF Fill Probe C

SCS Project Number: 23212007.00
Probe Installation
Closed Landfill
St. Bernard, Ohio

Logged By:	R. Mills	Date Started:	4/2/12
Drilled By:	Jersey West	Date Completed:	4/2/12
Boring Method:	solid augers	G. S. Elevation:	
Total Boring Depth:	5 5 feet	Northing	
Sampling Method:	direct push	Easting	

Depth in feet	Surf Elev	Samples	Recovery (in.)	Headspace (ppm)	Blow Count	GRAPHIC	USCS	DESCRIPTION
0								See the log for Drift Probe C for a description of the soils in this depth range.

Fill Probe C



04-09-2012 I:\PROJECT\2012 Projects\23212007.00 St Bernard LF\Data\Fill Probe C.bor

APPENDIX B

REVISED EGMP TABLES 1, 2, and 3

Table 1
Landfill Gas Monitoring Network Summary
St. Bernard Landfill

Probe/Other Monitoring Point ID	Category			Former ID
	Compliance Probe	Storm Sewer Manhole	Extraction System	
MP-1	●			
SP-1			●	
EW-2S			●	
SP-3R			●	EW-3R
EW-3S			●	
EW-4S			●	
EW-5S			●	
SP-6R			●	EW-6R
EW-6S			●	
SS-6		●		
MP-7E	●			
MP-7H	●			
MP-8F	●			
SS-8		●		
MP-9	●			
MP-10	●			
EW-14S			●	
MP-16	●			
MP-17	●			

Table 2.
Probe Screened Interval Depths
St. Bernard Landfill

Probe	Top of Screen Depth (feet below ground surface)	Bottom of Screen Depth (feet below ground surface)
MP-1	Not known	Not known
MP-7E	3	14
MP-7H	2	15
MP-8F	4	14
MP-9	2	12
MP-10	2	12
MP-16	2	12
MP-17	3	13

Table 3.
Monitoring Network
St. Bernard Landfill

Probe	Adjacent Structure
MP-1	448 Bank
MP-7E	429 Bank
MP-7H	425 Bank (and 421 Bank)
MP-8F	433 Bank
MP-9	437 Bank
MP-10	441 and 437 Bank
MP-16	441 Bank
MP-17	441 Bank

APPENDIX C

EGMP FIGURES 4 & 5

I:\PROJECT\2012 Projects\23212007.00 St Bernard LF\Deliverables\ECMP\Draft Revised ECMP\Sept 2014 Revision\Fig 4.dwg Jul 23, 2015 - 3:22pm Layout Name: FIG 4 By: 4078jcb

SAN MH
RIM=505.33
INV=489.23-8" S/W
501.93-8" SW

INV 6"CPP=506.79

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

SS-12
EX. MH RISER
RIM=503.30

SS-10
SAN MH RIM=501.67
INV=490.69 - 8"

SS-9
CATCH BASIN GRATE=502.29
INV=493.89-24"

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

EX. SAN C.O.
RIM=506.78
INV=497.25
N: 431802.5182
E: 1400321.6611

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

3" PVC

4" PVC

MP-15
(APPROX. LOCATION)

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

MP-1

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

SB-2

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

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

SB-1

MP-14 (FORMER MP-1A)

EX. SAN C.O.
RIM=508.38
INV=497.87
N: 431711.1779
E: 1400288.4885

CONDENSATE FLOW TO COLLECTION TANK

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

MP-12A

MP-1A
(FORMER EW-1)

SS-2
CATCH BASIN TOP=500.39
WINDOW=498.65
INV=496.68-8"E
498.08 - 12"&15"

MP-12B

MP-17

MP-11

MP-10

MP-9

MP-8D

MP-8F

MP-8E

MP-8B

MP-8

MP-8A

MP-8C

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

MP-7D

MP-7F

MP-7I

EX. SAN C.O.
RIM=504.54
INV=499.42
N: 431652.5977
E: 1400611.8807

CONDENSATE FLOW TO VACUUM BREAK

SS-8 STORM MH
RIM=512.27
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

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

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

SS-11
(STORM MH RIM=503.25
12" INV=499.57 (S)
12" INV=496.31 (N)

EW-4S

COLLECTED CONDENSATE FLOWS THROUGH TO VACUUM BREAK TO SANITARY SEWER.

COLLECTED GAS FLOWS TO VACUUM BLOWER

EW-6S A
SP-6P (FORMER EW-6D)

6" CPE DRAIN TILE (APPROXIMATE LOCATION)

VACUUM BREAK ISOLATION VALVE

EXISTING SOIL/BENTONITE CUT-OFF 2" PVC WALL (APPROXIMATE LIMITS SHOWN)

CUT OFF TRENCH

EX. 12" CMP
INV=502.89

EX. 12" CMP
INV=503.14

APPROXIMATE LOCATION OF MILLRACE STREET

SS-6
STORM MH RIM=518.19
INV=509.21 - 12"
514.18 - 6"

SS-5
INLET GRATE=516.85
INV=515.34 - 6"

3" HDPE GAS EXTRACTION VACUUM HEADER

SS-4
CURB INLET GRATE=541.28
INV=533.10 - 12"

SS-3
CATCH BASIN RIM=541.54
INV=536.38

24"

SP-1

SS-7
INV=536.09-12"IE
INV=535.66-12"H

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

MATCH LINE

MATCH LINE

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

SS-1

SPRING (APPROXIMATE LOCATION)

520

530

540

550

560

570

580

590

LEGEND

- EXISTING CONTOUR
- PROPERTY/LOT LINES
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY CLEANOUT
- EXISTING STORM SEWER
- EXISTING STORM MANHOLE
- EXISTING STORM CATCH BASIN
- EXISTING DRAINAGE TILE
- MP-11 — EXISTING MONITORING PROBE
- EW-4S — EXISTING EXTRACTION WELL
- SP-5P — EXISTING SPECIAL PURPOSE PROBES
- 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
1	9/8/14	ADD MP-17; SHOW MP-1A, MP-11, MP-12, MP-12B, MP-13 AS REMOVED	RCM

SHEET TITLE: FORMER 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.
2060 READING ROAD, CINCINNATI, OH 45202
PH. (513) 421-5353 FAX. (513) 421-2847

PROJ. NO. 23212007.02
DWN. BY: FDB
CHK. BY: RCM
APP. BY: JJW
QA/A CHK BY: CES

CADD FILE: FIG 4
DATE: SEPTEMBER 2014
SCALE: AS SHOWN
DRAWING NO.
FIG 4

I:\PROJECT\2012 Projects\23212007.00 St Bernard LF\Deliverables\EGMP\Draft Revised EGMP\Sept 2014 Revision\Fig 5.dwg Jul 23, 2015 - 3:23pm Layout Name: FIG 5 By: 4078jcb

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)

2" PVC

4" PVC

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

MP-1

EX. SAN C.O.
RIM=507.98
INV=497.39
N: 431781.5612
E: 1400283.2903

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, Jon
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

EX. SAN C.O.
RIM=508.38
INV=497.87
N: 431713.1779
E: 1400288.4895

CONDENSATE FLOW TO COLLECTION TANK

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

MP-17

MP-9

MP-10

MP-8F

MP-7E

EX. CONDENSATE VACUUM BREAK
RIM=502.48
INV=498.84
N: 431649.8339
E: 1400505.0296

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

EX. SAN C.O.
RIM=504.54
INV=499.42
N: 431652.5277
E: 1400611.8807

CONDENSATE FLOW TO VACUUM BREAK

SS-8 STORM MH
RIM=517.22
INV=492.69

2" SCH. 40 PVC CONDENSATE GRAVITY DRAIN FLOWS WEST TO EAST, DISCHARGING TO THE NDENSATE TANK. CLEANOUTS LOCATED AS SHOWN. ANDUITS ARE BURIED APPROXIMATELY 12" BELOW RADE 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

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: 431656.2386
E: 1400356.4814

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

2" PVC

EX-45

EX-55

COLLECTED CONDENSATE FLOWS THROUGH TO VACUUM BREAK TO SANITARY SEWER.

EX. CMP
INV=502.89

EX. 12" CMP
INV=503.54

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

CUT OFF TRENCH

MP-7H

6" CPE DRAIN TILE (APPROXIMATE LOCATION)

VACUUM BREAK ISOLATION VALVE

COLLECTED GAS FLOWS TO VACUUM BLOWER

SS-G
STORM MH RIM=518.19
INV=509.24 - 12"
514.19 - 8"

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
- EXISTING STORM SEWER
- EXISTING STORM MANHOLE
- EXISTING STORM CATCH BASIN
- EXISTING DRAINAGE TILE
- MP-11 — EXISTING MONITORING PROBE
- EW-45 — 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: EXISTING 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.
2060 READING ROAD, CINCINNATI, OH 45202
PH. (513) 421-3353 FAX. (513) 421-2847

PROJ. NO. 23212007.02 | DWN. BY: FDB | CHK. BY: RCM | CSE. BY: CES | D/A. R/W BY: JW | APP. BY:

CADD FILE: FIG 5

DATE: SEPTEMBER 2014

SCALE: AS SHOWN

DRAWING NO.

FIG 5

APPENDIX D

PHOTOGRAPHS

Photo 1. MP-15 with concrete pad partially removed.

Photo 2. MP-15 removed during excavation.

Photo 3. Bentonite chips placed in MP-15 excavation.

Photo 4. Bentonite chips placed in buried flush mount protective casing at SP-14.

Photo 5. Excavation for SP-2 and SP-2R. One casing has been partially pulled up during excavation.

Photo 6. SP-12 excavation.

Photo 7. MP-7T(?) flush mount protective casing and tubing that had been installed in this probe location.

Photo 8. Perforations in tubing from MP-7T(?).

Photo 9. Bottom of excavation at MP-7T(?).

Photo 10. MP-7F in foreground with unknown probe encountered in the excavation of MP-7F in the background.

Photo 11. MP-7F and unknown probe have been capped and bentonite chip placement has started.

Photo 12. MP-7G excavated and capped.

Photo 13. Placement of bentonite chips above MP-7G using a cut-off bucket as a form.

Photo 14. MP-8G casing pulled out of excavation.

Photo 15. MP-8G casing pulled out of excavation.

Photo 16. Bentonite chips placed above MP-8G and hydrated.

Photo 17. Probe casing pulled from MP-8G location.

Photo 18. Casing pulled during excavation of MP-8E.

Photo 19. Removal of bucket form after backfilling around bucket, prior to hydration of bentonite chips at MP-8E location.

Photo 20. MP-8AR against side of excavation.

Photo 21. Placement of bentonite chips above MP-8AR using soil to contain chips.

Photo 22. Bentonite placed in MP-8BR.

Photo 23. Bucket form placed above capped MP-8R and partially backfilled, prior to placement of bentonite chips.

Photo 24. Bucket form filled with bentonite chips above MP-8R.

Photo 25. Excavation of MP-8D and PPA.

Photo 26. Bentonite chips placed above MP-8D and PPA.

Photo 27. Excavation of DPC and FPC.

Photo 28. DPC and FPC excavated and cut off.

Photo 29. Checking depth of excavation at DPC.

Photo 30. Checking depth of excavation at FPC.

Photo 31. Bentonite chips placed above DPC and FPC.

Photo 32. MP-15 area after backfill.

Photo 33. SP-14 area after backfilling.

Photo 34. SP-2/SP-2R area after backfilling.

Photo 35. Topsoil being placed at SP-12.

Photo 36. MP-8CR area after backfilling.

Photo 37. MP-8BR area after backfilling.

Photo 38. MP-8R area after backfilling.

Photo 39. MP-8AR area after backfilling.

Photo 40. MP-7G area after backfilling.

Photo 41. MP-7F and MP-7T(?) area after backfilling.

Photo 42. MP-8G area after backfilling.

Photo 43. MP-8E area after backfilling.

Photo 44. MP-8D and PPA area after backfilling.

Photo 45. DPC and FPC area after backfilling.

Photo 46. Area in the vicinity of MP-7G, MP-7F, and MP-7T(?).

Photo 47. Area includes MP-8R, MP-8AR, MP-8BR, MP-8CR, MP-8D, PPA, DPC, and FPC.

Photo 48. Some soil was added to the settled area in the vicinity of the vacuum break.

Photo 49. SP-12 area.

Photo 50. SP-2 and SP-2R area.

Photo 51. SP-14 area.

Photo 52. MP-15 area.

Photo 53. Soil stockpile area seeded and covered with straw.