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Brown AND
Caldwell

October 18, 2012

Mr. Jerry L. Parker
Environmental Engineer
Ohio Environmental Protection Agency
Northeast District Office
Division of Solid and Infectious Waste Management
2110 East Aurora Road
Twinsburg, Ohio 44087

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OCT 19 2012

OHIO EPA NEDO

142487

Subject: Comment Responses
2012 GCCS - Phase 2 Construction Certification Report
Lorain County II Landfill
Oberlin, Ohio

Dear Mr. Parker:

Brown and Caldwell Ohio, LLC, on behalf of Republic Services, Inc. (Republic), respectfully submits responses to comments received from the Ohio Environmental Protection Agency (Ohio EPA) Northeast District Office (NEDO) for the Lorain County II Landfill 2012 GCCS - Phase 2 Construction Certification Report. The comment responses are based on the e-mail to Chris Jaquet of Republic dated October 17, 2012. Each comment is presented in bold followed by a response in the following narrative.

A "Revisions Instruction Sheet" is also enclosed to assist with updating the hard copy of the 2012 GCCS - Phase 2 Construction Certification Report.

**I. Horizontal Gas Collectors (HGC)
Delineation on Plan Sheet**

Based on a telephone conversation with Rick Isaac who is Republic's consultant from Brown and Caldwell for the Lorain Landfill, I was under the impression that all of the active HGCs were to be included on a plan sheet in this report. In addition, Curt Holes, also a Republic consultant, stated in an e-mail below that the following HGCs are active: H01, H02, H03, H04, H05, H12, H13, H14, H15N, H16, H16N, H17N, H18N, NH1, NH5, NH6. Although HGC 6 through 18 are shown on Plan Sheet (P.S.) RD-1 of the report in the northeastern portion of the site, Ohio EPA was unable to locate the remaining collectors. It is requested that RD-1 be revised to include all active HGCs.

Response: The protocol established for the Plan View Project Record Drawings is to show the items i.e. landfill gas extraction wells, headers, laterals condensate sumps, etc. that were installed/constructed for each specific Construction Certification Report in "blue" to make these items easy to see on the drawing. All of the horizontal collectors are shown on the Plan View drawing, but not in "blue."

A revised Drawing RD-1 is included with these responses which shows the active horizontal collectors not installed as part of this Construction Certification Report in "red."

**II. Section 3.2.2.
HGC Installation**

On page 3-2 of the above section, the following statement is provided in the sixth bullet: "....Approximately 3-foot width of geotextile was placed above and centered on the trench..." In attempting to verify this statement, it was observed that a reference is made to "geotextile or geocomposite" in Detail 5 of P.S. RD-3. Republic should clarify the type of material that was placed on the top of the No. 4 stone in the trench and provide the appropriate revisions.

Response: The text on Page 3-2 in Section 3.2.2 is correct; the detail (Detail 5) on Drawing RD-3 has been revised to indicate geotextile was used above the No. 4 stone. A copy of revised Drawing RD-3 is included with these responses.

**III. Appendix I
Pipeline Pressure Tests**

During the review of the above appendix, several observations were noted. First, the test performed on 8/21/2012 was conducted for 16 hours while the other tests ran for 4 hours. Republic is asked to provide an explanation. Second, the 2" diameter airline was evaluated at 100 psi, while, the 2" diameter force main was tested at 50 psi. Given the same diameter pipe, an explanation is request for the different pressures.

Response: The pipe pressure test performed on 8/21/2012 was started in the evening with the pipe left under pressure throughout the night. The final pressure was checked the following morning and recorded as passing with 16 hour duration. The pipe pressure tests are generally performed during the work day for a minimum of four hours; however, sometimes, based on how the work progresses throughout the day, the test is started at the end of the day and run overnight with the final check made at the beginning of the following day.

The diameter of the pipe has no bearing on the pressure used to test the pipe; the use of the pipe is the determining factor i.e. airlines are tested at 100 psi, leachate force mains are tested at 50 psi, and headers/laterals are tested at 10 psi. The airlines are tested at 100 psi because of the constant pressure exerted on these lines to run the pumps associated with the combination wellheads. The leachate force mains convey the leachate from the pumps and are under less and non-constant pressure, so the test is performed using 50 psi. The landfill gas, conveyed by the laterals to the headers is either passive i.e. no pressure or active i.e. drawn by low vacuum with no pressure, so 10 psi is used for the pressure test.

**IV. System Repairs and Maintenance
FML Patch Repair**

Section 5-3, "Observation / Tests", p. 5-2 of the report states the following: "...Prior to the welding of the 60-mil FML patch to the existing FML,....The minimum required value for passing a peel test for a 40-mil LLDPE is 44 lb/in (ppi). The minimum required value for passing a shear 40-mil LLDPE is 60 ppi..." Since a 60-mil patch is being used, please explain the citation of 40-mil LLDPE peel and shear values.

Mr. Jerry L. Parker
Ohio Environmental Protection Agency
October 18, 2012
Page 3

Response: When welding a patch of thicker material i.e. 60-mil to 40-mil, 80-mil to 60-mil, etc., the tensile pressure exerted for the trial welds is performed for the criteria of the thinner material which is the main component of the liner or cap that is being repaired. Due to material properties, the 40-mil material will have a greater tendency to fail when subjected to the tensile pressure criteria of the 60-mil material. Conversely, a 60-mil liner or cap could not be patched using a 40-mil patch because the 40 -mil patch would have a greater tendency to fail when subjected to the tensile pressure criteria of the 60-mil main component of the liner or cap.

**V. Appendix D
Well Schedule**

On P.S. RD-2, EW-321 has a refuse depth of 58 feet and a boring depth of 43 feet which equates to an isolation distance of 15 feet from the liner. Since the typical isolation distance is 20 feet, an explanation is requested.

Response: The boring for gas extraction well EW-321 has a separation distance to the liner system of less than 20 feet due to the limited depth of waste column at this location and the desire to extract as much landfill gas as possible from the waste. This well is temporary and will be replaced in future GCCS expansions with a re-drilled extraction well as the depth of the waste increases.

Please feel free to contact us at (614) 410-6144 if you have any additional questions or comments.

Very truly yours,

Brown and Caldwell Ohio , LLC



Richard A. Isaac, P.E.
Principal Engineer

cc: Chris Jaquet, Republic Services, Inc., Oberlin, OH, w/enc.
Richard Kostelnick, Republic Services, Inc., Oberlin, OH, w/enc
John Sabo, Lorain County Health Department, Elyria, OH, w/enc.
Erik Bewley, Ohio EPA, NEDO, DAPC, Twinsburg, OH, w/enc.
Project File

2012 GCCS – Phase 2 Construction Certification Report for the Lorain County II Landfill

Revisions Instruction Sheet

Report Cover and Spine Tab

Remove the existing report cover and spine tab and replace with the revised report cover and spine tab.

Appendices

Appendix D.

Remove existing Drawing RD-1 and replace with revised Drawing RD-1.

Remove existing Drawing RD-3 and replace with revised Drawing RD-3.

2012 GCCS – Phase 2 Construction Certification Report for the Lorain County II Landfill

Prepared for



Lorain County, Oberlin, Ohio
October 2012

142487.302

RECEIVED

OCT 03-2012

OHIO EPA NEDO

Brown AND
Caldwell

4700 Lakehurst Court, Suite 100
Columbus, Ohio 43016

4693

Notarized Statement

"I, Chris Jaquet, certify that this 2012 GCCS - Phase 2 Construction Certification Report for the Republic Services, Inc. Lorain County II Landfill in Lorain County, Oberlin, Ohio and all attachments were prepared in accordance with the provisions and requirements of Ohio Administrative Code (OAC) Rule 3745-27-08(H) effective August 2003. Based on my inquiry of the person or persons who were directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Signature

10/5/12

Date

Chris Jaquet

Name

Area Environmental Manager

Title

On this, the 5th day of October 2012, before me, a notary public, the above signed person, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.


Notary Public

LYNN C WILLIAMS
NOTARY PUBLIC - OHIO
MY COMMISSION EXPIRES 08-23-16

Engineer's Certification

"I, Richard A. Isaac, being a Registered Professional Engineer in the State of Ohio, PE No. E-57074, certify under penalty of law that this 2012 GCCS - Phase 2 Construction Certification Report for the Republic Services, Inc. Lorain County II Landfill in Lorain County, Oberlin, Ohio and all attachments were prepared by me or under my direction or supervision in accordance with the provisions and requirements of Ohio Administrative Code (OAC) Rule 3745-27-08(H) effective August 2003 and in accordance with good engineering practices. I have personally visited and examined the facility and am familiar with the information submitted in this document and based on my inquiry of the person or persons directly responsible for preparing this 2012 GCCS - Phase 2 Construction Certification Report, the information submitted in the 2012 GCCS - Phase 2 Construction Certification Report is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant civil and/or criminal penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Richard A. Isaac

Signature

10/8/12

Date

Richard A. Isaac, P.E.

Name



On this, the 8th day of October 2012, before me, a notary public, the above signed person, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

Kathleen Alleman

Notary Public



KATHLEEN ALLEMAN
Notary Public
In and for the State of Ohio
My Commission Expires
August 11, 2014

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Section 1

Introduction

The purpose of this 2012 Gas Collection and Control System (GCCS) – Phase 2 Construction Certification Report (Certification Report) is to detail the materials, construction/installation methods, and observations and tests performed for the 2012 GCCS – Phase 2 Construction Project at the Lorain County II Landfill (herein after referred to as the “Landfill”), Lorain County, Oberlin, Ohio. This Certification Report was prepared in general conformance with Ohio Administrative Code (OAC) 3745-27-08(H). The Owner’s Notarized Statement and the Engineer’s Certification attesting to the accuracy and compliance of this Certification Report are included as Pages ii and iii, respectively.

The Certification Report includes the following sections:

1. Introduction
2. Landfill Gas Extraction Wells
3. Landfill Gas Collection System
4. Airline and Force Main System
5. System Repairs and Maintenance

A discussion of each new or altered component of the Landfill GCCS materials, construction/installation methods, and observations/tests performed is provided in the appropriate section. Daily field logs, photographs, project record drawings, extraction well boring logs, laboratory test results, pipe pressure test results, and additional relevant information is provided in the appendices.

Under the approval of Republic Services, Inc. (Republic), maintenance was performed on the existing Landfill GCCS. One GCCS extraction well was replaced (re-drilled) and seven new GCCS extraction wells were installed (refer to the Project Record Drawings in Appendix D for locations).

The field work was performed from August 8, 2012 to August 24, 2012 by Republic’s subcontractor, American Environmental Group Ltd. (AEGL) of Richfield, Ohio. AEGL, under the supervision of Roy McMasters (Gas Extraction System Operations Manager) and Jeff Enochs (Drilling Operations Manager), performed the construction/installation of the extraction wells and pipeline components. Construction quality assurance (CQA) oversight was performed by Brown and Caldwell with Janet Todia, Bill Foster, and Nate Givens providing day-to-day observations and documentation. Richard A. Isaac, P.E. of Brown and Caldwell served as the certifying engineer and Ms. Todia also served as the Project Manager. Daily field logs and construction/installation photographs are included in Appendices A and B, respectively. Qualifications for Ms. Todia, Mr. Foster, Mr. Givens, and Mr. Isaac are included in Appendix C.

For the purposes of this Certification Report, construction quality assurance (CQA) is used to refer to activities performed by Brown and Caldwell, where quality control (QC) refers to observation and testing activities performed by the GCCS component’s installer (AEG) and manufacturer (ISCO).

1.1 Field Alterations/Deviations

During the course of the construction/installation activities, minor alterations/deviations from the construction drawings were implemented in the field. These minor alterations/deviations are listed below, and are also reflected in the Project Record Drawings included in Appendix D:

- EW-133R was drilled to a depth of 75 feet due to refusal related to encountering steel material. Drilling continued for a minimum of one hour with no advancement of the boring past the point of refusal. The scheduled boring depth was 107 feet.
- Horizontal collectors H16 and H15 were installed without sump access risers and air and force main. Due to the depths encountered to obtain 3 percent on horizontal collectors H18 and H17, it was determined that excavation would initiate at the far north and far south horizontal termination points of horizontal collectors H15 and H16 and continue to meet in the middle such that both the northern and southern portions of the horizontals were installed at 3 percent grade. A gravel collection reservoir was installed to 21-foot depth for each of these horizontal collectors at the midpoint, with no riser and no future plans for pump placement due to anticipated movement of the active phase immediately following construction in this area.
- A second road crossing was installed under the haul road near H15S for continued utilization of this haul road for truck traffic to access the new active phase tipper area immediately following construction.
- The lateral connection for H18S was installed further north than initially indicated, directly tied into the lateral for EW-50R. It was determined during the pre construction meeting that extending this horizontal collector further south, as originally indicated, would initiate the potential for leachate infiltration into the southern end of horizontal collector H18.

Section 2

Landfill Gas Extraction Wells

A total of seven new and one replacement extraction wells were installed at the Landfill. The new extraction wells are listed in the following Table 1:

Table 1. New Extraction Wells	
✓ EW-169	✓ EW-320
✓ EW-170	✓ EW-321
✓ EW-318	✓ EW-322
✓ EW-319	

The existing extraction well that was abandoned and replaced is listed in the following Table 2:

Table 2. Existing Landfill Gas Extraction Wells	
Replacement	Abandoned
✓ EW-133R	EW-133

The existing extraction well was abandoned by excavating around the existing well casing to an approximate four-foot depth below the existing ground surface and cutting off the exposed casing. A polyvinyl chloride (PVC) slip cap, with a bead of silicone gel inside the cap, was lag-bolted on top of the cut-off well casing and the excavation was backfilled with the excavated materials and clean on-site soil, as needed.

The new extraction wells, listed in Table 1, were connected to the Landfill GCCS using 6-inch HDPE lateral pipelines, tees, and well risers. The re-drilled (replacement) extraction well was connected to the Landfill GCCS with a 6-inch lateral that ties into the 6-inch lateral that served the associated abandoned extraction well.

The seven new extraction wells were tied into the existing GCCS as follows:

- EW-169 tied into the existing 6-inch lateral at EW-43R2 (see the Project Record Drawings in Appendix D).
- EW-170 is tied into the existing 6-inch lateral at EW-149.
- EW-318 is tied into the existing 12-inch north header.
- EW-319 is tied into the existing 12-inch north header.
- EW-320 is tied into the existing 12-inch north header.
- EW-321 is tied into the existing 12-inch north header via the new 6-inch lateral installed for well EW-322.
- EW-322 is tied into the existing 12-inch north header.

The replacement extraction well was tied into the existing GCCS as follows:

- EW-133R is tied into the existing 6-inch lateral at EW-133.

Periodic air monitoring was performed during the installation of the new and replacement extraction wells (see Subsection 2.4).

2.1 Materials

The materials used for the construction/installation of the new and replacement extraction wells included the following:

- 6-inch diameter solid and perforated SDR 11 HDPE pipe with HDPE butt caps and 6-inch Schedule 40 PVC end caps
- No. 4 stone (1-inch to 3-inch washed non-carbonate) backfill material
- Geonet with geofabric, which was heat-bonded to one side
- 8-mesh granulated bentonite

2.2 Construction/Installation Methods

Equipment used to construct/install the extraction wells included a Soilmec SR-30 track-mounted drill rig, a Caterpillar 953D track-mounted loader, a JCB 718 articulated dump truck, ISCO Hotline HDPE butt-fusion pipe welding equipment, and various hand tools. The general construction/installation methods were as follows:

- A field survey was conducted by the Wellert Corporation of Medina, Ohio to stake the design location for each extraction well and the final well schedule was updated accordingly.
- Boreholes for the extraction wells were drilled into the waste in advance of installing the extraction well materials and equipment. Drilling was performed using a Soilmec SR-30 track-mounted drill rig with a 36-inch diameter auger to the depth for each individual extraction well indicated in the final extraction well schedule on the Project Record Drawings (see Appendix D).
 - Waste material encountered within the borehole was placed in the articulated dump truck for transportation and disposal at the active working face of the Landfill.
- Depth of the borehole was controlled and verified using a weighted tape measure. As the auger advanced, the cuttings were visually observed to ensure no geosynthetics were encountered. Waste temperatures and waste composition were also recorded (see boring logs in Appendix E).
- Final borehole depth was confirmed using a weighted tape measure prior to extraction well casing placement.
- Solid wall and perforated sections of HDPE pipe were butt-fusion welded to the lengths provided in the final extraction well schedule for placement into the borehole. A typical detail for the extraction well construction is provided on the Project Record Drawings in Appendix D.
- Using the Caterpillar 953D track-mounted loader, the welded HDPE casing was raised and slipped into the borehole. A metal grate was placed around the casing to position the casing as close as possible to the middle of the borehole. The casing was secured to the metal grate to prevent the casing from sagging.
- No. 4, washed, non-carbonate stone was placed in the borehole annulus from the bottom up to a minimum of two feet above the top of the perforated section of the 6-inch or 8-inch HDPE casing. The geotechnical test results for the No. 4 stone are provided in Appendix F.
- Geonet with geofabric, which was heat-bonded to one side of the Geonet, was placed over the stone with the geonet in contact with the stone. A one-foot clean soil plug was placed on top of the Geonet.
- A two-foot thick (minimum) granular bentonite seal was placed on top of the clean soil plug. The granular bentonite was hydrated with water and on-site clean soil material was placed on top of the granular bentonite seal. The clean soil material varied in thickness. The two-foot thick (minimum) granular bentonite seal was placed on top of the clean soil material so that the top of the upper granular bentonite seal extended a minimum of six inches into the cover soil.

- Schedule 40 PVC temporary caps were installed using set screws and silicone sealant on top of the new well casings. Upon completion of the Landfill GCCS piping, Landtec wellheads were installed as permanent replacements for the temporary caps. In most cases, each newly drilled extraction well was connected the same day to either temporary or permanent vacuum laterals to proactively mitigate potential odor issues. All wells and associated risers were marked with reflective tape to increase visibility.
 - Landtec wellheads were installed using flexible couplers secured with hose clamps.

2.3 Observations/Tests

The following observations and tests were performed during the construction/installation of the new and replacement extraction wells:

- Materials used in the construction/installation of the new and replacement extraction wells were visually observed for conformance with the construction drawings, as well as to verify there were no signs of damage. The extraction well casing materials were determined to be in conformance with the construction drawings and no visual damage to the materials was observed.
- Perforation size (diameter) and pattern (spacing around the circumference and along the length) for the perforated portion of the extraction well casings were observed for general conformance with the construction drawings.
- Boreholes were observed during the drilling to document that the boreholes were completed to the appropriate depth as provided in the final extraction well schedule provided on the Project Record Drawings included in Appendix D.
- No. 4 washed non-carbonate stone was used to backfill the annular space between the perforated extraction well casing and the borehole. The geotechnical results for the No. 4 stone, provided in Appendix F, was reviewed and determined to be in compliance with the gradation and carbonate residue requirements (minimum acceptable carbonate content ≤ 5 percent).
- Brown and Caldwell CQA monitors observed the butt-fusion welding process used to connect the HDPE pipe casing sections together to verify appropriate welding procedure guidelines were followed. The butt-fusion welding was performed according to acceptable standards.
- Brown and Caldwell CQA monitors obtained and recorded measurements to verify the extraction wells were constructed according to the construction drawings as well as to create the Project Record Drawings.
- The AEGL driller and the Brown and Caldwell CQA monitors recorded refuse temperature, composition, and degree of moisture at approximately five-foot intervals during drilling activities. The AEGL well logs are provided in Appendix E.

2.4 Air Monitoring

Air monitoring was performed during the drilling of the new and replacement extraction wells. A multi-gas VRAE monitoring device, manufactured by RAE Systems, was used to conduct the air monitoring. The atmospheric concentrations within the breathing zone were monitored for methane (lower explosive limit [LEL]), oxygen, carbon monoxide, and hydrogen sulfide. The air monitoring results, which were recorded by the Brown and Caldwell CQA monitor, are provided in Appendix H.

Section 3

Landfill Gas Collection System

AEGL installed the GCCS components required to incorporate the new extraction well, the replacement extraction wells, and four horizontal collectors into the existing GCCS. Approximately 1,152 linear feet of 6-inch diameter SDR 17 solid-wall HDPE pipe was installed to connect the new extraction wells and the replacement extraction well on line with the existing Landfill GCCS. Approximately 912 linear feet of 6-inch diameter SDR 11 perforated HDPE pipe and 487 linear feet of 6-inch diameter SDR 11 solid HDPE pipe was used to construct the horizontal collectors. The approximate linear footage of pipeline installed is included in the daily field logs for AEGL (see Appendix A).

3.1 Materials

The components used to connect the new and replacement extraction wells and the horizontal collectors into the existing Landfill GCCS included the following:

- 6-inch diameter solid SDR 17 HDPE lateral pipe
- 6-inch diameter perforated SDR 11 HDPE horizontal collector pipe
- 6-inch diameter solid SDR 17 HDPE horizontal collector riser pipe
- 12-inch diameter and 18-inch diameter corrugated metal pipe (road crossing encasements)
- Landtec well heads for the horizontal collectors
- Various sizes of HDPE tie-in couplings, reducers, tees, and other fittings and appurtenances

3.2 Construction/Installation Methods

Equipment used to connect the new and replacement extraction wells and the horizontal collectors into the existing Landfill GCCS included Caterpillar 320D and 325C track-mounted excavators, Caterpillar 725 articulated dump trucks, Caterpillar D4K and D6K track-mounted dozers, ISCO Hotline HDPE butt-fusion pipe welding equipment, and various hand tools.

3.2.1 Lateral Construction/Installation Methods

The general construction/installation methods used to connect the new and replacement extraction wells into the existing Landfill GCCS were as follows:

- HDPE pipe of various diameters was delivered to the site and stored in a clean area.
- The 6-inch HDPE pipe was butt-fusion welded on-site by AEGL prior to being connected to the existing Landfill GCCS.
- HDPE pipe was placed in the trenches following completion of the excavation.
 - HDPE pipe was installed to achieve the minimum design slopes of three percent within the limits of waste.
 - Pipe bedding consisted of clean cover soil material removed from the trench excavation.
 - Survey markers were placed at 50-foot intervals along the pipelines, at road crossings, and at fitting locations. The survey markers were removed following completion of the field survey activities.

- Installed pipelines, fittings, components, and road crossings were field surveyed after installation from a third order benchmark using global positioning system (GPS) technology.
 - Locations of the pipelines, components, and appurtenances are provided on the Project Record Drawings in Appendix D.
 - 5-mil x 3-inch underground detectable tape with the words “CAUTION BURIED GAS LINE BELOW” was placed approximately 1-foot above the HDPE pipe during backfilling activities.
- Waste material encountered within the excavated soil was separated from the soil as the trenches were backfilled. The waste material was placed in an articulated dump truck for transportation and disposal at the active working face of the Landfill.
 - Additional soil was obtained from an onsite stockpile to augment the backfill soil, if needed.

3.2.2 Horizontal Collector Construction/Installation Methods

The general methods used to install the horizontal collectors were as follows:

- HDPE pipe was butt-fusion welded on-site by AEGL.
- Trenches were excavated with a minimum width of 3 feet and a minimum depth of 4 feet.
 - For trenches H17 and H18, the excavation was initiated at a depth of 4 feet on the north end and progressed to the south end at a 3 percent grade with gravel sumps installed at the south end.
 - For trenches H15 and H16, the excavation was initiated at a depth of 4 feet at both north and south ends and progressed to the middle with both north and south sections obtaining 3percent grade; terminating in the middle with a gravel sump reservoir excavated to a depth of 21 feet.
- 6 inches of No. 4 washed non-carbonate stone bedding was placed at the bottom of the trench.
- 6-inch diameter SDR 11 HDPE perforated horizontal collector pipe and solid riser pipe(s) were set in the trench on the stone bedding.
- Backfilling was completed with No. 4 stone or crushed brick.
- Approximately 3-foot width of geotextile was placed above and centered on the trench.
- Clean, onsite clay material was spread in a 1-foot thick lift to completely cover the geosynthetics materials.

A detail for the horizontal collectors is provided on Project Record Drawings in Appendix D.

3.3 Observations/Tests

The following observations and tests were performed during the connection of the new and replacement extraction wells and the horizontal collectors to the existing Landfill GCCS:

- Pipe was visually observed for conformance with the construction drawings, as well as to verify there were no signs of damage. The pipe was determined to be in conformance with the construction drawings and no visual damage to the pipe was observed.
- Butt-fusion welds were visually observed prior to back-filling the trenches. Brown and Caldwell CQA monitors observed hot plate temperature, holding times, and welding techniques. The welds were determined to be in conformance with the specifications.
- Pipelines were pressure tested prior to being connected to the existing Landfill GCCS, and while in place. Pressure tests consisted of applying a minimum of 25 pounds per square inch (psi) for the 6-inch diameter SDR-17 HDPE pipe. All tests were conducted over a minimum four-hour period. Prior to beginning the test, during the test, and following completion of the test, the gauges were visually assessed for damage and proper units of measurement. The results of the pressure tests determined that the pipelines did not have any leaks. Pipe pressure test results are provided in Appendix I.

- The geotechnical results for the No. 4 stone was reviewed and determined to be in compliance with the gradation and carbonate residue requirements (minimum acceptable carbonate content ≤ 5 percent).

Section 4

Airline and Force Main System

AEGL installed the airline and force main system components required to incorporate the new extraction well leachate pumps into the existing Landfill GCCS. A total of 2 pneumatic pumps were installed at the Landfill as listed in Table 3. An estimated 1,212 linear feet of HDPE pipe was installed to connect the new extraction well pumps with the leachate collection and compressed air system. Of that linear footage of pipeline installed, 617 linear feet was 2-inch diameter HDPE airline and 595 linear feet was 2-inch diameter HDPE leachate force main. The approximate linear footage of pipeline installed is included in the daily field logs for AEGL (see Appendix A).

Table 3. Extraction Well Pumps and Depths

Well	Pump Depth (ft)
EW-133R	70
EW-169	100

Two-inch airline and force main were installed to operate newly installed pumps and to accommodate future installation of additional pumps. The airline and force main were connected to the existing airline and force main by pinching the pre-existing lines and butt fusing new lines to extend the runs. The locations of the new extended airlines and force main is shown on the Project Record Drawings in Appendix D.

4.1 Materials

The airline and force main components include the following materials:

- 2-inch diameter HDPE SDR 9 pipe (airline)
- 2-inch diameter HDPE SDR 11 pipe (force main)
- 12-inch diameter and 18-inch diameter corrugated metal pipe (road crossing encasements)
- QED Pneumatic pumps and associated hardware
- Various sizes of HDPE tees, fittings, and appurtenances

4.2 Construction/Installation Methods

Equipment used to install the airline and force main system included Caterpillar 320D track-mounted excavators and CAT 725 articulated dump trucks, electro-fusion couplers and welding equipment, ISCO Hotline butt-fusion welding equipment and various hand tools.

The general construction/installation methods used to install the airline and force main system were as follows:

- The HDPE pipe was butt-fusion welded on-site by AEGL.
- Airline and force main was laid in the same trench with solid 6-inch HDPE laterals below the existing ground surface alongside the 6-inch laterals.
- The leachate force main and airline piping was placed in a trench on a bed of compacted soil and backfilled with clean on-site soil.

- Waste encountered was separated from the fill as the trench was backfilled. Excavated waste was placed in an articulated dump truck for disposal at the active working face of the Landfill.
- Riser pipes at each extraction well were connected to the pumps installed in the extraction wells listed in Table 3.

4.3 Observations/Tests

The following observations and tests were performed during the installation of the leachate force main and airlines:

- The HDPE pipe was visually observed for conformance with the construction drawings, as well as to verify there were no signs of damage. The pipe was determined to be in conformance with the construction drawings and no visual damage to the pipe was observed.
- Butt-fusion welds were visually observed to be completed according to the butt-fusion welding specifications.
- Installed force main and airlines were pressure tested prior to being connected to the existing Landfill GCCS. The pressure test for the airline consisted of applying 100 psi of pressure over a minimum 4-hour period. The pressure test for the leachate force main consisted of applying 50 psi of pressure over a minimum 4-hour period. Prior to beginning the test, during the test, and following completion of the test, the gauges were visually assessed for damage and proper units of measurement. The results of the pressure tests determined that the pipelines did not have any leaks. Pipe pressure test results are provided in Appendix I.

Section 5

System Repairs and Maintenance

Maintenance activities were performed by AEGL on Condensate Sump, CS-5. The maintenance activities are discussed in the following sections.

5.1 Materials

The components used for the maintenance activities associated with Condensate Sump, CS-5 included the following:

- 6-inch diameter solid SDR 17 HDPE lateral pipe
- Various sizes of HDPE tie-in couplings, reducers, tees, and other fittings and appurtenances
- Nominal 60-mil thick HDPE flexible membrane liner (FML)
- Geocomposite
- HDPE extrusion welding rod

5.2 Construction/Installation Methods

Equipment used to perform the maintenance activities associated with Condensate Sump, CS-5 included a Caterpillar 320D track-mounted excavator, Caterpillar D4K dozer, butt-fusion welding equipment, and various hand tools.

5.2.1 Maintenance Construction/Installation Methods

The general construction/installation methods used to perform the maintenance activities associated with Condensate Sump, CS-5 were as follows:

- HDPE pipe was delivered to the site and stored in a clean area.
- 6-inch HDPE pipe was butt-fusion welded on-site by AEGL prior to being connected to the existing Landfill GCCS. Maintenance activities included the installation of a clean out riser leading to sump CS-5 for purposes of future jetting access.
- A 6" prefabricated HDPE clean out riser was placed in the trench following completion of the excavation.
 - Pipe bedding consisted of clean cover soil material removed from the trench excavation.
 - Locations of the pipelines, components, and appurtenances are provided on the Project Record Drawings in Appendix D.
 - 5-mil x 3-inch underground detectable tape with the words "CAUTION BURIED GAS LINE BELOW" was placed approximately 1-foot above the HDPE pipe during backfilling activities.
 - Additional soil was obtained from an onsite stockpile to augment the backfill soil.
- No waste material was encountered during the repair of CS-5. All repair work was conducted above the liner of the final cover system. However; a small tear impacted the geosynthetic component of the liner during excavation and was repaired as follows:
 - Hand tools were used to expose the area where the geosynthetic component of the liner was impacted.

- Surface of the existing FML was cleaned of debris.
- A section of 60-mil FML was cut to overlay the damaged area of the existing FML by a minimum of six inches.
- A hand grinder (60-grit sand paper) was used to prepare the area of the existing FML component where the extrusion welding would be performed prior to initiating welding.
- Trial welds were performed for the extrusion welder prior to performing the extrusion welding of the 60-mil FML patch to the existing FML component of the final cover system.
- The 60-mil FML patch was extrusion welded to the existing FML component of the existing final cover system.
- The geocomposite was repaired by placing a section of geocomposite material cut to overlay the damaged area by a minimum of one-foot.

5.3 Observations/Tests

The following observations and tests were performed during the above described maintenance activities:

- Pipe and appurtenances were visually observed to verify there was no sign of damage. No visual damage to the materials installed for the maintenance activities was observed.
- Visual observations and written and photographic documentation of the maintenance activities were performed.
- Backfilling operations were monitored to assure that there were no negative impacts to the new and existing components of Condensate Sump, CS-5.
- Butt-fusion welds were visually observed prior to back-filling the trenches. Brown and Caldwell CQA monitors observed hot plate temperature, fusion pressure, holding times, and welding techniques. The welds were determined to be in conformance with the butt-fusion welding specifications.
- Electro-fusion welds were visually observed to be completed according to the electro-fusion welding specifications.
- The installed pipelines were pressure tested prior to being connected to Condensate Sump, CS-5. The pressure test for the pipeline consisted of applying 25 psi of pressure over a minimum 4-hour period. Prior to beginning the test, during the test, and following completion of the test, the gauges were visually assessed for damage and proper units of measurement. The results of the pressure tests determined that the pipelines did not have any leaks. Pipe pressure test results are provided in Appendix I.

The following observations and tests were performed during the installation of the 60-mil FML patch repair:

- Prior to welding of the 60-mil FML patch to the existing FML, a trial weld was performed using the extrusion welder. Test sections of the weld were cut and a tensiometer was used to perform three peel and two shear tests on the test weld sections. The minimum required value for a passing peel test for 40-mil LLDPE is 44 lb/in (ppi). The minimum required value for passing a shear test for 40-mil LLDPE is 60 ppi. The results of the peel and shear tests are presented in Appendix G.
- Brown and Caldwell CQA monitor performed visual observation and documentation of the repairs and vacuum box testing. The results of the vacuum box tests are presented in Appendix G. The vacuum box testing was performed as follows:
 - Soapy solution was applied to the surface of the weld.
 - Vacuum box was placed over approximately 12 to 18 inches of the extrusion weld.
 - Negative pressure was applied to the vacuum box.

- Welds passed the vacuum box test when no bubbles were observed along the length of the weld under the vacuum box. The test duration was ten seconds.
- The extrusion weld passed the vacuum box testing.

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Appendix A: Daily Field Logs

Brown and Caldwell

American Environmental Group, Ltd.

Brown and Caldwell

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

Janet Todia

Date: *8/7/12*

Construction Day No.:

Time In: *0700*

Time Out: *1200*

Weather:

87°F + sunny

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☐ LFG Piping
- ☐ Pressure Testing
- ☐ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☐ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

AEG construction; mobilization + PRE CON meeting

Summary of Work:

*0700 arrive on site
0800 pre con meeting, AEG, B+C + Republic
Services
- will start trenching tomorrow; begin on
north side (H18) to stay away from
movement of active phase
- review of site rules; added one well
B1169 + perforated trench risers for
horizontal to add pumps later*

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Janet Todia 8/7/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1	Date: 8/8/12	Construction Day No.:
Project No.: 140980	Time In: 0700	
Location: Lorain County II Landfill	Time Out: 1900	
BC Personnel: Janet Todia	Weather: sunny + 90°F	

Items Worked On:

- | | |
|--|--|
| ☐ Gas Extraction Wells | ☐ Combo Wells |
| ☐ Flare/piping installation | ☐ Liner Installation |
| ☒ LFG Piping | ☐ Liner Repair |
| ☒ Pressure Testing | ☒ Excavation/Trenching |
| ☒ Earthwork | ☐ Other |

Begin trenching at H18 (north) laterals

Contractor/Subcontractors/Visitors:

ABG construction

Summary of Work:

0700 arrive on site; safety meeting
0715 no geotextile on site; so we will start w/ laterals H18 north
0800 excavation + trenching for lateral H18 to 12" header (blind flange)
0840 ADR TEST 6" 830' @ 25 psi 4 hours PASS
1130 begin excavation + trenching H17 lateral to 12" header
1300 ADR TEST 2" SDR 09 + 2" SDR 11 = 100 + 50 psi 4 hours PASS; 12" header shut off for tie in H18
1900 12" brought back on line; leave site

Attachments:

- | | |
|--------------------------|-------------------|
| ☐ | Contractor Report |
| ☐ | Field Notes |
| ☐ | Other: |

Janet Todia 8/8/12

Signature of CQA Monitor

Date

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lora'n County II Landfill

BC Personnel: Imet Todid

Date: 8/9/12 Construction Day No.:

Time In: 0700

Time Out: 1830

Weather: overcast + 80°F
drizzle
storms approaching

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

ARC construction, Weller Engineering
(survey D1170)

(no tie ins today)

Summary of Work:

0700 arrive on site, safety meeting
0800 finish fill in of air-foul main @ 12' header H17
0815 excavate horizontal H18 from south end (H18S lateral) to north; call from Kodulnick help SOS
1145 repair 17R3 hit by New Dominion
1222 complete repair 17R3 (H18S lateral)
1600 continue excavation of H18S lateral - H18 half completed; done, bentonite, water & survey rivers
1830 leave site for the day

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Imet Todid 8/9/12

Signature of CQA Monitor

Date

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: Janet Todis

Date: 8/10/12

Construction Day No.:

Time In: 0700

Time Out: _____

Weather: rain + 74°F

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

REC construction

Goal: finish H18 + get it on extraction today

Summary of Work:

0700 arrive on site; safety meeting
0720 continue excavation of H18 from mid point of horizontal to the north H18N + install sump riser
1116 continue H18 excavation of horizontal north toward future sump installation
1150 place geotextile on 2' stone bed H18
1556 fabricate 6" sump + bring sump to H18N
1700 install sump + begin backfill of H18; will bring H18 on line Saturday morning
1800 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other: _____

Janet Todis 8/10/12

Signature of CQA Monitor

Date

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: Bill Foster

Date: 08/11/12

Construction Day No.:

Time In: 0700

Time Out: 0930

Weather: 70° overcast

Items Worked On:

- ☒ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☐ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☐ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

AE6 construction

Summary of Work:

- on site
- safety mtg
- meet w/John to discuss the days workplan.
- call SCS, to shut off valve, in order for AE6 to install well head. SCS shuts off valve.
- AE6 installs H18N (well head)
- SCS opens valve back up + bring system back online.
- I leave the site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

B.W. Foster

Signature of CQA Monitor

08/11/12

Date

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: Janet Todia

Date: 8/13/12

Construction Day No.:

Time In: 0700

Time Out: 1900

Weather: Sunny & 79°F
overcast afternoon

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

ARG construction, ARG Drilling (mob)

Summary of Work:

0700 arrive on site; safety meeting
0730 begin excavation of H17 horizontal from
H17S towards H17N.
1000 continue trench excavation H17
1040 ARG drilling mob on site
1213 place bendable on rock and perl/solid interface
1225 install survey vials at rock and H17
1250 move loader/drum rock
1700 begin backfill rock and after placement
of survey vials & geotextile
1713 begin backfilling H17 (half done)
1900 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Janet Todia 8/13/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

Enat Todia

Date: 8/14/12

Construction Day No.:

Time In: 0700

Time Out: _____

Weather: SEA, Tstorms
68°F

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping Installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

ARG construction, ARG Drilling

Summary of Work:

0700 arrive on site; safety meeting
0730 continue H17 toward H17N; Rain
starting; well continued
0931 continue w/ H17 trenching; slow due to
rain
1330 continue trenching H17
1500 still trenching H17 @ 14' depth
1712 fill H17 w/ stone; install pipe & gate valve
1800 did not install sump riser; will cover so
no odors overnight; will start sump riser tomorrow
1900 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other: _____

[Signature] 8/14/12

Signature of CQA Monitor

Date

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

Janet Tadio

Date: *8/15/12*

Construction Day No.:

Time In: *0700*

Time Out: *1900*

Weather:

Sunny + 73°F

Items Worked On:

- ☒ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☒ Pressure Testing
- ☒ Earthwork

- ☒ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

ARG construction, ARG drilling, Weller Engineering

Bobs crew + Chad's crew on site

Summary of Work:

0700 arrive on site; safety meeting
0725 Bobs crew to completed pumps in 101R2
0725 begin drilling BW321 & complete
0900 begin drilling BW322
1130 done drilling BW322 begin drill BW319
1240 launching complete HIT
1433 HIT 3' perf in sump riser; HIT 7' perf for sump riser
1436 BW319 complete; Weller surveying on site
1600 ARG TEST PASS 1200-1600 240' SDR09 + SDR11; removing survey risers after survey
1730 tie in HIT to 12" electrophase
1900 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Janet Tadio 8/15/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

James Rodia

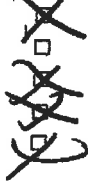
Date: *8/16/12* Construction Day No.:

Time In: *0700*

Time Out: *1900*

Weather: *swamy + 79°F*

Items Worked On:



Gas Extraction Wells
Flare/piping installation
LFG Piping
Pressure Testing
Earthwork

☐ Combo Wells
☐ Liner Installation
☐ Liner Repair
☒ Excavation/Trenching
☐ Other

Contractor/Subcontractors/Visitors:

*ARG construction, ARG drilling
Weller Engineering*

Landfill II

Summary of Work:

*0700 safety meeting
0800 weekly progress meeting
0805 Down drilling DWH 8 + finish
0909 excavating RW322 lateral for tie in
0910 excavating lateral connection for H15 16
Tie in to 12" header
1100 drill RW320 + finish
1330 lateral excavation 321 + 322 + H18N + air + fuel
main. sump near 18
1400 tie in H15 to 12" header
1700 continue w/ excavations; tie in point
H15 @ 12" + H16 lateral to 12" header
1900 leave site*

Attachments:

- ☐ Contractor Report
☐ Field Notes
☐ Other:

Signature of CQA Monitor

Date

James Rodia 8/16/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140880

Location: Lorain County II Landfill

BC Personnel: Bart Todie

Date: 8/17/12

Construction Day No.:

Time In: 0700

Time Out: 1900

Weather: overcast
drizzle + 68°F

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

ARG construction, ARG drilling on
site (2000 in service - no drilling today)

Summary of Work:

0700 arrive on site; safety meeting
0730 begin excavation of H16N horizontal
0745 continue completion of H15 lateral tie
in to 12" header + completed
0815 SCS brought 321, 322 + H18N on line
0830 design change for H15; road wing required
discussed w/ Brotherton of Republic
1544 continue excavation of H16 from H16S
toward midpoint sump
1700 spoke w/ Kordnick regarding road wing
1715 sump dug out
1900 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

M. Todie 8/17/12

Signature of CQA Monitor

Date

Daily Field Report

Project: 2011 GCCS Phase # 2
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: N. GWENS

Date: 8/18/12 Construction Day No.:

Time In: 0700

Time Out: 1300

Weather: SUNNY, 80°F

Items Worked On:

- | | |
|--|--|
| ☐ Gas Extraction Wells | ☐ Combo Wells |
| ☐ Flare/piping installation | ☐ Liner Installation |
| ☒ LFG Piping | ☐ Liner Repair |
| ☐ Pressure Testing | ☒ Excavation/Trenching |
| ☐ Earthwork | ☐ Other |

Contractor/Subcontractors/Visitors:

AEGL

Summary of Work:

- ONSITE AT 0700. TAILGATE MEETING.
- AEGL TRENCHED FOR H-15 ROAD CROSSING FROM EW. 46 ~~TOWARD NORTH~~ TO THE NORTH.
- AEGL INSTALLED 100' OF 6" SOLID HDPE PIPE. 6" SWEEP 90 AND 6" RISER INSTALLED AT SW-46. 60' OF 18" CMP INSTALLED AROUND ENCASED 6" SOLID COLLECTOR PIPE FOR ROAD CROSSING.
- AEGL BACKFILLED TRENCH PER SPEC AND RESTORED ROAD SURFACE WITH CRUSHED AGGREGATE.
- AEGL COMPLETED DRESS UP OF DISTURBED AREA AND LEFT THE SITE.
- OFFSITE AT 1300.

Attachments:

- ☐ Contractor Report
☒ Field Notes
☒ Other: TAILGATE MEETING FORM
AIR MONITORING FORM

Signature of CQA Monitor

Date

8/18/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

Tyler Todia

Date: *8/20/12*

Construction Day No.:

Time In:

0700

Time Out:

2000 (extended hours approved)

Weather:

sunny + 70°F

Items Worked On:

- ☒ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

*REG construction, Wellnet Engineering (survey)
REG Drilling*

Summary of Work:

*0700 arrive on site; safety meeting
0800 plant will shut down @ 0900; REG to
complete all horizontal fill ins except H15N
0930 trenching north half of H15 from H15S to
H15N (road xing)
- Wellnet surveyed on site especially for road
xing
- trench north half of H16; drill 170
- backfill H15 (half) + H14 complete
2000 leave site for the day after calling
Kostelnick; odor fan off*

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

[Signature] 8/20/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

Ismael Torres

Date: *8/21/12*

Construction Day No.:

Time In: *0700*

Time Out: *2000*

Weather:

overcast 78°F

Items Worked On:



Gas Extraction Wells
Flare/piping installation
LFG Piping
Pressure Testing
Earthwork

☐ Combo Wells
☐ Liner Installation
☐ Liner Repair
☒ Excavation/Trenching
☐ Other

Contractor/Subcontractors/Visitors:

AREC construction, AREC drilling

2 PRESSURE TEST 6" SDR17 100' and

Summary of Work:

*0700 arrive on site; safety meeting
0730 excavate lateral BUL170w NFM tie in
0730 drill BUL17A remote (No air force main)
0730 continue excavation of H15 N + full SCIS
to tie in H16N (completed last night)
1200 Set in bit steel @ 75' on 133R; need approval
from Jaquez to set @ 75'
1230 begin excavation of lateral for remote well
91T 169 to 138R 43R2
1715 making final tie ins from 149 → 170; will
complete H15 tomorrow (shot by 20)
1900 leave site → clean up (2000) call Kostelnick*

Attachments:

- ☐ Contractor Report
☐ Field Notes
☐ Other:

Signature of CQA Monitor

Date

Ismael Torres 8/21/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: Janet Todd

Date: 8/22/12 Construction Day No.:

Time In: 0700

Time Out: 1900

Weather: Sunny + 70°F

Items Worked On:

- ☒ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☒ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

AR&B construction, AR&B drilling (demob)
Willett Engineering

Summary of Work:

0700 arrive on site; safety meeting
0730 working on excavation & fill H15N
0745 working on lateral excavation 133R
0900 lengthen lateral EV149 for flange to
be above grade; remove risers after survey
1111 fill in for 133R complete
1815 fill in H3R2 to 169 complete
1830 install handles H15N
-sunny w/ Willett throughout day
1900 leave site

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Janet Todd 8/22/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel:

James Tolia

Date: *8/23/12*

Construction Day No.:

Time In: *0700*

Time Out:

1900

Weather:

Sunny + 80°F

Items Worked On:

- ☐ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☒ Liner Repair
- ☒ Excavation/Trenching
- ☒ Other *sump CS5*

Contractor/Subcontractors/Visitors:

AREG construction

Summary of Work:

*0700 arrive on site; safety meeting
0745 begin excavation of CS5 sump to
investigate blockage
1000 24" butt fused cap → 4" conveyance
line to 8" sump; old + new system tied
together
1400 obtain & connection from AREG office to tie
in for jetting & access
1705 finish tie in; begin liner repair for one
3x3 pipe
1720 pull & shear test AREG
1900 complete liner repair & leave site*

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Msobkha 8/23/12

Brown AND Caldwell

Daily Field Report

Project: 2011 GCCS Phase 1
Project No.: 140980

Location: Lorain County II Landfill

BC Personnel: Janet Todia

Date: 8/24/12 Construction Day No.:

Time In: 0700

Time Out: 1700

Weather: Sunny + 85°F

Items Worked On:

- ☒ Gas Extraction Wells
- ☐ Flare/piping installation
- ☒ LFG Piping
- ☐ Pressure Testing
- ☒ Earthwork

- ☐ Combo Wells
- ☐ Liner Installation
- ☐ Liner Repair
- ☐ Excavation/Trenching
- ☐ Other

Contractor/Subcontractors/Visitors:

AREC construction (demob); Willett Engineering

Summary of Work:

0700 arrive on site: safety meeting
1000 final walk thru for Phase #1
① air force main cut below grade 133
② backblade H18 N area
③ 2 survey stakes for CMP at H15
④ longer transfer H18 N
⑤ repair air leak C55
1700 wrap up paperwork w/ AREC +
leave site w/ Republic signatures
complete

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

Date

Janet Todia 8/24/12

American Environmental Group, Ltd



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/23/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: #	PIPE DIA.
QED VAULT KITS:		STATION:	LINEAR FT.
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		Lateral: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	sunny
START TIME	6:00
STOP TIME	7:00 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting approximately 20 minutes. We split into 3 groups. One group continued with the dirt hauling and dress up of remaining work areas. Another group cleaned up the remaining parts and pipe. The third group dug up and repaired sump 5 the repair consisted of installing 2-4" Ys into the drain line from the header. We then regraded the drain line and backfilled the area and placed the vault back around the sump. General clean up concluded the day.

Justin Todia 8/23/12
CLIENT REPRESENTATIVE DATE

Chris Johnson 8-24-12
AEGL SITE SUPERVISOR DATE

Jonat A Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/22/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-15	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 83ft
QED PUMPS:		RISER HEIGHT: 7ft	TRENCH DEPTH 15-16ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		Lateral: # 133R	PIPE DIA. 6"
		STATION:	LINEAR FT. 28ft
		RISER HEIGHT: 6ft	TRENCH DEPTH 2ft
		REMOTE: # 169	PIPE DIA. 6"
		STATION:	LINEAR FT. 149ft
		RISER HEIGHT: 5ft	TRENCH DEPTH 6-Feb
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy
START TIME	6:00
STOP TIME	7:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes. We started trenching and installing 6" pipe for H-15, we installed 83ft of perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. We installed a rock sump at the low point on the horizontal. We also dug and installed Lateral for wells 133r total length of 28ft, well 169 total length of 149ft. Then we hauled dirt and did dress up work. General clean up concluded the day.

John A. Tobis 8/22/12
CLIENT REPRESENTATIVE DATE

Chad Suprak 8-24-12
AEGL SITE SUPERVISOR DATE

John A. Tobis CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/21/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-15	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 170ft
QED PUMPS:		RISER HEIGHT: 7ft	TRENCH DEPTH 15-16ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		Horizontal: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy
START TIME	6:00
STOP TIME	7:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes .We started trenching and installing 6" pipe for H-15, we installed 50ft of solid and 170ft of perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. We installed a rock sump at the low point on the horizontal. We also installed the lateral to well 149 total length of 178ft. General clean up concluded the day.

Amelia 8/21/12
CLIENT REPRESENTATIVE DATE

Cheryl Jacobach 8-24-12
AEGL SITE SUPERVISOR DATE

Janet A. Todia CBA
E & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/20/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-16	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 280ft
QED PUMPS:		RISER HEIGHT: 7ft	TRENCH DEPTH 15-16ft
ENCASEMENTS:		Horizontal: # H-15	PIPE DIA. 6"
MISC. ITEMS / EXTRA DETAIL: (Described Below)		STATION:	LINEAR FT. 150ft
		RISER HEIGHT: 7ft	TRENCH DEPTH 6-16ft
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy
START TIME	6:00
STOP TIME	7:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes .We started trenching and installing 6" pipe for H-16, we installed 50ft of solid and 210ft of perf. H-15 we installed 150ft of perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. We installed a rock sump at the low point on the horizontal. General clean up concluded the day.

Joe A. Todis 8/20/12
CLIENT REPRESENTATIVE DATE

Chad Schmale 8-24-12
AEGL SITE SUPERVISOR DATE

Joe A. Todis CBA
NAME & TITLE

DATE _____



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/17/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-16	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 290ft
QED PUMPS:		RISER HEIGHT: 7ft	TRENCH DEPTH 15-16ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy
START TIME	6:00
STOP TIME	7:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting approximately 20 minutes. We started trenching and installing 6" pipe for H-16, we installed 50ft of solid and 240ft of perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. We installed a rock sump at the low point on the horizontal. General clean up concluded the day.

Janet A. Todia 8/17/12
CLIENT REPRESENTATIVE DATE

Chad Suder 8-24-12
AEGL SITE SUPERVISOR DATE

Janet A. Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/16/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: #	PIPE DIA.
QED VAULT KITS:		STATION:	LINEAR FT.
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: # H-17	PIPE DIA. 6"
		STATION:	LINEAR FT. 186'
		RISER HEIGHT: 5ft	TRENCH DEPTH 2-3ft
		LATERAL: # 320, 321	PIPE DIA. 6"
		STATION:	LINEAR FT.
		RISER HEIGHT: 5ft	TRENCH DEPTH 2-3ft
WEATHER & TIME INFORMATION		REMOTE #	PIPE DIA.
DAILY CONDITIONS: Cloudy		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
START TIME 6:00		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
STOP TIME 7:30 PM		RISER HEIGHT:	TRENCH DEPTH

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes. We split up into two groups, one group dug and installed a 6" lateral from H-18 riser to two wells 320 and 321 total length. The other group dug and installed the lateral for h-17 total length of 186ft. Then we all backfilled and hauled dirt. General clean up concluded the day.

J. M. Todia 8/16/12
CLIENT REPRESENTATIVE DATE
J. M. Todia CQA
NAME & TITLE

Chad Federal 8-24-12
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/15/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-17	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 105ft
QED PUMPS:		RISER HEIGHT: 7ft	TRENCH DEPTH 15-16ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: # Sump for H-17	PIPE DIA. 2"
		STATION:	LINEAR FT. 65ft
		RISER HEIGHT: 7ft	TRENCH DEPTH 3ft
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
WEATHER & TIME INFORMATION			
DAILY CONDITIONS:	Cloudy		
START TIME	6:00		
STOP TIME	7:30 PM		

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes. We started trenching and installing 6" pipe for H-17, we installed 50ft of solid and 55ft of perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. We also installed 6" sump at low point, 3ft of perf, and 18ft of solid. We backfilled around the perf part of the sump with stone. Then we split up into three groups, one group exposed the header for the lateral for H-18, and installed a 12X6" tee. Another group ran air and forcemain for the sump on H-17, total length of 65ft.. And finished backfilling. The other group hauled dirt for the next Horizontal, H-16. General clean up concluded the day.

Amal India 8/15/12
CLIENT REPRESENTATIVE DATE

Chad J. J. J. 8-24-12
AEGL SITE SUPERVISOR DATE

Isaac A. Tolia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/14/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-17	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 200ft
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH 15-16ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy/Rain
START TIME	6:00
STOP TIME	6:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting approximately 20 minutes. We started trenching and installing 6" pipe for H-17, we installed 200ft of Perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. General clean up concluded the day.

Janet A. Todia 8/14/12
CLIENT REPRESENTATIVE DATE

Chad J. Lohr 8-24-12
AEGL SITE SUPERVISOR DATE

Janet A. Todia CQA

NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/13/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H-17	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 250ft
QED PUMPS:		RISER HEIGHT: 9ft	TRENCH DEPTH 4-15ft
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS:	Cloudy
START TIME	6:00
STOP TIME	6:00 PM

COMMENTS (Description of Work Order Completed):

We arrived on sit at 6:00 and conducted a safety meeting approximately 20 minutes. We started trenching and installing 6" pipe for H-17, we installed 50ft of 6" solid pipe and 200ft of Perf. We bedded the trench with 2ft of stone and then covered the pipe with an additional 6" of stone, fabric, and then dirt 1ft above existing grade. General clean up concluded the day.

Joe M. Mordica 8/13/12
CLIENT REPRESENTATIVE DATE
Sam Atodia CQA
NAME & TITLE

Chad Jodrut 8-24-12
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/11/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: #	PIPE DIA.
QED VAULT KITS:		STATION:	LINEAR FT.
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below) We installed a 6" riser/sump approximately 50' from the well head on the north end of the horizontal.		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS: rain	
START TIME	7:00
STOP TIME	12:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting that took approximately 20 minutes. Two men came in today and installed a well head on H18 after adding 2' to the riser. They then staged dirt on top for work on Monday. General clean up concluded the day.

Janet A Todia 8/11/12
CLIENT REPRESENTATIVE DATE

Chad Federal 8-24-12
AEGL SITE SUPERVISOR DATE

Janet A Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/10/2012

PROJECT NAME: Lorain County Landfill

PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELL HEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H18	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 280'
QED PUMPS:		RISER HEIGHT: 7'	TRENCH DEPTH 10' to 18'
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
We installed a 6' riser/sump approximately 50' from the well head on the north end of the horizontal.		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS: rain	
START TIME	6:00
STOP TIME	7:30 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting that took approximately 20 minutes. We continued trenching on H18 at 3% grade toward the north. When we got approximately 50' from the end we trenched to 21' deep and installed a 6" riser/sump which was 25' long with 7' of perf on the bottom and a blind flange on top. All pipe was shot then bedded on 2' of stone and covered with 6" of stone with 3' wide fabric placed on top. We then backfilled the trench up to grade and put a 1' mound on top. General clean up concluded the day.

John A. Todia 8/10/12
CLIENT REPRESENTATIVE DATE

Chad J. J. J. 8-24-12
AEGL SITE SUPERVISOR DATE

John A. Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/9/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		Horizontal: # H18	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 170
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH 4' to 10'
ENCASEMENTS:			
MISC. ITEMS / EXTRA DETAIL: (Described Below)		LATERAL: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		AIR&FM: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH

WEATHER & TIME INFORMATION	
DAILY CONDITIONS: sunny and hot	
START TIME	6:00
STOP TIME	7:00 PM

COMMENTS (Description of Work Order Completed):

We arrived on site at 6:00 and conducted a safety meeting that took approximately 20 minutes. We split into two groups. One group tied in the air and force main for H17 then backfilled the hole in 1' lifts with caution tape placed after the first lift. The other group started trenching on H18 at 3% grade toward the north which was held up for 3 hours to go repair EW-17R3 that dominion ran over. we then trenched approximately 220' on the horizontal. We then installed and shot 120'-6" perf and 50'-6" solid. All perf pipe was bedded with 2' of stone and covered with 6" of stone that had 3' wide fabric placed on top then covered with dirt to grade with 1' mounded on top. General clean up concluded the day.

Joe B. Bledsoe 8/9/12
CLIENT REPRESENTATIVE DATE

Chad Fedral - 8-24-12
AEGL SITE SUPERVISOR DATE

James A. Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/8/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		LATERAL: # H18	PIPE DIA. 6"
QED VAULT KITS:		STATION:	LINEAR FT. 192
QED PUMPS:		RISER HEIGHT: 7'	TRENCH DEPTH 3'
ENCASEMENTS:	20'-12" CMP	LATERAL: # H17	PIPE DIA. 6"
MISC. ITEMS / EXTRA DETAIL: (Described Below)		STATION:	LINEAR FT. 186'
		RISER HEIGHT: 7'	TRENCH DEPTH 3'
		REMOTE: #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
WEATHER & TIME INFORMATION		REMOTE #	PIPE DIA.
		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
DAILY CONDITIONS: sunny and hot		AIR&FM: # H18	PIPE DIA. 2"
		STATION:	LINEAR FT. 192
		RISER HEIGHT:	TRENCH DEPTH 3'
START TIME 7:00		AIR&FM: # H17	PIPE DIA. 2"
STOP TIME 7:30 PM		STATION:	LINEAR FT. 186
		RISER HEIGHT: 7'	TRENCH DEPTH 3'

COMMENTS (Description of Work Order Completed):

We arrived on site at 7:00 and conducted a safety meeting that took approximately 20 minutes. We trenched from well locations to existing header on the north slope then installed both laterals as well as air and FM. We cut the existing blind flange off then fused a 12" blind onto a 12x6 tee and fused it on at the end then tied the lateral into it. Air and force main was tied in using 1-2" tee and 1-4x2 tee. We cut into the header below H13 and efused a 12x6 tee into it and tied the lateral to it. We then back filled both trenches in 1' lifts with caution tape placed after the first lift. General clean up concluded the day.

John A. Todia 8/8/12
CLIENT REPRESENTATIVE DATE

Chad Lepore 8-24-12
AEGL SITE SUPERVISOR DATE

John A. Todia CQA
NAME & TITLE



American
Environmental
Group Ltd.

AEGL DAILY DIARY

DATE: 8/7/2012

PROJECT NAME: Lorain County Landfill
PROJECT#: 202-12-136

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: #	PIPE DIA.
VALVE STEMS:		STATION:	LINEAR FT.
LAND-TEC WELLHEADS:		HAR:	TRENCH DEPTH
IN-LINE SUMPS:		REMOTE: #	PIPE DIA.
QED VAULT KITS:		STATION:	LINEAR FT.
QED PUMPS:		RISER HEIGHT:	TRENCH DEPTH
ENCASEMENTS:		REMOTE: #	PIPE DIA.
MISC. ITEMS / EXTRA DETAIL: (Described Below)		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
WEATHER & TIME INFORMATION		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
DAILY CONDITIONS: sunny and hot		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
START TIME <u>7:00</u>		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.
STOP TIME <u>5:30 PM</u>		STATION:	LINEAR FT.
		RISER HEIGHT:	TRENCH DEPTH
		REMOTE: #	PIPE DIA.

COMMENTS (Description of Work Order Completed):

We arrived on site at 7:00 and conducted a safety meeting that took approximately 20 minutes. We unloaded a load of 6" perf pipe and loaded up the 6" solid that was sent by mistake. We then fused up all 6" into 4-450' stringers. We had the precon meeting at 8:00 am. General clean up concluded the day.

[Signature] 8/7/12
CLIENT REPRESENTATIVE DATE

[Signature] 8-24-12
AEGL SITE SUPERVISOR DATE

[Signature] CQA
NAME & TITLE



DATE: 8/6/2012

MISC. INSTALLED ITEMS / Construction		PIPELINE INSTALLATION DETAILS / Construction	
INSTALLED ITEM	INSTALLED QUANTITY		
VALVES:		HEADER: # _____	PIPE DIA. _____
VALVE STEMS:		STATION: _____	LINEAR FT. _____
LAND-TEC WELLHEADS:		HAR: _____	TRENCH DEPTH _____
IN-LINE SUMPS:		REMOTE: # _____	PIPE DIA. _____
QED VAULT KITS:		STATION: _____	LINEAR FT. _____
QED PUMPS:		RISER HEIGHT: _____	TRENCH DEPTH _____
ENCASEMENTS:		REMOTE: # _____	PIPE DIA. _____
MISC. ITEMS / EXTRA DETAIL: (Described Below)		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		REMOTE: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		REMOTE: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		REMOTE: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		REMOTE: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		AIR&FM: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____
		AIR&FM: # _____	PIPE DIA. _____
		STATION: _____	LINEAR FT. _____
		RISER HEIGHT: _____	TRENCH DEPTH _____

We arrived on site at 7:00 and conducted a safety meeting that took approximately 20 minutes. We set up and cleaned out our trailers and performed maintenance on our equipment. We unloaded a truck load of pipe and parts then began building stringers. General clean up concluded the day.

DATE _____

NAME & TITLE

DATE _____



American
Environmental
Group Ltd.

DAILY DIARY

PROJECT NAME

Lorain

DATE: 8/21/2012

PROJECT#

101-12-124

DRILLING		CONSTRUCTION	
180 LINEAR FEET OF DRILLING			
LINEAR FEET OF DRILLING-ABANDONMENT			
180 LINEAR FEET OF WELL COMPLETION			
138 PERFORATED PIPE-DIA.	6" HDPE SDR-11	HEADER #	PIPE DIA.
48 SOLID PIPE -DIA.	6" HDPE SDR-11	STATION	LINEAR FT.
			TRENCH DEPTH
COMPLETION: (WELL NUMBERS)		HEADER #	PIPE DIA.
EW169-105ft		STATION	LINEAR FT.
EW133R-75ft			TRENCH DEPTH
		SUBHEADER #	PIPE DIA.
		STATION #	LINEAR FT.
			TRENCH DEPTH
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
GENERAL INFORMATION		LATERAL: #	PIPE DIA.
WEATHER CONDITIONS		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
START TIME 6:00 A.M.		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
STOP TIME 7:00 P.M.		RISER HEIGHT	TRENCH DEPTH
		SUMPS	VALVES

COMMENTS:

Arrived on site set up and drilled EW169 to depth and completed then moved and drilled EW133R to a depth of 75ft where I encountered a obstruction and was informed to set the well there so I did so and completed then removed the benches for EW169, and EW133R so one hour benching will be charged

David Tolia 8/21/12
CLIENT REPRESENTATIVE DATE
David Tolia CBA
NAME & TITLE

Detin Moore 8/21/2012
AEGLE SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 8/20/2012

PROJECT NAME Lorain
PROJECT# 101-12-124

DRILLING	CONSTRUCTION
125 LINEAR FEET OF DRILLING	HEADER # _____ PIPE DIA. _____
_____ LINEAR FEET OF DRILLING-ABANDONMENT	STATION _____ LINEAR FT. _____
125 LINEAR FEET OF WELL COMPLETION	TRENCH DEPTH _____
104 PERFORATED PIPE-DIA. 6" HDPE SDR-11	HEADER # _____ PIPE DIA. _____
24 SOLID PIPE -DIA. 6" HDPE SDR-11	STATION _____ LINEAR FT. _____
COMPLETION: (WELL NUMBERS)	TRENCH DEPTH _____
EW170-125ft	SUBHEADER # _____ PIPE DIA. _____
	STATION # _____ LINEAR FT. _____
	TRENCH DEPTH _____
	LATERAL: # _____ PIPE DIA. _____
	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
GENERAL INFORMATION	LATERAL: # _____ PIPE DIA. _____
WEATHER CONDITIONS	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
START TIME <u>6:00</u> A.M.	LATERAL: # _____ PIPE DIA. _____
STOP TIME <u>7:00</u> P.M.	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
	SUMPS _____ VALVES _____

COMMENTS:

Arrived on site set up and drilled EW170 to depth and completed then constructed benches for EW169, and EW133R so one hour benching will be charged

[Signature] 8/20/12
CLIENT REPRESENTATIVE DATE
[Signature] CBA
NAME & TITLE

Detin Moore 8/20/2012
AEGLE SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 8/16/2012

PROJECT NAME Lorain
PROJECT# 101-12-124

DRILLING	CONSTRUCTION
135 LINEAR FEET OF DRILLING	HEADER # _____ PIPE DIA. _____
_____ LINEAR FEET OF DRILLING-ABANDONMENT	_____ LINEAR FT. _____
135 LINEAR FEET OF WELL COMPLETION	STATION _____ TRENCH DEPTH _____
93 PERFORATED PIPE-DIA. 6" HDPE SDR-11	HEADER # _____ PIPE DIA. _____
48 SOLID PIPE -DIA. 6" HDPE SDR-11	_____ LINEAR FT. _____
COMPLETION: (WELL NUMBERS)	STATION _____ TRENCH DEPTH _____
EW318-70ft	SUBHEADER # _____ PIPE DIA. _____
EW320-65ft	_____ LINEAR FT. _____
_____	STATION # _____ TRENCH DEPTH _____
_____	LATERAL: # _____ PIPE DIA. _____
_____	STATION _____ LINEAR FT. _____
_____	RISER HEIGHT _____ TRENCH DEPTH _____
GENERAL INFORMATION	LATERAL: # _____ PIPE DIA. _____
WEATHER CONDITIONS	STATION _____ LINEAR FT. _____
START TIME <u>6:00 A.M.</u>	RISER HEIGHT _____ TRENCH DEPTH _____
STOP TIME <u>7:00 P.M.</u>	LATERAL: # _____ PIPE DIA. _____
	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
	SUMPS _____ VALVES _____

COMMENTS:

Arrived on site and constructed a bench for EW318 then drilled to depth and completed then constructed a bench for EW320 then drilled to depth and completed and removed both benches so three hours benching will be charged

Detin Moore 8/16/12
CLIENT REPRESENTATIVE DATE
Detin Moore COA
NAME & TITLE

Detin Moore 8/16/2012
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 8/15/2012

PROJECT NAME Lorain
PROJECT# 101-12-124

DRILLING	CONSTRUCTION
177 LINEAR FEET OF DRILLING	HEADER # _____ PIPE DIA. _____
_____ LINEAR FEET OF DRILLING-ABANDONMENT	_____ LINEAR FT. _____
177 LINEAR FEET OF WELL COMPLETION	STATION _____ TRENCH DEPTH _____
124 PERFORATED PIPE-DIA. 6" HDPE SDR-11	HEADER # _____ PIPE DIA. _____
62 SOLID PIPE -DIA. 6" HDPE SDR-11	_____ LINEAR FT. _____
COMPLETION: (WELL NUMBERS)	STATION _____ TRENCH DEPTH _____
EW321-43R	SUBHEADER # _____ PIPE DIA. _____
EW322-66R	_____ LINEAR FT. _____
EW319-68R	STATION _____ TRENCH DEPTH _____
GENERAL INFORMATION	LATERAL: # _____ PIPE DIA. _____
WEATHER CONDITIONS	_____ LINEAR FT. _____
START TIME <u>6:00</u> A.M.	RISER HEIGHT _____ TRENCH DEPTH _____
STOP TIME <u>7:00</u> P.M.	LATERAL: # _____ PIPE DIA. _____
	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
	LATERAL: # _____ PIPE DIA. _____
	STATION _____ LINEAR FT. _____
	RISER HEIGHT _____ TRENCH DEPTH _____
	SUMPS _____ VALVES _____

COMMENTS:

Arrived on site set up and drilled EW321 to depth and completed then constructed a bench for EW322 and drilled to depth and completed then constructed a bench for EW319 then drilled to depth and completed then removed both benches so two hours benching will be charged

Detin Moore 8/15/12
CLIENT REPRESENTATIVE DATE
Detin Moore CRA
NAME & TITLE

Detin Moore 8/15/2012
AEG SITE SUPERVISOR DATE

Appendix B: Construction Photographs and Description Logs

(CD Enclosed)

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2012 GCS - Phase II - Photograph Log - Lorain II

Date	Photo ID	Direction	Description
8/8/2012	100 1447	N	Lateral excavation for H18N.
8/8/2012	100 1448	W	Odor control being moved to facilitate construction.
8/8/2012	100 1455	S	12-inch blind flange uncovered to allow connection of lateral serving H18N.
8/8/2012	100 1471	N	10-inch CMP Road Crossing encasing lateral, airline, and force main serving H18N.
8/8/2012	100 1474	N	Construction of 6-inch by 12-inch tee connection for lateral serving H18N.
8/9/2012	100 1483	S	6-inch vacuum, 2-inch airline, and 2-inch force main risers serving H18N.
8/9/2012	100 1484	N	Excavation for lateral serving H18S from EW-50R.
8/9/2012	100 1487	N	Placement of No. 2 stone in trench for H18.
8/9/2012	100 1494	Ground	Placement of dehydrated bentonite for plug around perforated and solid pipe interface in trench for H18.
8/9/2012	100 1502	Ground	Hydration of bentonite for plug around perforated and solid pipe interface in trench for H18.
8/13/2012	100 1546	N	Overnight tarp placement over uncompleted H17 construction.
8/14/2012	100 1550	N	Placement of geotextile in trench above H17.
8/15/2012	100 1557	S	Drilling EW-322.
8/15/2012	100 1559	NE	Well casing for EW-322 set amidst bore hole safety grate.
8/15/2012	100 1571	N	Placement of perforated pipe in trench during construction of H17.
8/15/2012	100 1583	NE	Sweeping 90-degree bend at riser for H17N well head.
8/15/2012	100 1585	S	Placement of airline and force main in H17 trench.
8/16/2012	100 1587	NE	Connections for lateral (i.e. 6-inch by 12-inch electrofusion tee), airline, and force main serving H16N.
8/16/2012	100 1593	E	Bags of dehydrated bentonite to form lower 2-foot plug in EW-318 borehole.
8/17/2012	100 1623	N	Shared vacuum source for H17N and EW-320.

Date	Photo ID	Direction	Description
8/20/2012	100 1644	NW	Risers for H16 and H17 alongside to EW-49R2.
8/20/2012	100 1653	N	Installed shared vacuum source assembly to serve EW-318 and H15N.
8/21/2012	100 1669	W	Drilling EW-169.
8/22/2012	100 1710	W	Installation of tee for remote well head serving EW-169.
8/22/2012	100 1713	NW	Shared vacuum source assembly serving EW-43R2 and EW-169 (remote).
8/23/2012	100 1733	Ground	Existing piping at CS-5 from 24-inch header.
8/23/2012	100 1743	NW	Installed clean out risers at CS-5 to create access to existing 4-inch by 24-inch pipe transition.

Appendix C: Resumes for CQA Certifying Engineer and Monitors

Richard A. Isaac, P.E.

Experience Summary

Rick Isaac has 34 years of extensive experience managing, performing, and certifying engineering design, permitting, and construction quality assurance (CQA) programs for new land disposal and other solid and hazardous waste management facilities. Mr. Isaac's CQA experience includes landfills in Ohio, Virginia, West Virginia, Pennsylvania, Maryland, Mississippi, and Louisiana for new cell construction, final cover system construction and final landfill closure, and landfill gas collection and control system (GCCS) installations. Mr. Isaac has prepared and certified construction quality assurance plans (CQAPs) for landfills used as the basis for performing field oversight and CQA services. Mr. Isaac has managed and certified the CQA activities on recent projects for Republic in Ohio at the Lorain County II Landfill, Lorain County I Landfill (Closed), Countywide Recycling and Disposal Facility, County Environmental of Wyandot Landfill, County Land Development (CLD) Landfill, and Lewis Landfill (Closed) and Imperial Landfill in Pennsylvania. He has successfully completed and received approval of Construction Certification Reports from the Ohio Environmental Protection Agency (Ohio EPA) and the Pennsylvania Department of Environmental Protection (PADEP) for various types of construction at each of these landfills.

In addition, Mr. Isaac brings to his work extensive experience in managing feasibility studies (FS) and remedial design/remedial action (RD/RA) for Superfund sites under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and state-led remedial sites, as well as managing corrective measures studies (CMS) and implementation of remediation systems for operating facilities under Resource Conservation and Recovery Act (RCRA). He also possesses extensive experience with bid procurement services including preparation of contract documents, technical specifications, and construction drawings for a wide variety of projects including solid and hazardous waste facilities, remediation, and the cleaning and demolition of buildings, both municipal and industrial. He participates in and/or conducts pre-bid and pre-construction meetings, bid review, evaluation, recommendation, and contract award.

Assignment

Certifying Engineer

Education

B.S. Civil Engineering, West Virginia University, Morgantown, 1978

Registration

Professional Engineer in Ohio, Michigan, Pennsylvania, Mississippi, Louisiana, and West Virginia; Virginia (retired status); Colorado (retired status); Wyoming (retired status); and Montana (retired status)

Experience

34 years

Joined Firm

2007

Training

OSHA 29 CFR 1910.120, Health and Safety Training

Relevant Expertise

- Solid and Hazardous Waste Management
- CQA Oversight and Management
- CERCLA, RCRA, and Remediation
- Site Assessments and Investigations
- Regulatory Compliance
- Storm Water/Surface Water Management

Solid and Hazardous Waste Management

Reservoir Liner and Earthwork CQA Services, City of Fremont, Fremont, Ohio

Certifying Engineer. Managed the CQA for the installation of a 96 acre liner system for a raw water reservoir in Fremont, Ohio. The liner system included, in ascending order, Bentomat 200R geosynthetic clay liner (GCL), 40-mil smooth linear low density polyethylene (LLDPE) geomembrane, 10 oz./sy. nonwoven geotextile, and 18-inches of protective soil on the reservoir floor and Bentomat DN GCL, 40-mil textured LLDPE geomembrane, 10 oz./sy. nonwoven geotextile, 12-inches of sand material, 4-inch bedding stone, and 24-inch dumped rock riprap on the reservoir slopes. Provided direction to the field inspectors who were onsite full-time throughout the duration of the liner installation activities. Perform review and approval of the quality control (QC) testing for the liner materials and oversight for the quality assurance (QA) sample collection and testing of the liner materials. The CQA inspectors performed field density/moisture testing for the liner system subgrade and replacement of the reservoir dam to facilitate the liner anchor trench. Prepared and served as the "Engineer of Record" for the Certification Report submitted to the Ohio Department of Natural Resources (ODNR) to document the reservoir liner installation.

Lorain County II Landfill Gas CQA Services, Republic Services, Inc., Oberlin, Ohio

Certifying Engineer. Managed the CQA for the installation of a 24-inch diameter high density polyethylene (HDPE) header pipeline to connect onsite enclosed flares to a gas plant at a landfill in Oberlin, Ohio. Provided direction to

the field inspectors who were onsite full-time throughout the duration of the pipeline installation activities. The header installation included the 24-inch diameter HDPE pipeline with a 3-inch by 6-inch diameter HDPE force main, 3-inch diameter HDPE airline, and 3-inch diameter HDPE communications conduit. Seven 48-inch diameter HDPE condensate pump station were installed along the header. Assisted in the preparation, performed QA review, and served as the "Engineer of Record" for the Certification Report submitted to the Ohio EPA to document the header line installation.

Lorain County II Landfill Gas Design and CQA Services, Republic Services, Inc., Oberlin, Ohio

Certifying Engineer. Managed the CQA for the expansion of the landfill gas management system at a landfill in Oberlin, Ohio. Provided direction to the field inspectors who were onsite full-time throughout the duration of the expansion implementation activities. The expansion activities included installation of an enclosed flare station, condensate sumps, 24-inch and 18-inch diameter HDPE header pipelines, laterals to new and re-drilled gas extraction wells, condensate and airlines, and road crossings. Managed the preparation and provided QA review of the construction drawings for the landfill gas management system expansion. Assisted in the preparation, performed QA review, and served as the "Engineer of Record" for the Certification Report submitted to the Ohio EPA to document the landfill gas system expansion installation.

Lorain County I Landfill (Closed) Gas CQA Services, Allied Waste Industries, Inc., Oberlin, Ohio

Certifying Engineer. Managed the CQA for the expansion of the landfill gas management system at a closed landfill in Oberlin, Ohio. Provided direction to the field inspectors who were onsite full-time throughout the duration of the expansion implementation activities. The expansion activities included installation of 8-inch diameter HDPE header pipelines, laterals to new and re-drilled gas extraction wells, installation of Landtec combination wellheads, leachate system force main, condensate and airlines, and road crossings. Assisted in the preparation, performed QA review, and served as the "Engineer of Record" for the Certification Report submitted to the Ohio EPA to document the landfill gas system expansion installation.

County Land Development Landfill Closure CQA Services, Republic Services, Inc., Salem, Ohio

Project Manager/Certifying Engineer. Managed the CQA for the implementation of final closure activities at a sanitary/construction demolition debris (C&DD) landfill in Salem, Ohio. Provided direction to the field inspectors who were onsite full-time throughout the duration of the final closure implementation including final cover construction, landfill gas management system expansion, and storm water controls. Managed and assisted in the preparation, performed quality assurance (QA) review, and served as the "Engineer of Record" for the Final Closure Certification Report submitted to the Ohio EPA to document the implementation of the final landfill closure construction.

County Environmental of Wyandot Landfill Gas Design and CQA Services, Republic Services, Inc., Carey, Ohio

Certifying Engineer. Managed the CQA for the expansion of the landfill gas management system at a landfill in Carey, Ohio. Provided direction to the field inspectors who were onsite full-time throughout the duration of the expansion implementation activities. The expansion activities included installation of an enclosed flare station, condensate sumps, 24-inch diameter high-density polyethylene (HDPE) header pipeline, laterals to new and re-drilled gas extraction wells, condensate and airlines, and road crossings. Managed the preparation and provided QA review of the construction drawings for the landfill gas management system expansion. Assisted in the preparation, performed QA review, and served as the "Engineer of Record" for the Certification Report submitted to the Ohio EPA to document the landfill gas system expansion installation.

Cherokee Run Landfill Gas Design Services, Republic Services, Inc., Bellefontaine, Ohio

Certifying Engineer. Managed the design of the expansion of the landfill gas management system at a landfill in Bellefontaine, Ohio. Provided direction to the design engineers who prepared the construction drawings and details for use by the installer to construct the landfill gas management system expansion. The expansion activities included installation of a condensate sump, 18-inch diameter HDPE header pipeline, laterals to new and re-drilled gas extraction wells, and condensate and airlines. Provided QA review of the construction drawings for the landfill gas management system expansion.

Noble Road Landfill Vertical Expansion Perimeter Berm Design, Republic Services, Inc., Shiloh, Ohio
Project Manager/Certifying Engineer. Managed the design of a perimeter berm used to expand the available air space at a landfill in Shiloh, Ohio. Provided direction and assisted staff engineers in the preparation of “construction-ready” design drawings for use by contractors in preparation of bids. The drawings included grading plans, construction sequence plans, leachate management system plans, storm water management plans, and details. Prepared the contract documents and technical specifications for use by contractors in preparing bids. Participated in the bid procurement, bid review, and contractor selection for construction of the perimeter berm. Performed QA review, and served as the “Engineer of Record” for the berm design.

Hazardous Waste Landfill Remediation, Laufen International, Inc., East Sparta, Ohio
Project Manager/Certifying Engineer. As part of a RCRA Corrective Action through a Consent Decree with the U.S. EPA Region 5, prepared an Interim Measures Work Plan for the remediation of a hazardous waste landfill at a facility in eastern Ohio. The Interim Measures included landfill cap enhancements, leachate management system modifications, construction of a flood protection levee, modification of the perimeter surface drainage system, and modification of the settlement monitoring program. Managed and prepared the contract documents, technical specifications, and drawings to procure a geosynthetics installer for the synthetic components of the new final cover system. Managed the implementation and CQA for the construction of the Interim Measures including construction of a new final cover system to encapsulate the existing landfill and the geotechnical program and construction of the flood protection levee. Prepared the construction certification report for submittal to the U.S. EPA following completion of the remediation activities.

Design, Permitting, and Construction of a Solid Waste Transfer Station, Rumpke Waste, Inc., Ironton, Ohio

Project Manager/Certifying Engineer. Managed the design, permitting, and construction of a solid waste transfer station for a major solid waste company in southeast Ohio. The facility permit was through the Ohio EPA Southeast District Office in accordance with the Ohio Administrative Code rules and regulations pertaining to transfer stations. Coordinated and managed the transfer facility design by assembling a team of design professionals including site work, geotechnical and structural, environmental management systems, architectural, and mechanical, electrical, and plumbing including both wet and dry fire suppression systems. Prepared and obtained the required building permits through the Ohio Department of Commerce, Bureau of Building Code Compliance office. Managed the preparation of the contract documents, technical specifications, and construction drawings including QA/QC of the final bid documents and was responsible for the bid procurement including pre-bid meeting, bid evaluation, recommendation, and contract award. Performed limited CQA during the facility construction including project progress meetings, contractor requests for information, pay application review and approval, and change order requests.

Design and Permitting for a Type I Restricted Waste Landfill, Mittal Steel USA, Burns Harbor, Indiana

Project Manager/Certifying Engineer. Managed the design and permit preparation for a Type I Restricted Waste Landfill for disposal of secondary wastewater treatment plant sludge at a major steel manufacturing facility in Indiana. Performed the leachate management system evaluation including landfill floor configuration, HELP Model to determine leachate volumes, and design calculations for pipe sizes, perforation openings, sumps, and pumps. Assisted with the preparation of the Special Exception to the Zoning Application required for the facility.

C&DD Landfill Closure Certification, Stambaugh Properties Ravenna, Ohio

Project Manager/Certifying Engineer. Managed the closure and closure certification of a C&DD landfill in Ravenna, Ohio. Performed field oversight services including soil sample collection for geotechnical analysis. Prepared the Closure Certification Report and served as the Engineer-of-Record. Submitted the Closure Certification Report to the Portage County Health Department.

Hazardous Waste Facility Post – Closure Plan, ESAB Welding & Cutting Ashtabula, Ohio

Design Engineer. Prepared and submitted to the Ohio EPA a hazardous waste facility post-closure plan for former lime ponds and associated impoundments at a welding wire manufacturer in Northeast Ohio. Post-

closure plan included discussions on site security, inspection plan, monitoring plan, maintenance plan, and financial assurance.

Design and Permitting of a Solid Waste Transfer Station, Waste Management, Inc., Wooster, Ohio
Design Engineer. Managed the design and permitting of a solid waste transfer station for a major solid waste company in central Ohio. The design included grading and storm water control plans, vehicle sequencing and staging plans, and detailed design of the transfer building structure and operating pad.

Design and Permitting for the Vertical Expansion of a Sanitary Landfill, Mid-American Waste Systems, Gary, Indiana

Design Engineer. Managed the design and permitting for the vertical expansion of an existing sanitary landfill. Project included the design of leachate management, gas management, grading, closure and post-closure, and erosion and sediment control plans. Coordinated site remediation activities, including a toe drain collection and conveyance system and a groundwater cut-off slurry wall.

Design and Permitting for the Upgrade and Compliance of a Large Sanitary Landfill, City of Virginia Beach, Virginia

Project Manager/Design Engineer. Managed the design and permitting for upgrade and compliance of a large existing sanitary landfill located in the Tidewater region of Virginia with new Subtitle D regulations. The design included plans for grading, leachate collection system and groundwater underdrain, closure and post-closure, and storm water management. Wetlands associated with expansion were permitted through the US Army Corps of Engineers Nationwide 26 Permit process.

Design and Closure of an On-Site Waste Disposal Site at an Aluminum-Processing Facility, Alcoa Cleveland Works, Cleveland, Ohio

Design Engineer. Managed the design and closure of an on-site waste disposal site at an aluminum processing facility. Closure plan included grading, storm water management, gas management, post-closure care, and land-use plans.

Design and Permitting for Closure of Three Disposal Units at a Coke Facility, Wheeling-Pittsburgh Steel, Follansbee, West Virginia

Design Engineer. Managed the design and permitting for the closure of three disposal units located at a coke facility along the Ohio River. Closure plans included grading, storm water management, gas management, and post-closure care and land use plans. Designed the closure plans and prepared permit applications as "fast track" projects in order to meet imposed regulatory deadlines.

Closure of a Hazardous Ash Disposal Impoundment at a Paint Pigment Facility, Cytec Industries, Inc., Washington, West Virginia

Design Engineer. Managed the closure of a hazardous ash disposal impoundment at a paint pigment facility located along the Ohio River in West Virginia. The closure included final grading plan; final cover system configuration, including geogrids to allow construction equipment access to the ash material during the construction phase; and surface water management.

Design and Preparation of Permit Application Drawings for the Vertical Expansion of a Landfill, City of Barnstable, Massachusetts

Design Engineer. Managed the design and preparation of permit application drawings for the vertical expansion of an existing landfill in Massachusetts. The project included the design of grading plans, disposal cell phase and sequence plans, storm water management, leachate collection and treatment systems, landfill gas management system, liner and fill cap system configurations, and closure and post-closure care plans. The existing site is located on Cape Cod within a Zone II Aquifer system, which required specialized engineering designs to ensure zone environmental protection of the groundwater systems at the site.

Preparation of a Waste Alternatives Study for a Large Paper Mill Facility, WESTVACO, Luke, Maryland

Design Engineer. Managed the preparation of a Waste Alternatives Study for a large paper mill facility located in western Maryland. The study compared the development, design, permit preparation, and construction of two potential landfill sites: one located in West Virginia and the second located in Maryland. The study

evaluated operations, design, permitting, material hauling to each site, and construction of each potential site for a study period of 20 years, with present worth analysis performed to determine capital required to finance the project. Each potential site was also compared to contract waste collection, transportation, and disposal by an independent waste contractor.

Design and Permitting for a Construction and Demolition Debris Landfill, Warren Recycling, Inc., Warren, Ohio

Project Manager/Design Engineer. Managed the design and permitting for a C&DD landfill located in Warren, Ohio. The project included License Application forms, grading plans, leachate management plans, storm water management plans, and fill sequence plans. Applied for and received a variance from groundwater monitoring from the City Health Department.

Design and Permitting for a Construction and Demolition Debris Landfill, Iron Valley, Chesapeake, Lawrence County, Ohio

Project Manager/Design Engineer. Managed the design and permitting for a C&DD landfill located in Lawrence County, Ohio. The project included License Application forms, grading plans, leachate management plans, storm water management plans, and fill sequence plans.

Design and Permitting of the Closure for a Residual Carbon Waste Disposal Facility, The Stackpole Corporation, St. Marys, Pennsylvania

Design Engineer. Managed the design and permitting of the closure for a residual carbon waste disposal facility in Pennsylvania. Design included a combination RCRA-style final cover system and standard State of Pennsylvania cover system.

CERCLA, RCRA, and Remediation

RD/RA and Implementation of Closure for a Site in Elyria, Ohio

Certifying Engineer/Designer. Prepared the bid documents, technical specifications, and construction drawings for the construction of a steep slope (2:1) soil buttress from the river plain to the crest and installation of a 1976 Ohio EPA-compliant final cover system at a former landfill site. Soil buttress had specific strength requirements for the soil related to slope stability issues and the final cover system incorporated low permeability soil ($k \leq 1 \times 10^{-5}$ cm/sec). The steep slope incorporated GreenArmour™ 7020 turf reinforcement mat with Flexterra® HP-FGM™ flexible growth medium with a steep slope seed mix developed for the site to control erosion. Bid documents and technical specifications were prepared to following the CSI 2004 format. Participated in pre-bid meetings, bid evaluation, and contractor recommendation and contract award. Served as the Engineer-of Record for the design and assisted with the field CQA program including contractor oversight, project progress meetings, and contractor requests for information.

Bid Documents, Technical Specifications and Construction Drawings for a Hydraulic Barrier Wall and Groundwater Extraction and Treatment System for a Site in Holland, Michigan

Certifying Engineer/Designer. Prepared the bid documents, technical specifications, and construction drawings for the installation of a hydraulic barrier wall and groundwater extraction and treatment system at a former manufacturing site. The hydraulic barrier wall consists of a soil-bentonite (SB) slurry wall and blast furnace slag- cement-bentonite (BFSCB) slurry wall. Groundwater extraction and treatment system consists of five extraction wells, water filtration treatment, and deep well injection under high pressure. Bid documents and technical specification were prepared to following the CSI 2004 format. Participated in pre-bid meetings, bid evaluation, and contractor recommendation and contract award. Served as the Engineer-of Record for the design and assisted with the field CQA program including contractor oversight, project progress meetings, and contractor requests for information.

Preparation of RD/RA for Former Tar and Chemical Facility, Reilly Industries, Inc., Dover, Ohio

Project Manager/Design Engineer. Managed the preparation of the RD/RA for a former tar and chemical facility located in Dover, Ohio. The remedial design included excavation of on-site soils and sediments contaminated with polycyclic aromatic hydrocarbons (PAHs), and benzene, toluene, ethylbenzene, and xylene (BTEX) for either off-site treatment by thermal destruction and disposal or placement within an on-site building foundation closed by the construction of an Ohio EPA- compliant solid waste final cover system; construction of

a groundwater recovery trench with recovered groundwater discharged to the local publically owned treatment works (POTW); and placement of soil cover.

Hydrogeologic Site Investigation and Preparation of a Focused FS for a Lagoon at a Major Coke-Producing Facility, US Steel, Clairton, Pennsylvania

Design Engineer. Managed the performance of a hydrogeologic site investigation and preparation of a "focused" FS for a lagoon contaminated with polynuclear aromatic hydrocarbons, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) at a major coke-producing facility. Performed the FS to adhere to the requirements of the Pennsylvania Department of Environmental Protection (PADEP). Alternatives evaluated included augmenting the existing groundwater pump and treat with lagoon sediment solidification/stabilization and construction of a PADEP-compliant final cover system.

Site Investigation, Permitting, Remedial Design, and Remediation Implementation at a Creosote Wood Treating Facility, Southern Wood Piedmont, Benson, North Carolina

Design Engineer. Managed the site investigation, permitting, remedial design, and remediation implementation at a creosote wood treating facility in North Carolina. Surface impoundments used for disposal of creosote and surface water were remediated by stabilization/solidification of the resulting sludge and covering with a solid-waste-style final cover system.

Preparation of a Feasibility Study for a Large Primary Aluminum Facility, Ormet, Hannibal, Ohio

Design Engineer. Managed the preparation of a FS for a large primary aluminum facility located along the Ohio River in the State of Ohio. Five impoundments, a former potash disposal area, a former spent carbon disposal area, a former construction material and demolition debris area, and the backwash area required remediation for fluoride, cyanide, and VOCs. The final proposed remedy included construction of RCRA-style final cover systems; soil washing/soil flushing aided by a Ranney well, which influenced the flow of groundwater; and river sediment dredging.

Preparation of a "Focused" Corrective Measures Study for a Hazardous Materials Recycling Facility, Safety-Kleen, Hebron, Ohio

Design Engineer. Managed the preparation of a "focused" CMS for a hazardous materials recycling facility in the State of Ohio. Implemented interim corrective measures including groundwater recovery wells and low-profile air stripper with a groundwater cut-off wall. The CMS evaluated alternatives for remediating VOCs that had entered the soils and groundwater as a result of a fire at the facility.

Design of an Ultraviolet Peroxidation Groundwater Treatment System, Honeywell, Annapolis, Maryland

Design Engineer. Managed the design of an ultraviolet (UV) peroxidation groundwater treatment system. The design included the UV system and associated groundwater recovery system for the remediation of VOCs, and SVOCs. Prepared contract documents, technical specifications, and construction drawings for use in the contractor bid procurement process.

Paint Sludge and Sediment Remediation in Lake Michigan, Flanders Industries, Inc., Menominee, Michigan

Design Engineer. Managed the design and preparation of contract documents, technical specifications, and construction drawings for paint sludge and sediment remediation in Lake Michigan. Project included the design and construction of an impermeable dike built in Lake Michigan to isolate the contaminated sediments, sediment removal plans, sediment staging and sequencing plans, sediment testing plans, and site restoration plans.

Design and Construction of a Recovery and Treatment System at a Carbon Graphitizing Facility, The Stackpole Corporation, St. Marys, Pennsylvania

Provided QA/QC and senior oversight for the design and construction of a recovery and treatment system at a carbon graphitizing facility in Pennsylvania. The system included 14 groundwater recovery wells and soil vapor extraction for chlorinated organics.

General Engineering

Implementation of Design/Build Services for Building Demolition, TRW, Inc., Cleveland, Ohio

Lead Engineer Responsible for providing direction and oversight to the onsite CQA inspector throughout the performance of the building demolition for a former automobile parts manufacturing facility. Site activities included asbestos abatement, multi-story building complex demolition consisting of steel and wood frame, concrete, block and brick buildings including removal, cleaning, and off-site disposal of tanks and pipelines containing residual materials, removal, cleaning, and off-site disposal of PCB-containing transformers, and segregation and recycling of steel, concrete, and brick materials. Provided interpretation of project specifications and conducted bi-monthly project progress meetings.

Design, Technical Specifications and Construction Drawings for Filter Press installation, Whirlpool Corporation, Marion, Ohio

Project Manager for the design and preparation of technical specifications and construction drawings for the installation of a filter press in an existing water treatment building. Prepared the civil component of the specifications and drawings and managed the preparation of the structural, mechanical, electric, and plumbing (MEP) components of the project. Installed the filter press in the existing filter press building by retrofitting the inside of the building and the existing structural components and MEP. Installation of the filter press allowed the client to realize a two-fold increase in filtering the effluent from the onsite wastewater treatment plant (WWTP).

Technical Specifications and Construction Drawings for Building Demolition, City of Dayton, Office of Economic Development, Dayton, Ohio

Design Engineer. Prepared the contract documents, bidding documents, technical specifications, and construction drawings for the demolition of a 845,000 square foot, multi-story building complex consisting of steel frame, concrete, block and brick buildings including removal and off-site disposal of tanks and pipelines containing residual materials. Contract and bidding documents were prepared to adhere to client's (municipal) preferred formats. Participated in pre-bid and pre-demolition meetings, bid evaluation, and contractor recommendation and contract award. Managed the CQA program including contractor oversight, project progress meetings, and contractor requests for information.

Technical Specifications and Construction Drawings for Building Demolition, Columbus Recreation and Parks, Columbus, Ohio

Project Manager/Design Engineer. Prepared the contract documents, bidding documents, technical specifications, and construction drawings for the demolition of a 25,500 square foot, three-story, steel frame, concrete, block and brick building including removal and off-site disposal of an underground storage tank (UST). Contract and bidding documents were prepared to adhere to client's (municipal) preferred formats. Participated in pre-bid and pre-demolition meetings, bid evaluation, and contractor recommendation and contract award. Project included field survey and verification of existing utilities associated with the building and preparation of a site grading plan following removal of the building debris from the site.

Cleaning, Asbestos Abatement, and Demolition of Aboveground Storage Tanks, Buildings, Process Equipment, and Pipelines at a Large Coal Tar Refining Facility, Reilly Industries, Inc., Cleveland, Ohio

Project Manager/Design Engineer. Managed the cleaning, asbestos abatement, and demolition of aboveground storage tanks (500 to 1,000,000 gallons) and pipelines and demolition of facility buildings and process equipment at a large coal tar refining facility under the Ohio EPA Cessation of Regulated Operations (CRO) Program. Products produced at the site included coal tar and coal tar distillates, creosote, naphthalene, and oils. Directly prepared technical specifications and construction drawings for use in bid procurement, conducted pre-bid and pre-demolition meetings, bid review and evaluation and assisted client with contract award. Managed the field oversight services throughout performance of the field activities.

Site Assessments and Investigations

Preparation of Phase I Environmental Site Assessment, City of Steubenville, City Engineer, Steubenville, Ohio

Project Manager. Performed the Phase I Environmental Site Assessment (ESA) in accordance with ASTM E1527-00 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The Phase I ESA included environmental database searches, interviews with past property owners, limited title searches, site reconnaissance, agency information reviews, and report preparation.

Preliminary Phase II Site Screening, Whittier Peninsula Properties, Columbus Recreation and Parks, Columbus, Ohio

Project Manager. The purpose of the site screening was to review historical information and data related to environmental issues and concerns associated with the Peninsula properties, develop a site ranking system, and develop preliminary recommendations and costs for performing Phase II site investigation activities to identify potential impacts to the soils and groundwater at the Whittier Peninsula.

Phase II Environmental Site Investigation, Whittier Peninsula Properties, Columbus Recreation and Parks, Columbus, Ohio

Project Manager. The Phase II ESI included field work, laboratory analysis, and reporting writing in accordance with the Ohio EPA Voluntary Action Program (VAP) rules and regulations. Field work included collection of soil samples using the Geoprobe® Direct-Push Technology and installation and sampling of groundwater monitoring wells. Prepared the report narrative text, tables, and drawings.

Preparation of Phase I Environmental Site Assessment, City of Columbus, Street Design Department, Columbus, Ohio

Managed and provided QA/QC for a Phase I ESA of Short Street in Columbus, Ohio. Performed the Phase I ESA for the City of Columbus Street Design Department as part of the street-widening program. Used ASTM E1527-00 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process in the performance and preparation of the Phase I ESA report.

Preparation of Phase II Environmental Site Investigation, City of Columbus, Street Design Department, Columbus, Ohio

Managed and provided QA/QC for a site investigation performed at Reynolds Avenue in the City of Columbus, Ohio. Performed work for the City of Columbus Street Design Department as part of the street-widening program. The site investigation included the performance of Geoprobe holes to collect soil samples for laboratory analysis prior to initiation of construction activities. Prepared a Phase II Environmental Site Investigation Report presenting the results of the investigation and conclusions that no subsurface contamination was present within the construction limits.

Preparation of Phase II Environmental Site Investigation, City of Columbus, Street Design Department, Columbus, Ohio

Managed and provided QA/QC for a site investigation at an intersection along Hudson Street in the City of Columbus, Ohio. The intersection was being modified to include turning lanes and Geoprobe holes were performed to collect subsurface soil samples. Performed work for the City of Columbus Street Design Department as part of the street-widening program.

Phase II Environmental Site Investigation and Remediation, City of Columbus, Street Design Department, Columbus, Ohio

Managed and performed QA/QC for a site investigation and remediation of a former dry-ice manufacturing facility along McKinley Avenue in Columbus, Ohio. The City of Columbus Street Design Department was widening McKinley Avenue. Used Geoprobe technology to collect subsurface soil samples for purposes of determining the presence of contamination within the construction limits. A former dry ice manufacturing facility, located along the revised road centerline, required remediation of an existing concrete vault prior to demolition to allow construction to proceed. Cleaned the vault by power washing and vacuuming with off-site disposal of the resulting sludge and rinsate waters.

Compliance

Spill Prevention, Control, and Countermeasure Plans – Medical Center, The Ohio State University, Columbus, Ohio

Prepared the Spill Prevention, Control, and Countermeasure (SPCC) Plans for the OSU Main Campus Medical Center and the Hospital East Complex in accordance with the requirements of 40 CFR 112 for The Ohio State University (OSU) in Columbus, Ohio. Reviewed facility specific oil storage areas, performed facility inspections, and prepared the SPCC Plans using the “poster-format” with cross-references and supporting documents.

Spill Prevention, Control, and Countermeasure Plan, The Ohio State University, Columbus, Ohio

Performed the “five-year” review and evaluation of existing Spill Prevention, Control, and Countermeasure (SPCC) Plans for re-certification in accordance with the requirements of 40 CFR 112 for The Ohio State University (OSU) in Columbus, Ohio. Reviewed, revised, and re-certified the Master SPCC Plan for the OSU main campus. Reviewed facility specific SPCC Plans, performed facility inspections, and revised the SPCC Plans using the “poster-format” with cross-references and supporting documents for four facilities within the OSU main campus: Center for Automotive Research, McCracken Power Plant, Transportation and Parking Services, and the Scarlet and Gray Golf Course. Also reviewed the SPCC Plan for the Wooster Campus of OSU in Wooster, Ohio, performed a site inspection, and prepared and certified the “poster-format” with cross-references and supporting documents.

Integrated Contingency Plan (ICP), The Ohio State University, Don Scott Field, Columbus, Ohio

Prepared an ICP for The Ohio State University Airport, Don Scott Field. Combined the existing Storm Water Pollution Prevention Plan (SWP3) and the existing SPCC Plan into one document that also included a new emergency response plan for the airport. The ICP addressed the onsite Avgas and Jet A aviation fuel storage facility, mobile aircraft refuelers, and two maintenance facilities resident on the airport property. Prepared the ICP in accordance with the National Interagency Incident Management System (NIIMS) Incident Command System (ICS) that is a nationally recognized system that provides a commonly understood framework that allows for effective interaction among response personnel, thus facilitating its ease of use during an emergency situation.

Spill Prevention, Control, and Countermeasure Plan, Denison Hydraulics, Marysville, Ohio

Prepared SPCC Plan to bring the Denison Hydraulics facility in compliance with the requirements of 40 CFR 112 for a specialty hydraulic equipment manufacturing facility in Marysville, Ohio. Prepared the SPCC Plan text, drawings, and appendices based on review of historic records, conversations with facility personnel, and site inspections. Served as the “Engineer-of-Record” for certification of the SPCC Plan.

Spill Prevention, Control, and Countermeasure Plan, Koneta Rubber, Wapakoneta, Ohio

Prepared SPCC Plans to bring two facilities in compliance with the requirements of 40 CFR 112 for a specialty rubber manufacturing facility in Wapakoneta, Ohio. Prepared the SPCC Plan text, drawings, and appendices based on review of historic records, conversations with facility personnel, and site inspections. Served as the “Engineer-of-Record” for certification of the SPCC Plans.

Notice of Intent and Storm Water Pollution Prevention Plan, United Precast, Mount Vernon, Ohio

Prepared and submitted the Notice of Intent (NOI) for a concrete manufacturing facility in central Ohio to provide coverage of the facility under the General Permit Authorization to discharge Storm Water Associated with Industrial Activity (General Permit No. OHR000003) Under the National Pollutant Discharge Elimination System (NPDES) as administered by the Ohio EPA. As a condition of the General Permit, prepared the SWP3 for the facility including a site walk over, material inventory, preliminary development of “Best Management Practices (BMPs)”, certification of non-storm water discharges, and recommendations for implementing BMPs to minimize contact with storm water.

Spill Prevention, Control, and Countermeasure Plan, Campbell Soup Company, Napoleon, Ohio

Reviewed and revised existing SPCC Plan for re-certification in accordance with the requirements of 40 CFR 112 for a food manufacturing facility in Napoleon, Ohio. Prepared revisions to the SPCC Plan based on the site inspection and updated the existing plan to adhere to the revised SPCC Plan Rules and Regulations effective as of August 16, 2002.

Spill Prevention, Control, and Countermeasure Plan, Lumi-Lite Candle Factory, Norwich, Ohio

Reviewed and revised existing SPCC Plan for re-certification in accordance with the requirements of 40 CFR 112 for a candle manufacturing facility in Norwich, Ohio. Prepared revisions to the SPCC Plan based on the site inspection and updated the existing plan to adhere to the revised SPCC Plan Rules and Regulations effective as of August 16, 2002.

Spill Prevention, Control, and Countermeasure Plan, Confidential Client, Bucyrus, Ohio

Reviewed and revised existing SPCC Plan for re-certification in accordance with the requirements of 40 CFR 112 for a rubber and plastic hose manufacturing facility in Bucyrus, Ohio. Prepared revisions to the SPCC Plan based on the site inspection and updated the existing plan to adhere to the revised SPCC Plan Rules and Regulations effective as of August 16, 2002.

Conditional No Exposure Exclusion for Industrial Activity, Delphi Automotive Systems, Warren, Ohio

Performed site inspections and developed inspection forms for five automotive parts manufacturing facilities to determine compliance with the NPDES, Storm Water Phase II Final Rule – Conditional No Exposure Exclusion for Industrial Activity as administered by the Ohio EPA. Used the initial facility inspections to develop forms that the client could use to perform subsequent annual compliance inspections. Provided a summary of issues to be addressed prior to submitting Conditional No Exposure Exclusion requests to the Ohio EPA.

Spill Prevention, Control, and Countermeasures Plan Re-Certification, Delphi Automotive Systems, Warren, Ohio

Perform review, prepared revisions, and re-certified SPCC Plans in accordance with the requirements of 40 CFR 112 for a major automotive parts manufacturer in Northeast Ohio. Performed site inspections for two facilities, updated the SPCC Plans, and signed as the "Engineer of Record".

Storm Water Pollution Prevention Plans, Delphi Automotive Systems, Warren, Ohio

Performed site inspections, review of existing plans, and prepared required revisions of SWP3s for a major automotive parts manufacturer in Northeast Ohio. Reviewed and revised the SWP3s in accordance with the facilities General Permit Authorization to Discharge Storm Water Associated with Industrial Activity under the NPDES.

Aboveground Tank Compatibility Certification, Yenkin-Majestic Paint Corporation, Columbus, Ohio

Certified the compatibility of an aboveground storage tank (AST) for use in storing waste solvents in accordance with Ohio Administrative Code (OAC) Rules and Regulations, Chapter 3745-66-92. Certification included inspection of the AST including overflow and automatic shut-off controls, preparation of the certification report and submittal to the Ohio EPA.

Storm Water/Surface Water Management

Design and Implementation of a "Class A" Trout Stream, Cerro Metal Products, Company, Bellefonte, Pennsylvania

Managed the design and implementation of a "Class A" trout stream in central Pennsylvania. Lead, copper, zinc, and PCBs contaminated the stream banks and sediment. Modeled 20+ square mile drainage area utilizing SEDCAD 4 software for the design of riprap/gabion baskets to stabilize the stream banks, following excavation and off-site removal of the contaminated soils and sediments. Prepared contract documents, technical specifications, and construction drawings. Completed the project on a "fast track" schedule due to strict regulatory deadlines.

Evaluation of Sedimentation Basin at a Sanitary Landfill, Private Landfill in Minnesota

Prepared the evaluation of an existing sedimentation basin at a sanitary landfill utilizing SEDCAD+ computer software. Modeled the watershed for the basin and added 1000 GPM of inflow from a groundwater recovery/treatment system. Treated the basin as an infiltration structure, which saved the client \$200,000 by not having to construct a second basin to handle water from the groundwater recovery/treatment system.

Abandoned Mine Lands and Mining

Acid Mine Drainage, Investigation and Remedial Design, Meigs County, Ohio, Ohio Department of Natural Resources, Columbus, Ohio

Managed the investigation and remedial design for acid mine drainage (AMD) from old underground mine openings in Meigs County, Ohio. Basements of houses located within 30- to 50-feet of the toe of the slope were flooding during rainfall events due to saturation of the soils caused by AMD from the mine openings. Resealed the openings and employed an underdrain system to drain the back yards of the houses and former mine openings. Designed the underdrain system and constructed taking into account the proximity of the toe of the slope and the need to protect the integrity of the slope by preventing slope failure. Technical specifications and drawings were prepared in accordance with the Ohio Department of Natural Resources (ODNR) protocols.

Reclamation and Surface Erosion Remediation, Gallia County, Ohio, Ohio Department of Natural Resources, Columbus, Ohio

Managed the reclamation and surface erosion remediation at an abandoned mine land site in Gallia County, Ohio. The reclamation design involved the regrading of the site, including highwall and slope reduction to minimize future potential surface erosion problems. Developed technical specifications, prepared in accordance with the ODNR protocols, grading plans, and surface water control plans, in a format suitable for contractors to perform the reclamation work.

Mine Reclamation and Surface Erosion Remediation, Gallia County, Ohio, Ohio Department of Natural Resources, Columbus, Ohio

Managed the reclamation and surface erosion remediation at an abandoned mine land site in Gallia County, Ohio. The reclamation design involved the regrading of the site, including highwall and slope reduction to minimize future potential surface erosion problems. The grading plans were required to incorporate access to an active natural gas well located on the site. Developed topsoil borrow area plans (from adjacent undisturbed properties), including sampling plans, volume estimates, grading plans, and surface water control plans. Developed technical specifications, prepared in accordance with the ODNR protocols, grading plans, and surface water control plans, in a format suitable for contractors to perform the reclamation work.

Reclamation Design for Control of Acid Mine Drainage, Peabody Coal Company, St. Louis, Missouri

Prepared the reclamation design for control of AMD from an old abandoned auger mining pit in Missouri. AMD from the auger pit was flowing into the Clairton River and causing discoloration problems. The reclamation design included the construction of a sedimentation basin at the mouth of the valley leading from the old auger pit and prior to entering the river. Sedimentation basin outfall was a corrugated pipe down the slope to the river to minimize potential surface erosion attributed to the outfall.

Mine Plans and Reclamation Plans for Two Large Coal Mines, Powder River Coal Company, Bill, Wyoming

Prepared mine plans and reclamation plans for two large coal mines in Wyoming (6,000,000 tons/year and 8,000,000 tons/year). Plans included sequencing of strip pits, overburden handling, backfill, and grading plans. Storm water management included design of sedimentation basins, diversion ditches, containment berms, and ditches.

Permit Revisions to an Existing Mine Plan, Powder River Coal Company, Bill, Wyoming

Managed the preparation of permit revisions to an existing mine plan to include the construction of a concentric loop track, silo, slot storage, and conveyor system for increased coal handling, storage, and loading capacity. Following approval of the permit revision, managed the preparation of technical specifications and construction drawings for the required facility upgrades, the bidding and contractor procurement activities, and construction oversight activities throughout the construction of the project.

Underdrain System to Control Groundwater Flow at a Mine in the Rocky Mountains, Peabody Coal Company, Denver, Colorado

Designed an underdrain system to control groundwater flow beneath backfilled overburden at a mine in the Rocky Mountains. The underdrain allowed mining of the coal seam from the bottom of the mountain to the top,

instead of contour mining, which increased the amount of recoverable coal. Used the slope stability program REAME developed by the University of Kentucky to aid in the design and backfill placement of underdrain materials and overburden to create a stable backfill as part of the reclamation.

Major Channel Relocation/Remediation, Powder River Coal Company, Bill, Wyoming

Participated in the design, material handling, stockpiling, and backfilling of a major channel relocation/remediation. During the early stages of opening a new mine, relocated a major creek to allow for maximum recovery of the coal seam. As the creek was being stripped, selectively handled and stockpiled the material comprising the creek, i.e., sands, gravels, etc., for reconstruction during the reclamation process for this area. Following coal removal, reconstructed the stream in its former location, with each lithologic unit replaced to recreate the stream before mining events took place.

Publications

"Construction and Demolition Debris Rules in Ohio," Concrete Connection, Ohio Ready Mixed Concrete Association (ORMCA), November 1998

"Simplifying Environmental Planning Requirements," FOUNDRY Management & Technology, pp. 20-23, April 1999.

Janet Todia

Experience Summary

Janet Todia recently joined Brown and Caldwell. Ms. Todia brings 12 years of experience in landfill operation and maintenance.

Assignment

Project Manager

Experience

12 years

Joined Firm

2010

Relevant Expertise

- Solid Waste Management
- Landfill Gas Systems
- Air Compliance

Landfill Operation and Maintenance Experience

Cuyahoga Regional Sanitary Landfill, Solon, Ohio

Project Manager for landfill gas services to supply a 3.8 megawatt power plant on site and a 72 mmbtu boiler system to Nestle USA. Managed coordination of field operations with pipeline and compression skid construction activities for the start up of the Nestle Gas to Energy Project.

Epperson Waste Disposal, Republic Services, Williamstown, Kentucky

Supervisor for well field technicians. Aided in the installation of pneumatic pumps for well dewatering purposes. Responsible for environmental compliance reporting.

Hazel Road Landfill, Akron, Ohio

Project Manager for landfill gas field services. Assisted field technicians in trouble shooting potential landfill gas migration issues and pneumatic pump installation.

Hoffman Road Landfill, City of Toledo, Toledo, Ohio

Project Manager for landfill gas field services. Managed environmental compliance and reporting, assisted site technicians in small-scale construction repairs, installation of pneumatic pumps, potential site migration issues, and routine well field tuning. Responsible for routine and non-routine construction budgets.

Lake County RDF, Waste Management, Chesterland, Ohio

Project Manager for landfill gas field services. Managed small-scale construction repairs, submitted proposals for small-scale construction projects, and coordinated well field compliance with Environmental Specialists, Inc.

Oakland Heights Development, Allied Waste Industries, Inc., Auburn Hills, Michigan

Project Manager for landfill gas project that provides methane to the GM Lake Orion boiler system. Managed budget and non-routine activities. Worked with Air Quality Specialists, Inc. to maintain environmental compliance.

Pine Tree Acres Landfill, Inc., Waste Management, Lenox Township, Michigan

Project Manager for well field technicians and aided in routine well field tuning to increase flow to the gas energy plant on site. Worked with Air Quality Specialists, Inc. to maintain environmental compliance.

Statewide Landfill, Waste Management, Canton, Ohio

Project Manager for well field technicians and aided in routine well field tuning, installation of pneumatic pumps, small scale construction repairs, and troubleshooting potential landfill gas migration issues.

Valley View Landfill, Republic Services, Sulpher, Kentucky

Supervisor for well field technicians. Managed routine and non-routine budgets. Responsible for environmental compliance reporting.

Landfill Air Compliance Reporting Experience

Deercroft Recycling and Disposal Facility, Waste Management, Michigan City, Indiana

Prepared semiannual Title V reports, semiannual new source performance standards (NSPS) reports, and semiannual startup, shutdown, and malfunction (SSM) reports. Submitted variance requests/alternative timeline requests, Title V annual compliance certification, and well decommissioning requests and Deviation Occurrence Reports.

Douglas County Recycling and Disposal Facility, Waste Management, Bennington, Nebraska

Prepared semiannual Title V reports, semiannual NSPS reports, semiannual SSM reports, and Title V annual compliance certifications.

ELDA Recycling and Disposal Facility, Waste Management, Cincinnati, Ohio

Prepared quarterly/semiannual Title V reports, semiannual EG reports, and semiannual SSM reports. Submitted variance requests/alternative timeline requests and well decommissioning requests.

Epperson Waste Disposal, Republic Services, Williamstown, Kentucky

Prepared semiannual NSPS reports and semiannual SSM reports. Submitted alternative variance requests/alternative timeline requests and well decommissioning requests.

Greene Valley Recycling and Disposal Facility, Waste Management, Naperville, Illinois

Prepared semiannual EG reports, semiannual SSM reports, semiannual Clean Air Act Permit Program (CAAPP) reports, and annual CAAPP compliance certifications. Submitted CAAPP Form 405s on an as need basis.

Hardy Road Sanitary Landfill, Waste Management, Akron, Ohio

Prepared semiannual NSPS reports, semiannual SSM reports, quarterly/semiannual Title V reports, annual Title V compliance certifications, and annual solid waste report. Maintained operating records.

Hoffman Road Landfill, City of Toledo, Toledo, Ohio

Prepared semiannual NSPS reports, semiannual SSM reports, and quarterly/semiannual Title V reports.

Lake County RDF, Waste Management, Chesterland, Ohio

Prepared semiannual EG reports, semiannual SSM reports, quarterly/semiannual Title V reports, annual Title V compliance certifications, and annual solid waste report.

Lake Landfill, Waste Management, Northbrook, Illinois

Prepared semiannual EG reports, semiannual SSM reports, semiannual CAAPP reports, and annual CAAPP compliance certifications. Submitted CAAPP Form 405s on an as need basis.

Metro Park East Landfill, Waste Management, Mitchellville, Iowa

Prepared semiannual NSPS reports, semiannual SSM reports, semiannual Title V reports, and annual Title V compliance certifications.

Valley View Landfill, Republic Services, Sulpher, Kentucky

Prepared semiannual NSPS reports, semiannual SSM reports, semiannual Title V reports, and annual compliance certifications. Submitted variance requests/alternative timeline requests, and well decommissioning requests.

Wheeler Recycling and Disposal Facility, Waste Management, Wheeler, Indiana

Prepared semiannual EG reports, semiannual SSM reports, quarterly/semiannual Part 70 compliance certifications, and annual Part 70 compliance certifications. Submitted variance requests/alternative timeline requests, well decommissioning requests, and Deviation Occurrence Reports.

Woodland Recycling and Disposal Facility, Waste Management, South Elgin, Illinois

Prepared semiannual EG reports, semiannual SSM reports, semiannual Title V reports, and annual compliance certifications. Submitted variance requests/alternative timeline requests, and well decommissioning requests.

Bill Foster, E.I., S.I.

Experience Summary

Bill Foster has extensive experience dealing with project management, surveying, project scheduling, project cost estimating. As a design engineer, Mr. Foster has experience in landfill design, sewer design, grading, technical report preparation, landfill gas collection and control systems (GCCS), leachate management systems, and surface water management systems. As a field engineer, he has experience in providing quality assurance (QA) services for the construction and certification of municipal solid waste facilities, sanitary landfill facilities, and construction and demolition debris facilities. As a field technician, he has experience in observing and inspecting the installation of soils, aggregates, geosynthetics, geotextiles, structural fill berms, landfill gas collection and control systems, leachate management systems, recompacted soil barriers (liner/leachate and cap systems), protective cover placement, drainage structures, and final cover placement.

Mr. Foster has been involved in many projects as a project engineer, a design engineer, a field engineer and a field technician. These projects include site selection, borrow study evaluation, wetlands delineation, cost analysis, design of leachate management systems, design of surface water management systems, design of Class I, II, and III water reservoirs, design of landfill gas collection and control systems, cap and liner stability analysis, air emission calculations, and access road development. Compost facilities and transfer station applications have also been prepared under his direction.

Assignment

CQA Field Observer

Education

BS, Civil & Environmental Engineering,
The Ohio State University, 2001.

Registration

Engineering Intern, (E.I.) Ohio

Surveying Intern, (S.I.) Ohio

Training

40-Hour OSHA Health & Safety Training

Troxler Nuclear Density Gauge Certified

OSHA Site Supervisor Training

CPR/First Aid

APR Training

AED Training

Experience

11 years

Joined Firm

2009

Relevant Expertise

- Construction Quality Assurance (CQA)
- Project and Site Management
- Installation and Quality Assurance/Quality Control
- Repair and Maintenance
- Project Cost Estimating and Budget Control
- Permitting
- Compliance
- Planning and Development
- Design

Relevant Project Experience

Countywide Recycling & Disposal Facility 2011 South Slope Relocation, Gas and Liner System CQA Services, East Sparta, Ohio

Provided engineering expertise and served as the construction quality assurance (CQA) lead for this project that included modifications to the existing south slope, the existing leachate collection system, the existing GCCS, and the existing temporary flexible membrane liner (FML). These modifications consisted of the:

- Relocation of approximately 142,000 cubic yards of waste
- Replacement of approximately 1,900 feet of toe drain
- Installation of approximately 11,000 feet of high-density polyethylene (HDPE) pipe of various diameters.
- Installation of 5 new extraction wells
- Installation of 11 replacement extraction wells
- Installation of approximately 22 acres of temporary FML

CQA activities included documenting waste relocation, leachate, GCCS, and FML installation, field testing of HDPE pipe and FML, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an "as-built" construction certification report. Served as liaison between several parties including the US EPA, the Ohio EPA, the contractor, surveyor, pipe manufacturer, liner manufacturer, and the client. Prepared the construction certification report for submission and approval by the Ohio Environmental Protection Agency (Ohio EPA).

Imperial Landfill, LFG, Cell Construction, CQA Services, Republic Services, Inc., Republic Services, Findlay Township, Allegheny County, Pennsylvania

Provided engineering expertise and served as the construction quality assurance (CQA) lead for this \$8 million project to address odors resulting from hydrogen sulfide generation at a landfill located adjacent to an elementary school. Major project elements included the following:

- Installation of 42 acres of 40 mil geomembrane and 16 oz geotextile
- Construction of two new sedimentation ponds
- Expansion of an existing sedimentation pond
- Construction of nearly 20,000 feet of surface water channels
- Installation of 11 surface water culverts
- Installation of nearly 60,000 feet of high-density polyethylene (HDPE) header, lateral, horizontal collector, toe drain, forcemain, and airline piping of various diameters.
- Installation of 28 new extraction wells
- Installation of 11 replacement extraction wells
- Construction of a 3.7 acre dual-lined cell

The project involved assistance in developing the design, facilitating the permitting process, overseeing the construction, and providing the construction quality assurance services. Prepared the construction certification reports for submission and approval by the Pennsylvania Department of Environmental Protection for this time critical and substantial corrective action.

Countywide Recycling & Disposal Facility 2010 Gas System CQA Services, East Sparta, Ohio

Provided engineering expertise and served as the construction quality assurance (CQA) lead for this project that included modifications to the existing GCCS. These modifications consisted of the installation of the following:

- Approximately 19,000 feet of high-density polyethylene (HDPE) header, lateral, and forcemain piping of various diameters.
- 11 new extraction wells
- 2 pump stations
- 1 lift station
- 2 force main tie-in vaults

CQA activities included documenting GCCS installation, field testing of HDPE pipe, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an "as-built" construction certification report. Served as liaison between several parties including the Ohio EPA, the contractor, surveyor, pipe manufacturer, and the client. Prepared the construction certification report for submission and approval by the Ohio Environmental Protection Agency (Ohio EPA).

Countywide Recycling & Disposal Facility 2009 Gas System CQA Services, East Sparta, Ohio

Provided engineering expertise and served as the construction quality assurance (CQA) lead for this project that included modifications to the existing GCCS. These modifications consisted of the installation of the following:

- Approximately 43,000 feet of high-density polyethylene (HDPE) header, lateral, and forcemain piping of various diameters.
- 18 new extraction wells
- 26 replacement extraction wells

- 7 pump stations
- 2 force main tie-in vaults

CQA activities included documenting GCCS installation, field testing of HDPE pipe, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the US EPA, the Ohio EPA, the contractor, surveyor, pipe manufacturer, and the client. Prepared the construction certification report for submission and approval by the Ohio Environmental Protection Agency (Ohio EPA).

Countywide Recycling & Disposal Facility Leachate Collection System Improvements CQA Services, East Sparta, Ohio

Provided engineering expertise and served as the CQA lead for this project that incorporated improvements to the leachate collection system. These improvements consisted of the installation of the following:

- Approximately 2,200 feet of gravity drain piping.
- Approximately 14,000 feet of force main piping.
- 2 lift stations.
- 6 manholes
- A 500,000-gallon above ground storage tank.

CQA activities consisted of documenting pipe installation, field testing of the leachate pipe, coordination and review of manufacture and laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the US EPA, the Ohio EPA, the contractor, surveyor, concrete testing lab, leachate storage tank manufacturer, geosynthetics testing lab, and the client. Prepared the construction certification report for submission and approval by the Ohio EPA.

Countywide Recycling & Disposal Facility Isolation Break CQA Services, East Sparta, Ohio

Provided engineering expertise and served as the CQA lead for this project that included the installation of the following:

- Approximately 7,000 feet of high-density polyethylene (HDPE) header, lateral, and forcemain piping of various diameters.
- 8 new extraction wells
- 2 pump stations
- 1 force main tie-in vault
- 1 leachate sump
- Approximately 7.80 acres of Flexible Membrane Liner (FML)

CQA activities included documenting GCCSand FML installation, field testing of HDPE pipe and FML, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the US EPA, the Ohio EPA, the contractor, surveyor, pipe manufacturer, FML manufacturer, and the client. Prepared the construction certification report for submission and approval by the United States Environmental Protection Agency (USEPA).

Countywide Recycling & Disposal Facility 2009 Temporary FML CQA Services, Stark County, Ohio

Provided engineering expertise and served as the CQA lead for this project which included the installation of approximately 22.4 acres of FML

CQA activities included documenting FML installation, field testing of FML, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation

of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the US EPA, the Ohio EPA, the contractor, surveyor, FML manufacturer, soils testing lab, geosynthetics testing lab, and the client. Prepared the construction certification report for submission and approval by the USEPA.

Lorain County II Landfill Gas System CQA Services, Oberlin, Ohio

Provided engineering expertise and served as the CQA lead for this project that included the following:

- Replacement of approximately 800 linear feet of existing 12-inch diameter SDR-17 HDPE header pipe along the north slope of the Landfill with new 12-inch diameter SDR-17 HDPE header pipe.
- Installation of new 6-inch diameter SDR-17 HDPE jumper lines for EW-47, EW-48, EW-56, and EW-62R2.
- Installation of new 4-inch diameter SDR-17 HDPE vacuum lines to three existing side slope risers.
- Enhancements (new 48-inch diameter HDPE sump top and 4-inch diameter HDPE vacuum pipeline) to the northern sump of the southwest leachate sumps.
- Replacement of existing 2-inch diameter wellheads with new 3-inch diameter wellheads on five landfill gas extraction wells.

CQA activities included documenting GCCS installation, field testing of HDPE pipe, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the contractor, surveyor, pipe manufacturer, and the client. Prepared the construction certification report for submission and approval by the Ohio EPA.

Wyandot County Landfill Gas System CQA Services, Carey, Ohio

Provided engineering expertise and served as the CQA lead for this project that included the installation of approximately 2,956 linear feet of high-density polyethylene (HDPE) header, lateral, and forcemain piping of various diameters to connect the re-drilled extraction wells, new flare station, condensate sump, and convert the two existing extraction wells for combination wellheads.

CQA activities included documenting GCCS installation, field testing of HDPE pipe, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an “as-built” construction certification report. Served as liaison between several parties including the contractor, surveyor, pipe manufacturer, and the client. Prepared the construction certification report for submission and approval by the Ohio EPA.

Design, Permitting, and Construction Quality Assurance of a Resource Conservation and Recovery Act (RCRA) Hazardous Waste Landfill, Eastern Ohio

Managed the permitting and design for the remediation of an existing RCRA hazardous waste landfill in eastern Ohio. Permitting included the preparation and subsequent approval of the Interim Measures Work Plan for submittal to the USEPA Region 5 as part of a Consent Decree. The landfill remedial design included replacement of leachate storage tanks, incorporation of a new final cover system to completely encompass the existing landfill footprint, construction of a flood protection levee, and remediation of the perimeter surface drainage system. Provided CQA for the construction of the new final cover system including geosynthetic components installation. Prepared the construction certification report for submission and approval by the USEPA.

Coshocton County Landfill, Coshocton, Ohio

Served as project engineer and CQA lead on a project that included excavation of cell, placement of engineered subgrade, structural fill, recompacted soil liner, geosynthetic clay liner, 60 mil HDPE geomembrane, geotextile, HDPE pipe, and protective layer. QA activities included documenting liner installation, field sampling and testing, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress, and collecting data for an “as-built” construction certification report. The work was performed at an accelerated pace to meet the client's needs. To minimize and ease the regulatory review process, worked closely with the

site owner and the Ohio EPA district engineers through the preparation of this alteration. Served as liaison between several parties including the contractor, surveyor, soils testing lab, geosynthetics testing lab, and client. Prepared construction certification report for submission to the Ohio EPA.

Gallia County Landfill, Gallia County, Ohio

Provided engineering expertise and served as the CQA lead for this project which included leachate management system (leachate collection and storage system, lift station, and force main), surface water management system (sedimentation basin, culverts, and channels), and a final cover system (recompacted soil barrier, intermediate cover, linear low-density polyethylene (LLDPE) geomembrane, geonet, geotextile and vegetative layer). CQA activities included documenting liner installation, field sampling and testing, coordination and review of laboratory testing, interpretation of specifications, documentation of all construction activities, documentation of the construction progress and collecting data for an "as-built" construction certification report. Served as liaison between several parties including the contractor, surveyor, soils testing lab, geosynthetics testing lab, and client. Prepared the construction certification report for submission and approval by the Ohio EPA. Also prepared the annual operational report for submission and approval by the Ohio EPA.

Franklin County Sanitary Landfill, Franklin County, Ohio

As Project Engineer, is involved in all contracts providing professional services at the Franklin County Landfill, either for the landfill operator or the Solid Waste Authority of Central Ohio (SWACO). Highly knowledgeable with the landfill and both the current landfill operations management and the SWACO landfill management personnel. Prepared the annual operational report for submission and approval by the Ohio EPA. Developed an excellent working relationship with the Ohio EPA Central District engineers and general staff having regulatory jurisdiction over the site.

H. Hafner & Sons, Inc., Construction and Demolition Debris Facility, Cincinnati, Ohio

Project included excavation of cell, placement of engineered subgrade, structural fill, recompacted soil liner, HDPE pipe, protective layer, drainage channels, sedimentation basins, and leachate management system. Services include preparing required air emission and storm water discharge permit applications for this facility located along the Little Miami River (State Designated Scenic River), including a Storm Water Pollution Prevention Plan (SWPPP) to control site runoff. Had designed a leachate management system, a surface water management system, and overall site grading. Evaluated the floodway line and 100-year flood impact of the Little Miami River adjacent to this site using HEC modeling. The firm has worked closely with the local health department to demonstrate facility expansion plans and flood control practices in this environmentally sensitive area. The firm has prepared various site expansion plans to compare available airspace in relation to final site grade and coordinated topographic mapping of the site. The firm has assisted the owner in phasing the landfill development in such a manner to minimize financial assurance requirements. Prepared the annual license application reports for submission and approval by the Ohio EPA.

D-K Enterprises, Construction and Demolition Debris Facility, Wood County, Ohio

Re-designed surface water management system (drainage channels, stilling basins, and sedimentation basins), and overall site grading. Prepared air emission and storm water discharge permits, a SWPPP, a preliminary site layout. Prepared a SWPPP to control site runoff. Provided design assistance in site access road paving, site entry layout, operational manifests, and transportation logs to allow the site operator to better track incoming loads. Coordinated the acquisition of topographic mapping and property line surveys. Also prepared numerous annual license application reports for submission and approval by the Ohio EPA.

Gene Hazen & Sons, Construction and Demolition Debris Facility, Zanesville, Ohio

Provided project engineering, project management, and oversight of this project from designing the final cap to the closure construction certification report. The project was under legal action from the Ohio's Attorney General's Office. The Ohio EPA closely regulated this project and considered many different closure options in detail. Developed an excellent working relationship with the Ohio EPA Southeast District engineers and general staff, as well as the staff of the Ohio Attorney General's Office, having regulatory jurisdiction over the site. Prepared the construction certification report for submittal and approval by the Ohio EPA.

Design, Permitting, and Construction of a Hazardous Waste Tipping Floor, The Environmental Quality Company, Wayne Disposal, Inc., Belleville, Michigan

Provided engineering expertise for the redesign, of a hazardous waste tipping floor, to minimize Polychlorinated Biphenyls being tracked out on the truck tires. Provided support in the preparation and management of the contract documents, technical specifications, and construction drawings including QA/QC of the final bid documents. Provided engineering guidance and construction quality assurance during the construction of the tipping floor.

Design, Permitting, and Construction of a Solid Waste Transfer/Recycling Station, Rumpke Waste, Inc., Ironton, Ohio

Provided engineering expertise for the design, permitting, and construction including construction quality assurance of a solid waste transfer/recycling station for a major solid waste company in southeast Ohio. The facility permit was obtained through the Ohio EPA Southeast District Office in accordance with the Ohio Administrative Code rules and regulations pertaining to transfer stations. Provided support in the preparation and management of the contract documents, technical specifications, and construction drawings including QA/QC of the final bid documents. Provided part-time construction quality assurance (CQA) during the construction of the facility.

North Star Golf Community Development, Delaware County, Ohio

Served as the project engineer providing expertise in surface water management, sediment control, and erosion control practices. Designed and modeled a channel to handle the off-site flow for up to a 100-year storm. Designed and modeled an irrigation impoundment to receive the 100-year storm without any discharge. Provided site grading and site underground utility layout guidance. Developed an excellent working relationship with the Ohio EPA Central District engineers and general staff and worked very closely with them throughout this project. Served as liaison between several parties including the contractor, surveyor, soils testing lab, and client.

The Ohio State University Experimental Wetlands, Franklin County, Ohio

Project included redesigning the surface water management of facility to better meet the client's needs. This project required more regulated inflow and the outflow of a 6.0 acres wetland area and the ability to possibly control, if so desired. An outlet channel and outlet structure, as well as a pump to control the inflow were all components of the design.

Long Term Control Plan, City of Columbus, Ohio

Served as a sampling crew team leader for this project. His crew is responsible for collecting samples from sewer overflows and regulators throughout the City's sewer system during wet weather events. Member of the consultant team led by Malcolm Pirnie, Inc., conducting these studies for the City of Columbus to develop a long-term plan to control and eliminate sewer overflows.

Nathan A. Givens, E.I.

Experience Summary

Nate Givens recently joined Brown and Caldwell as an Engineer I in Solid Waste. Mr. Givens has over fourteen years of experience in construction. His experience includes construction of surface and subsurface drainage systems, wetlands, stormwater detention basins, underground utilities and roadways. He brings exceptional attention to detail, proven understanding and is driven to provide quality services.

Assignment

Field CQA Inspector

Education

B.S., Civil Engineering, Ohio University, 2009

Registration

Engineer Intern, Ohio

Experience

14 years

Joined Firm

2010

Relevant Expertise

- *Hydraulics & Hydrology*
- *Water & Wastewater Treatment*
- *Construction Quality Assurance*
- *Field Testing*
- *Soil and Groundwater Sampling*

2010 Temporary Closure, Imperial Landfill, Republic Services, Inc., Imperial, Pennsylvania

CQA Technician. Duties included observation, documentation and testing of Interim Cap Gas Collection and Control System (GCCS) and forty acres of geotextile and 40-mil high-density polyethylene (HDPE) geomembrane. Observed construction of surface water channels, surface water culverts and sedimentation basins.

2010 Landfill GCCS, Imperial Landfill, Republic Services, Inc., Imperial, Pennsylvania

CQA Technician. Observed and documented installation of 31 vertical gas extraction wells and GCCS piping.

2010 New Cell Construction, Imperial Landfill, Republic Services, Inc., Imperial, Pennsylvania

CQA Technician. Provided oversight and daily documentation on the construction of a 3.8-acre, dual-lined solid waste disposal cell.

Site Closure Activities - Historical Document Review, Confidential Client, Ohio

Document Reviewer. Reviewed 20+ years of historical documents related to closure activities for the site. Attributed the client provided documents by document type, date, author and subject making them easily retrievable for future use. Also entered historical analytical data into spreadsheets, so that we could begin trending.

Landfill Gas Pipeline CQA, Lorain Landfill, BFI, Inc., Oberlin, Ohio

Monitored the installation of 18- and 24-inch headers. Documented installation of valves and a new sump. Observed dual extraction well pumps for proper function.

Sludge Lagoon Closure CQA, ArvinMeritor, Inc., Grenada, Mississippi

Field CQA Inspector. Duties included observation and documentation of the installation of the vegetative soil cover component of the final cover system for the closure of a former sludge lagoon. Responsibilities also included providing direction to the contractor for expansion of the onsite soil borrow area.

Residential Land Development

Senior Designer. Designed a residential subdivision, requiring knowledge of boundary and topographic surveying, lot layout, pavement design, grading plan development, storm and sanitary sewer design, detention pond design and municipal code.

Putnam/Gunkelman Drainage Project, Frankfort, Ohio

Designer. Designed and installed systematic subsurface drainage consisting of approximately fifteen miles of corrugated plastic tubing.

Kensington Residential Subdivision and Rosewood Villas Residential Subdivision, Chillicothe, Ohio
Project Superintendent and Heavy Equipment Operator during construction of streets and stormwater detention basins.

Appendix D: Project Record Drawings

Appendix E: Landfill Gas Extraction Well Boring Logs

American Environmental Group, Ltd.

American Environmental Group, Ltd



Well Log

PROJECT NAME Lorain

DATE: 8/21/2012

PROJECT# 101-12-124

[illegible]

CLIENT REPRESENTATIVE *Janet A Todia* DATE *8/21/12*
 NAME & TITLE *CRA*

Detin Moore	8/21/2012
AEGL SITE SUPERVISOR	DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain

DATE: 8/21/2012

PROJECT# 101-12-124

Drilling		Well Asbuild	
EW169 WELL NUMBER OR NAME		surface. 887 4ft Bentonite 2 Ft Hydrated Length of Solid 20 Clean on site soil backfill Bentonite 2 Ft Hydrated Soil 1 ft Isolation Ring above Length of Gravel Pack 87 Length of Perf. Pipe 84 style of pipe Bore diameter 36" well bore Bottom of bore 36 inch well bore	
105 LINEAR FEET OF DRILLING			
105 LINEAR FEET OF COMPLETION			
LINEAR FEET OF ABANDONMENT			
Time in: 8:15 Time out: 9:15			
Time in: Time out:			
Weather conditions: Cloudy			
Site conditions: Dry			
Rig hrs:			
Service: Radiator Grease			

Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt Msw	Slight	Dry	88
11:45 AM				10-20	Msw	Slight	Dry	91
12:45 PM				20-30	Msw	Moderate	Dry	99
1:45 PM				30-40	Msw	Moderate	Dry	106
2:45 PM				40-50	Msw	High	Dry	109
3:45 PM				50-60	Msw	High	Dry	117
4:45 PM				60-70	Msw	High	Dry	114
5:45 PM				70-80	Msw	High	Dry	119
				80-90	Msw	High	Dry	123
				90-100	Msw	High	Damp	130
				100-105	Msw Depth	High	Wet	127
				110-120				
Notes				120-130				
1 Hour Bench								

8/21/12
CLIENT REPRESENTATIVE
Isner Atodia CBA
NAME & TITLE

Detin Moore
AEGL SITE SUPERVISOR
8/21/2012
DATE



Well Log

DATE: 8/20/2012

Drilling		Well Asbuild	
EW170 WELL NUMBER OR NAME		The diagram illustrates the well construction from the surface down to the bottom of the bore. Key components and depths are labeled: Surface: 916 4ft: Depth to the top of the casing. TOP: Depth to the top of the gravel pack. 107: Depth to the top of the perforated pipe. 104: Depth to the bottom of the perforated pipe. 36" well bore: Diameter of the bore. Bottom of bore: Final depth of the well.	
125 LINEAR FEET OF DRILLING			
125 LINEAR FEET OF COMPLETION			
LINEAR FEET OF ABANDONMENT			
Time in: 7:40	Time out: 2:35		
Weather conditions: Cloudy		Bentonite 2 Ft Hydrated	
Site conditions: Dry		Length of Solid 20	
Rig hrs:		Clean on site soil backfill	
Service: Raidiator Grease		Bentonite 2 Ft Hydrated	
		Soil 1 ft	
		Isolation Ring	
		above	
		Length of Gravel Pack 107	
		Length of Perf .Pipe 104	
		style of pipe	
		Bore diameter 36" well bore	
		Bottom of bore	

Monitoring Log				Well Boring Log					
Time	OXYGEN	H2S	LEL / CO	Depth	Composition		Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt	Msw	Slight	Dry	89
11:45 AM				10-20	Msw		Slight	Dry	91
12:45 PM				20-30	Msw		Moderate	Dry	100
1:45 PM				30-40	Msw		Moderate	Dry	103
2:45 PM				40-50	Msw		Moderate	Damp	105
3:45 PM				50-60	Msw		Moderate	Damp	114
4:45 PM				60-70	Msw		Moderate	Damp	125
5:45 PM				70-80	Msw		Moderate	Damp	122
				80-90	Msw		High	Damp	124
				90-100	Msw		High	Damp	128
				100-110	Msw		High	Wet	132
				110-120	Msw		High	Wet	131
Notes				120-125	Msw	Depth	High	Wet	137

NAME & TITLE

<u>Detin Moore</u>	<u>8/20/2012</u>
AEGL SITE SUPERVISOR	DATE



Well Log

PROJECT NAME Lorain

DATE: 8/16/2012

PROJECT# 101-12-124

Drilling		Well Asbuilt	
Ew320 WELL NUMBER OR NAME			
65 LINEAR FEET OF DRILLING		surface. 824	TOP 0
85 LINEAR FEET OF COMPLETION			1
LINEAR FEET OF ABANDONMENT			3
Time in: 9:50 Time out: 12:40		Bentonite 2 Ft Hydrated	
Time in: Time out:		Length of Solid 20	15
Weather conditions: Cloudy		Clean on site soil backfill	
Site conditions: Dry		Bentonite 2 Ft Hydrated	17
Rig hrs:		Soil 1 ft	18
Service: Radiator Grease		Isolation Ring	20
		above	
		Length of Gravel Pack 47	
		Length of Perf .Pipe 44	
		style of pipe	
		Bore diameter 36" well bore	64
		Bottom of bore	65

Monitoring Log				Well Boring Log					
Time	OXYGEN	H2S	LEL / CO	Depth	Composition		Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt	Msw	None	Dry	85
11:45 AM				10-20	Msw		None	Dry	86
12:45 PM				20-30	Msw		None	Dry	96
1:45 PM				30-40	Msw		Slight	Dry	109
2:45 PM				40-50	Msw		Slight	Dry	108
3:45 PM				50-60	Msw		Slight	Dry	113
4:45 PM				60-65	Maw	Depth	Slight	Dry	122
5:45 PM				70-80					
				80-90					
				90-100					
Notes									
2 hour bench									

CLIENT REPRESENTATIVE Ernest A. Toledo CBA DATE 12/1/01
NAME & TITLE

Detin Moore	8/16/2012
AEGL SITE SUPERVISOR	DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain

DATE: 8/16/2012

PROJECT# 101-12-124

Drilling		Well Asbuild	
EW318 WELL NUMBER OR NAME			
70 LINEAR FEET OF DRILLING			
70 LINEAR FEET OF COMPLETION			
LINEAR FEET OF ABANDONMENT			
Time in: 6:40 Time out: 8:40			
Time in: Time out:		Length of Solid 20	
Weather conditions: Cloudy		Clean on site soil backfill	
Site conditions: Dry		Bentonite 2 Ft Hydrated	
Rlg hrs:		Soil 1 ft	
Service: Radiator Grease		Isolation Ring	
		above	
		Length of Gravel Pack 52	
		Length of Perf. Pipe 49	
		style of pipe	
		Bore diameter 36 inch well bore	
		Bottom of bore	

Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt Msw	None	Dry	85
11:45 AM				10-20	Msw	None	Dry	89
12:45 PM				20-30	Msw	None	Dry	96
1:45 PM				30-40	Msw	Slight	Dry	104
2:45 PM				40-50	Msw	Slight	Dry	106
3:45 PM				50-60	Msw	Slight	Dry	113
4:45 PM				60-70	Msw Depth	Slight	Dry	119
5:45 PM				70-80				
				80-90				
				90-100				
Notes								
1 hour bench								

Detin Moore 8/16/12
CLIENT REPRESENTATIVE DATE
Detin Moore CBA
NAME & TITLE

Detin Moore 8/16/2012
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain

DATE: 8/15/2012

PROJECT# 101-12-124

Drilling		Well Asbuild	
EW319 WELL NUMBER OR NAME		surface. 825 4ft TOP 0 1 3 15 17 18 20 50 47 36 inch well bore 67 68	
68 LINEAR FEET OF DRILLING			
68 LINEAR FEET OF COMPLETION			
LINEAR FEET OF ABANDONMENT			
Time in: 12:10 Time out: 2:10			
Time in: Time out:		Length of Solid 20	
Weather conditions: Cloudy		Clean on site soil backfill	
Site conditions: Dry		Bentonite 2 Ft Hydrated	
Rig hrs:		Soil 1 ft	
Service: Radiator Grease		Isolation Ring	
		above	
		Length of Gravel Pack 50	
		Length of Perf .Pipe 47	
		style of pipe	
		Bore diameter 36 inch well bore	
		Bottom of bore	

Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt Msw	None	Dry	80
11:45 AM				10-20	Msw	None	Dry	85
12:45 PM				20-30	Msw	None	Dry	92
1:45 PM				30-40	Msw	Slight	Dry	97
2:45 PM				40-50	Msw	Slight	Dry	106
3:45 PM				50-60	Msw	Slight	Dry	115
4:45 PM				60-68	Msw Depth	Slight	Dry	116
5:45 PM				70-80				
				80-90				
				90-100				
Notes								
1 hour bench								

Detin Moore 8/15/12
CLIENT REPRESENTATIVE DATE
Detin Moore COA
NAME & TITLE

Detin Moore 8/15/2012
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain

DATE: 8/15/2012

PROJECT# 101-12-124

Drilling		Well Asbuild	
EW322 WELL NUMBER OR NAME			
66 LINEAR FEET OF DRILLING			
66 LINEAR FEET OF COMPLETION			
LINEAR FEET OF ABANDONMENT			
Time in: 9:05 Time out: 11:15			
Time in: Time out:			
Weather conditions: Cloudy			
Site conditions: Dry			
Rig hrs:			
Service: Raidiator Grease			
Bentonite 2 Ft Hydrated		TOP 0	
Length of Solid 20		1	
Clean on site soil backfill		3	
Bentonite 2 Ft Hydrated		15	
Soil 1 ft		17	
Isolation Ring above		18	
Length of Gravel Pack 48		20	
Length of Perf. Pipe 45			
style of pipe			
Bore diameter 36 inch well bore		65	
Bottom of bore		66	

Monitoring Log				Well Boring Log					
Time	OXYGEN	H2S	LEL / CO	Depth	Composition		Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt	Msw	None	Dry	82
11:45 AM				10-20	Msw		None	Dry	84
12:45 PM				20-30	Msw		None	Dry	101
1:45 PM				30-40	Msw		Slight	Dry	108
2:45 PM				40-50	Msw		Slight	Dry	111
3:45 PM				50-60	Msw		Slight	Dry	114
4:45 PM				60-66	Msw	Depth	Slight	Dry	117
5:45 PM				70-80					
				80-90					
				90-100					
Notes									
1 hour bench									

Detin Moore 8/15/12
AGENT REPRESENTATIVE DATE
Detin Moore COA
NAME & TITLE

Detin Moore
AEGL SITE SUPERVISOR

8/15/2012
DATE



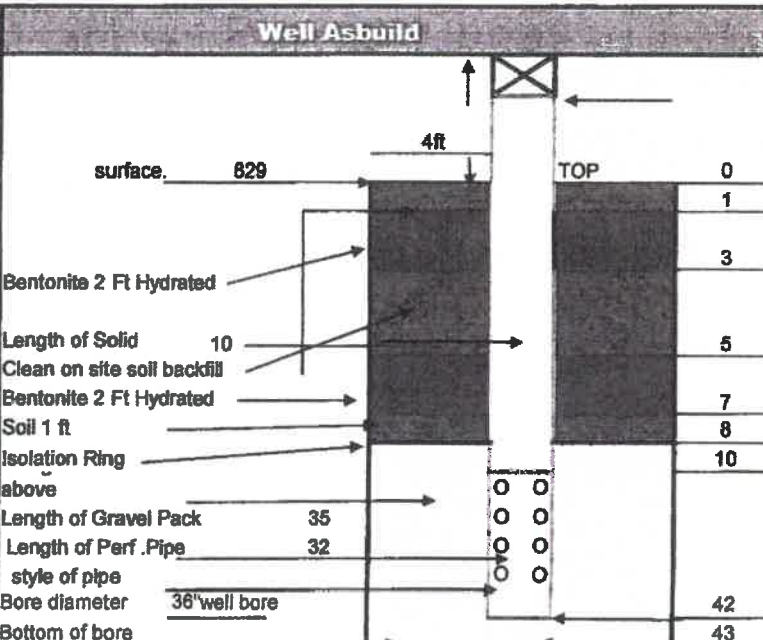
American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain

DATE: 8/15/2012

PROJECT# 101-12-124

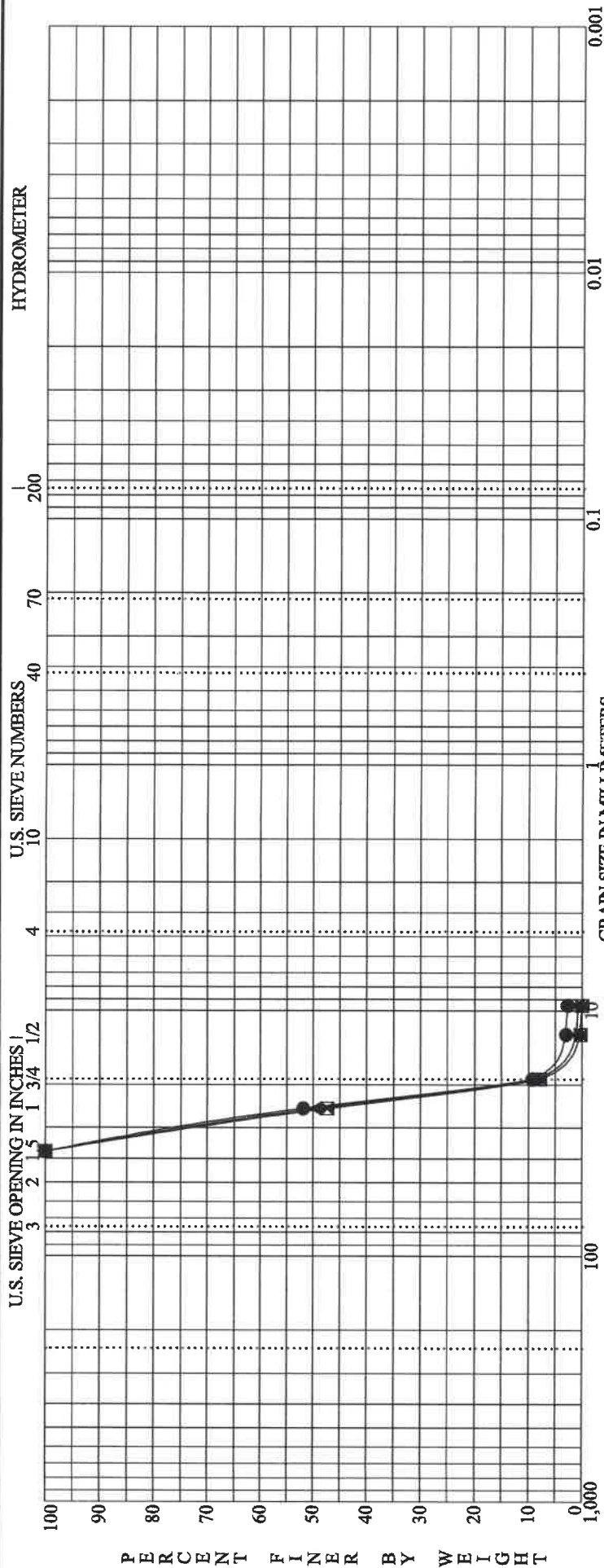
Drilling		Well Asbuild	
EW321	WELL NUMBER OR NAME		
43	LINEAR FEET OF DRILLING		
43	LINEAR FEET OF COMPLETION		
	LINEAR FEET OF ABANDONMENT		
Time in: 7:20	Time out: 8:20		
Weather conditions: Cloudy			
Site conditions: Dry			
Rig hrs:			
Service: Raidiator Grease			

Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
10:45 AM				1-10	Dirt Msw	None	Dry	84
11:45 AM				10-20	Msw	None	Dry	88
12:45 PM				20-30	Msw	None	Dry	99
1:45 PM				30-40	Msw	Slight	Dry	103
2:45 PM				40-43	Msw Depth	Slight	Dry	109
3:45 PM				50-60				
4:45 PM				60-70				
5:45 PM				70-80				
				80-90				
				90-100				
Notes								

Detin Moore 8/15/12
CLIENT REPRESENTATIVE DATE
James A. T. Jones CQA
NAME & TITLE

Detin Moore 8/15/2012
AEGL SITE SUPERVISOR DATE

Appendix F: No. 4 Stone Laboratory Results



Appendix G: Geosynthetics Test Results

Geomembrane Trial Weld Summary

Geomembrane Repair Summary





Geomembrane Repair Summary

[illegible]

Appendix H: Air Monitoring Results

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia

(Print and Sign):

Janet A Todia

Date:

8/8/12

Instrument(s)

Manufacturer:

V Rae

Model:

H gas meter

Manufacturer:

Model:

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0745	lateral H18 to 12" header	—	—	20.9	0	0	0
0800	"	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0840	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	"	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	"	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	lateral H17 to 12" header	—	—	20.9	0	0	0
1200	"	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0
1415	"	—	—	20.9	0	0	0
1430	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/8/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

*V Rae**4 gas meter*Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
<i>1445</i>	<i>T connection H18 (blind flange)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1500</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1515</i>	<i>tie in H17 to 12" header</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1530</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1545</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1600</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1630</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1645</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1700</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1715</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1730</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1745</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1800</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1820</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1845</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1900</i>	<i>LI</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/9/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

V Rae

4 gas meter

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
0800	all + force main tie into 12" header at H17	—	—	20.9	0	0	0
		—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	excavation of horizontal H18	—	—	20.9	0	0	0
0930	(south end moving north)	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	"	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	emergency repair for Republic 17R3	—	—	20.9	0	0	0
1100		—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	"	—	—	20.9	0	0	0
1145	"	—	—	20.9	0	0	0
1300	excavation of horizontal H18	—	—	20.9	0	0	0
1315	(south moving north)	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): Janet A TodiaDate: 8/9/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

V Rae 4 gas meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
1415	Excavation of horizontal H18 (south moving north)	✓	—	20.9	0	0	0
1430		✓	—	20.9	0	0	0
1445		✓	—	20.9	0	0	0
1500		✓	—	20.9	0	0	0
1530		✓	—	20.9	0	0	0
1545		✓	—	20.9	0	0	0
1600		✓	—	20.9	0	0	0
1615		✓	—	20.9	0	0	0
1630		✓	—	20.9	0	0	0
1645		✓	—	20.9	0	0	0
1700		✓	—	20.9	0	0	0
1715		✓	—	20.9	0	0	0
1730		✓	—	20.9	0	0	0
1800		✓	—	20.9	0	0	0
1815		✓	—	20.9	0	0	0
1830		✓	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>3/2</u>	
Project/Site Location: Oberlin, Ohio			
Employee Performing Air Monitoring: Janet Todja (Print and Sign): <i>Janet Todja</i>		Date: <u>8/10/12</u>	
Instrument(s)			
Manufacturer: <u>Vk2e</u>	Model: <u>4 gas meter</u>	Manufacturer:	Model:
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No			
Remarks:			

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0730	continue north half of	—	—	20.9	0	0	0
0745	horizontal H18	—	—	20.9	0	0	0
0800	1)	—	—	20.9	0	0	0
0815	1)	—	—	20.9	0	0	0
0830	1)	—	—	20.9	0	0	0
0845	1)	—	—	20.9	0	0	0
0900	1)	—	—	20.9	0	0	0
0915	1)	—	—	20.9	0	0	0
0930	1)	—	—	20.9	0	0	0
0945	2)	—	—	20.9	0	0	0
1000	1)	—	—	20.9	0	0	0
1015	1)	—	—	20.9	0	0	0
1030	1)	—	—	20.9	0	0	0
1045	1)	—	—	20.9	0	0	0
1100	1)	—	—	20.9	0	0	0
1115	1)	—	—	20.9	0	0	0
1130	1)	—	—	20.9	0	0	0
1145	1)	—	—	20.9	0	0	0
1315	1)	—	—	20.9	0	0	0
1330	1)	—	—	20.9	0	0	0
1345	1)	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>2</u>					
Project/Site Location: Oberlin, Ohio							
Employee Performing Air Monitoring: Janet Todia (Print and Sign): <i>Janet A Todia</i>				Date: <u>8/10/12</u>			
Instrument(s)							
Manufacturer: <u>VRAE</u>		Model: <u>4 gas meter</u>		Manufacturer:		Model:	
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No							
Remarks:							
Monitoring Data							
Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
1400	excavate north half of	—	—	20.9	0	0	0
1415	HIP	—	—	20.9	0	0	0
1430	1	—	—	20.9	0	0	0
1445	1	—	—	20.9	0	0	0
1500	1	—	—	20.9	0	0	0
1515	1	—	—	20.9	0	0	0
1600	1	—	—	20.9	0	0	0
1615	1	—	—	20.9	0	0	0
1630	1	—	—	20.9	0	0	0
1645	1	—	—	20.9	0	0	0
1700	1	—	—	20.9	0	0	0
1715	1	—	—	20.9	0	0	0
1800	1	—	—	20.9	0	0	0
1815	1	—	—	20.9	0	0	0
1830	1	—	—	20.9	0	0	0
1900	1	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase X2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Toglia
(Print and Sign): *Janet A. Toglia*Date: 8/13/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

VRAH935 meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
0730	trench horizontal H17	—	—	20.9	0	0	0
0745	810m H17S toward H17N	—	—	20.9	0	0	0
0800	"	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0845	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	"	—	—	20.9	0	0	0
0930	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	"	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	"	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	"	—	—	20.9	0	0	0
1145	"	—	—	20.9	0	0	0
1200	"	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>12</u>					
Project/Site Location: Oberlin, Ohio							
Employee Performing Air Monitoring: Janet Todia (Print and Sign): <i>Janet A Todia</i>		Date: <u>8/13/12</u>					
Instrument(s)							
Manufacturer: <u>VRAE</u>		Model: <u>4 gas meters</u>		Manufacturer:		Model:	
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No							
Remarks:							
Monitoring Data							
Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
1400	trench horizontal H17 from H17S to H17N	—	—	20.9	0	0	0
1415		—	—	20.9	0	0	0
1430	1)	—	—	20.9	0	0	0
1445	1)	—	—	20.9	0	0	0
1500	1)	—	—	20.9	0	0	0
1515	1)	—	—	20.9	0	0	0
1530	1)	—	—	20.9	0	0	0
1545	1)	—	—	20.9	0	0	0
1600	1)	—	—	20.9	0	0	0
1615	1)	—	—	20.9	0	0	0
1645	1)	—	—	20.9	0	0	0
1700	1)	—	—	20.9	0	0	0
1720	1)	—	—	20.9	0	0	0
1745	1)	—	—	20.9	0	0	0
1800	1)	—	—	20.9	0	0	0
1815	1)	—	—	20.9	0	0	0
1830	1)	—	—	20.9	0	0	0
1845	1)	—	—	20.9	0	0	0
1900	1)	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/14/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

*VR2e**4 gas meter*Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0730	H17 toward H17 N	—	—	20.9	0	0	0
0745	"	—	—	20.9	0	0	0
0800	"	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0845	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	"	—	—	20.9	0	0	0
0930	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	"	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	"	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	"	—	—	20.9	0	0	0
1145	"	—	—	20.9	0	0	0
1200	"	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase X2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/14/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

URSA4 gas meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
1400	H17 toward H17N	—	—	20.9	0	0	0
1415	1)	—	—	20.9	0	0	0
1430	1)	—	—	20.9	0	0	0
1445	1)	—	—	20.9	0	0	0
1500	1)	—	—	20.9	0	0	0
1515	1)	—	—	20.9	0	0	0
1530	1)	—	—	20.9	0	0	0
1545	1)	—	—	20.9	0	0	0
1600	1)	—	—	20.9	0	0	0
1615	1)	—	—	20.9	0	0	0
1630	1)	—	—	20.9	0	0	0
1645	1)	—	—	20.9	0	0	0
1700	1)	—	—	20.9	0	0	0
1715	1)	—	—	20.9	0	0	0
1730	1)	—	—	20.9	0	0	0
1745	1)	—	—	20.9	0	0	0
1800	1)	—	—	20.9	0	0	0
1830	1)	—	—	20.9	0	0	0
1845	1)	—	—	20.9	0	0	0
1900	1)	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/15/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

*VRCe**4 gas meter*Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
<i>0700</i>	<i>begin completion of H17</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0715</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0730</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0745</i>	<i>drill RW 321</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0800</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0815</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0830</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0845</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0900</i>	<i>drill RW 322</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0915</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0930</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>0945</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1000</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1015</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1030</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1100</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1115</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1130</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1145</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1245</i>	<i>begin drilling RW 319</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1300</i>	<i>(1)</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>3</u> <u>2</u>	
Project/Site Location: Oberlin, Ohio			
Employee Performing Air Monitoring: Janet Todia (Print and Sign): <i>Janet A Todia</i>		Date: <u>8/15/12</u>	
Instrument(s)			
Manufacturer: <u>VKae</u>	Model: <u>4 gas meter</u>	Manufacturer:	Model:
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No			
Remarks:			

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
1315	drilling BW319	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0
1415	"	—	—	20.9	0	0	0
1440	install sump H17 @ 21'	—	—	20.9	0	0	0
1500	"	—	—	20.9	0	0	0
1530	"	—	—	20.9	0	0	0
1545	"	—	—	20.9	0	0	0
1600	"	—	—	20.9	0	0	0
1615	"	—	—	20.9	0	0	0
1630	"	—	—	20.9	0	0	0
1645	"	—	—	20.9	0	0	0
1700	"	—	—	20.9	0	0	0
1715	"	—	—	20.9	0	0	0
1730	tie in for H16 at 12" header	—	—	20.9	0	0	0
1745	"	—	—	20.9	0	0	0
1800	"	—	—	20.9	0	0	0
1815	"	—	—	20.9	0	0	0
1830	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/16/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

*VK2e**4 gas meter*Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0845	drilling RW318	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	"	—	—	20.9	0	0	0
0930	excavate lateral 6" run	—	—	20.9	0	0	0
0945	for H16	—	—	20.9	0	0	0
1000	excavate tie in to 12"	—	—	20.9	0	0	0
1015	header for H15	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	drilling RW320	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	"	—	—	20.9	0	0	0
1330	lateral excavation 321+322	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0
1400	tie in point at H15 to	—	—	20.9	0	0	0
1415	12" header	—	—	20.9	0	0	0
1430	lateral to RW319	—	—	20.9	0	0	0
1445	"	—	—	20.9	0	0	0
1500	tie in to 12" for H15	—	—	20.9	0	0	0
1515	"	—	—	20.9	0	0	0
1530	"	—	—	20.9	0	0	0

[illegible]

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/17/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

VRCH gas meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0730	begin excavation of horizontal	—	—	20.9	0	0	0
0745	H14 from south Hills to	—	—	20.9	0	0	0
0800	H16 N	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0840	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0920	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	"	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	excavation of lateral portion	—	—	20.9	0	0	0
1100	H15 to 12" header	—	—	20.9	0	0	0
1115	connection (this is made	—	—	20.9	0	0	0
1145	yesterday) 6" lateral	—	—	20.9	0	0	0
1200	"	—	—	20.9	0	0	0
1315	"	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	continue H14 excavation	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0
1425	"	—	—	20.9	0	0	0



Air Monitoring Form

Page 2 of 2

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase 2	
Project/Site Location: Oberlin, Ohio			
Employee Performing Air Monitoring: Janet Todla (Print and Sign): <i>Janet A Todla</i>		Date: 8/17/12	
Instrument(s)			
Manufacturer: VRAE	Model: H gas meter	Manufacturer:	Model:
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No			
Remarks:			

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
1500	continue H16 horizontal	—	—	20.9	0	0	0
1515	evacuation from H16S	—	—	20.9	0	0	0
1530	20 H16N; not yet at	—	—	20.9	0	0	0
1545	3% midpoint	—	—	20.9	0	0	0
1600	"	✓	—	20.9	0	0	0
1630	"	—	—	20.9	0	0	0
1645	"	—	—	20.9	0	0	0
1700	"	—	—	20.9	0	0	0
1715	"	—	—	20.9	0	0	0
1730	"	—	—	20.9	0	0	0
1805	"	—	—	20.9	0	0	0
1830	"	—	—	20.9	0	0	0
1845	"	—	—	20.9	0	0	0
1900	"	—	—	20.9	0	0	0



Air Monitoring Form

Page 1 of 1

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>2</u>	
Project/Site Location: Oberlin, Ohio			
Employee Performing Air Monitoring: Janet Todia (Print and Sign): <u>NATE GUEENS</u> <u>[Signature]</u>		Date: <u>8/18/12</u>	
Instrument(s)			
Manufacturer: <u>RAE SYSTEMS</u>	Model: <u>VRAE</u>	Manufacturer:	Model:
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No			

Remarks:

Monitoring Data

[illegible]

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill		Project No: Phase <u>2</u>	
Project/Site Location: Oberlin, Ohio			
Employee Performing Air Monitoring: Janet Todla (Print and Sign): <i>Janet A Todla</i>		Date: <u>8/20/12</u>	
Instrument(s)			
Manufacturer: <u>Vlce</u>	Model: <u>4 gas meter</u>	Manufacturer:	Model:
Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No			
Remarks:			

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0700	trenching H16 north	—	—	20.9	0	0	0
0715	()	—	—	20.9	0	0	0
0730	()	—	—	20.9	0	0	0
0745	()	—	—	20.9	0	0	0
0800	()	—	—	20.9	0	0	0
0815	()	—	—	20.9	0	0	0
0830	()	—	—	20.9	0	0	0
0845	()	—	—	20.9	0	0	0
0900	trenching H15 north	—	—	20.9	0	0	0
0915	()	—	—	20.9	0	0	0
0930	()	—	—	20.9	0	0	0
0945	()	—	—	20.9	0	0	0
1000	()	—	—	20.9	0	0	0
1015	()	—	—	20.9	0	0	0
1030	drilling 170	—	—	20.9	0	0	0
1045	()	—	—	20.9	0	0	0
1100	()	—	—	20.9	0	0	0
1115	()	—	—	20.9	0	0	0
1130	()	—	—	20.9	0	0	0
1200	()	—	—	20.9	0	0	0
1330	()	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todja
(Print and Sign): *Janet A Todja*Date: 8/20/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

*VR2e**4 gas meter*Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
<i>1345</i>	<i>trenching H15N</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1400</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1415</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1430</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1500</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1515</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1530</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1600</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1615</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1630</i>	<i>backfill H15N + H16N</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1645</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1700</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1720</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1750</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1800</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1830</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1845</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1900</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1920</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>1945</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>2000</i>	<i>"</i>	<i>—</i>	<i>—</i>	<i>20.9</i>	<i>0</i>	<i>0</i>	<i>0</i>

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*

Date: 8/21/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

VR2A

4 gas meter

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0730	drill BW169	—	—	20.9	0	0	0
0745	"	—	—	20.9	0	0	0
0800	"	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0845	"	—	—	20.9	0	0	0
0900	excavate EW170 (A/FM)	—	—	20.9	0	0	0
0915	"	—	—	20.9	0	0	0
0930	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	excavate H15N	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	"	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	"	—	—	20.9	0	0	0
1200	"	—	—	20.9	0	0	0
1300	drill 133R						
1315	"						
1330	"						

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): *Janet A Todia*Date: 8/21/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

Vloc4 gas meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O ₂	%LEL	H ₂ S	CO
1345	drill 133R	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0
1415	"	—	—	20.9	0	0	0
1430	excavate 15N	—	—	20.9	0	0	0
1445	"	—	—	20.9	0	0	0
1500	"	—	—	20.9	0	0	0
1515	"	—	—	20.9	0	0	0
1530	"	—	—	20.9	0	0	0
1600	excavation of lateral 149	—	—	20.9	0	0	0
1615	to 158R	—	—	20.9	0	0	0
1630	"	—	—	20.9	0	0	0
1700	"	—	—	20.9	0	0	0
1730	backfill 15N horizontal	—	—	20.9	0	0	0
1745	"	—	—	20.9	0	0	0
1800	"	—	—	20.9	0	0	0
1820	"	—	—	20.9	0	0	0
1830	"	—	—	20.9	0	0	0
1900	"	—	—	20.9	0	0	0

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 3 12

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): Janet A TodiaDate: 8/22/12

Instrument(s)

Manufacturer:

✓ RAE

Model:

H gas meter

Manufacturer:

Model:

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0730	H15N excavate & fill	—	—	20.9	0	0	0
0745	"	—	—	20.9	0	0	0
0800	"	—	—	20.9	0	0	0
0815	"	—	—	20.9	0	0	0
0830	"	—	—	20.9	0	0	0
0845	"	—	—	20.9	0	0	0
0900	"	—	—	20.9	0	0	0
0915	lateral 221/149	—	—	20.9	0	0	0
0930	"	—	—	20.9	0	0	0
0945	"	—	—	20.9	0	0	0
1000	"	—	—	20.9	0	0	0
1015	tie in 135R	—	—	20.9	0	0	0
1030	"	—	—	20.9	0	0	0
1045	"	—	—	20.9	0	0	0
1100	"	—	—	20.9	0	0	0
1115	"	—	—	20.9	0	0	0
1130	excavate lateral 169 to 45R2	—	—	20.9	0	0	0
1145	"	—	—	20.9	0	0	0
1330	"	—	—	20.9	0	0	0
1345	"	—	—	20.9	0	0	0
1400	"	—	—	20.9	0	0	0

Air Monitoring Form

Instructions: Complete this form immediately prior to project start.

Name of Project/Site: Lorain County II Landfill

Project No: Phase 2

Project/Site Location: Oberlin, Ohio

Employee Performing Air Monitoring: Janet Todia
(Print and Sign): Janet A TodiaDate: 8/23/12

Instrument(s)

Manufacturer:

Model:

Manufacturer:

Model:

Vloc4 gas meterWas instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No

Remarks:

Monitoring Data

Time	Location and Activity	P/FID (ppm)	Mini- RAM (mg/m ³)	Multi-Gas Detection			
				O2	%LEL	H2S	CO
0745	CS5 dump	—	—	20.9	0	0	0
0800	1)	—	—	20.9	0	0	0
0815	1)	—	—	20.9	0	0	0
0830	1)	—	—	20.9	0	0	0
0845	1)	—	—	20.9	0	0	0
0900	1)	—	—	20.9	0	0	0
0915	1)	—	—	20.9	0	0	0
0930	1)	—	—	20.9	0	0	0
0945	1)	—	—	20.9	0	0	0
1000	1)	—	—	20.9	0	0	0
1015	1)	—	—	20.9	0	0	0
1030	1)	—	—	20.9	0	0	0
1045	1)	—	—	20.9	0	0	0
1055	1)	—	—	20.9	0	0	0
1120	1)	—	—	20.9	0	0	0
1130	1)	—	—	20.9	0	0	0
1335	1)	—	—	20.9	0	0	0
1400	1)	—	—	20.9	0	0	0
1415	1)	—	—	20.9	0	0	0
1430	1)	—	—	20.9	0	0	0
1445	1)	—	—	20.9	0	0	0

Appendix I: Pipeline Pressure Test Results

2012 GCCS - Phase 2 Construction Certification Report - Pipe Pressure Test Results

[illegible]