

2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT  
FOR THE  
LORAIN COUNTY II LANDFILL  
LORAIN COUNTY, OBERLIN, OHIO

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Prepared for



**REPUBLIC  
SERVICES, INC.**

Lorain County, Oberlin, Ohio

November 2009

Entity: Lorain County II Landfill LLC  
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County: Lorain  
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BROWN AND CALDWELL

4700 Lakehurst Court, Suite 100  
Dublin, Ohio 4301

#2894

# 2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT

## NOTARIZED STATEMENT

"I, Chris Jaquet, certify that this 2009 Landfill Gas 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

11/16/09  
Date

Chris Jaquet  
Name

Environmental Manager  
Title

On this, the 10<sup>th</sup> day of November 2009, 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, State of Ohio  
My Commission Expires  
August 23rd, 2011

BROWN AND CALDWELL



# 2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT

## 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 2009 Landfill Gas 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 2009 Landfill Gas Construction Certification Report, the information submitted in the 2009 Landfill Gas 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."



Signature

11-10-09

Date

Richard A. Isaac, P.E.

Name



On this, the 10<sup>th</sup> day of November 2009, 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



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



State of Ohio Environmental Protection Agency

Northeast District Office

2110 East Aurora Rd.  
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TELE: (330) 963-1200 FAX: (330) 487-0769  
www.epa.state.oh.us

Ted Strickland, Governor  
Lee Fisher, Lieutenant Governor  
Chris Korleski, Director

December 28, 2009

**RE: BFI LORAIN COUNTY II LANDFILL  
LORAIN COUNTY  
ACTIVE GAS EXTRACTION SYSTEM  
CONSTRUCTION CERTIFICATION CONCURRENCE**

Mr. Chris Jaquet  
Environmental Manager  
Republic Services, Inc.  
43502 Oberlin-Elyria Road  
Oberlin, OH 44074

Dear Mr. Jaquet:

On November 12, 2009, Ohio EPA received the following report for the Lorain County II Landfill which is owned and operated by Republic Services, Inc.: "2009 Landfill Gas Construction Certification Report". The report was prepared by Brown and Caldwell (B&N) on behalf of Republic Services. The report was submitted in accordance with OAC 3745-27-08(H), effective August 15, 2003. The landfill is located at 43502 Oberlin-Elyria Road, New Russia Township, Lorain County, Ohio.

The report documented the installation activities for the following: a second enclosed flare system with a capacity of 5,500 scfm and seven new (EW-126, 128, 129, 130, 135, 147 and 167) and five replacement (TEW-5R, 6R, 7R, 53R and 58R) active gas extraction wells. Based upon a review of the initial report, Ohio EPA issued a Notice of Deficiency (NOD) letter on December 7, 2009. B&N submitted a NOD response on December 24, 2009 which Ohio EPA has reviewed and concurred with.

If you have any questions, I can be reached by telephone at (330) 963-1186, or by electronic mail at [jerry.parker@epa.state.oh.us](mailto:jerry.parker@epa.state.oh.us).

Sincerely,

Jerry L. Parker  
Environmental Engineer  
Division of Solid and Infectious  
Waste Management

Authorized by:

Jennifer Kurko  
Environmental Supervisor  
Division of Solid and Infectious  
Waste Management

JLP:ddw

cc: Clarissa Gereby, DSIWM-NEDO  
John Sabo, Lorain County Health Department  
Rick Isaac, Brown and Caldwell  
File: [Land / BFI Lorain County II LF / Aut / 47]

Project ID # 2894

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OHIO EPA NED

BROWN AND  
CALDWELL

December 23, 2009

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

Re: Deficiency/Comment Responses  
2009 Landfill Gas Construction Certification Report  
Lorain County II Landfill  
Oberlin, Ohio

Dear Mr. Parker:

Brown and Caldwell (BC), on behalf of Republic Services, Inc., (Republic) respectfully submits responses to deficiencies/comments received from the Ohio Environmental Protection Agency (Ohio EPA) Northeast District Office (NEDO) for the Lorain County II Landfill 2009 Landfill Gas Construction Certification Report. The deficiency/comment responses are based on the letter to Chris Jaquet of Republic dated December 7, 2009. Each deficiency/comment is presented in bold followed by a response in the following narrative.

**I. DEFICIENCY ONE, FIELD ALTERATIONS/DEVIATIONS, REMOTE WELLHEAD.** Section 1-1, "Field Alterations/Deviations", page 1-2, item 3, refers to a remote wellhead. Since DSIWM-NEDO is unfamiliar with this type of component, Republic is requested to provide additional details such as the advantages and disadvantages of using a remote wellhead.

**Response:** In order to maintain adequate coverage i.e. overlap of the influence between landfill gas extraction wells, a remote wellhead is installed when the header or lateral pipeline is located upslope from the location of the extraction well. The wellhead is installed at or near the header or lateral so that the wellhead is upgradient and condensate can drain back to the extraction well without blocking landfill gas flow to the wellhead.

**II. DEFICIENCY TWO, FIELD ALTERATIONS/DEVIATIONS EW-52R.** The last sentence of Section 1-1, "Field Alterations/Deviations", page 1-2, item 7, states "...The lateral for EW-52R originates just south of EW-130..." Although EW-52 and EW-53R could be located on RD-1 Appendix C, EW-52R could not be found. The revised plan sheet should include this well.

**Response:** The reference to EW-52R should have been "EW-57R" in the last sentence of Item 7 on page 1-2. The text has been revised and the revised page is included with the response letter.

**III. DEFICIENCY THREE, LANDFILL GAS EXTRACTION WELLS, HDPE BRANCH SADDLES.** Section 2, "Landfill Gas Extraction Wells", page 2-1 refers to shop-fabricated HDPE branch saddles. In addition, Note 1 for Detail 1 on RD-3 specifies that branch saddles were shop fabricated and installed to maintain slope into the header. The following text is provided in Section 1-2, "Field Alterations/Deviations", page 1-2, item 8 of the 2008 Gas Certification Report "...Since construction drawings and Republic Standard Operation Procedures do not allow field fabricated branch saddle installation in landfill gas systems, AEGL was instructed to remove the field fabricated branch saddles and replace them with...shop fabricated saddles..." In addition to providing a cross-section detail of a shop fabricated saddle, an explanation is requested as to the difference between a field fabricated and a shop fabricated saddle.

**Response:** A shop-fabricated saddle is made in the factory by the HDPE pipe manufacturer i.e. ISCO Industries as a complete structure delivered to the field for installation. Fabrication in the shop provides a higher degree of quality control versus field-fabricating a saddle by cutting, shaping, and welding pieces of pipe together in the field to make a saddle. As a Standard Operating Procedure (SOP), Republic does not allow saddles to be fabricated in the field. A detail of a shop-fabricated saddle is provided with the response letter.

**IV. DEFICIENCY FOUR, ENCLOSED FLARE SYSTEM, CONSTRUCTION/INSTALLATION METHODS.** On page 4-2 of Section 4, "Enclosed Flare System", there is a reference to Condensate Sump (CS) - 18 in Items 8, 9 and 11. Since neither CS-17 nor CS-18 is identified on RD-1, the plan sheet should be revised to include this information. In addition, similar to the detail provided on RD-2, Detail 6 of the 2008 report, a detail would be helpful in describing the various construction/installation methods in Section 4.2.

**Response:** A detail providing how the piping is connected at the enclosed flare has been added to Drawing RD-2 as Detail 4. Condensate Sumps, CS-17 and CS-18, have also been labeled on revised Drawing RD-1. A copy of the revised Drawing RD-1 and RD-2 are included with the response letter.

**I. COMMENT ONE, LANDFILL GAS EXTRACTION WELLS, WELL ABANDONMENT.** Below Table 2, "Existing LFG Extraction Wells" on page 2-1 of Section 2, "Landfill Gas Extraction Wells", the abandonment process for existing wells is provided. The procedure consists of excavating around the well to a depth of four-foot, cutting off the casing and installing a PVC slip cap with a silicon bead and lag bolts. In the second and third paragraphs of Section 2, "Landfill Gas Extraction Wells", page 2-1, of the 2008 Gas Certification Report, it indicates that the well in the "non-capped" area is abandoned by excavating around the casing to an approximate depth of 10-foot below the existing ground surface. In a "capped area", the depth of the excavation is as deep as the FML. In the 2008 report, the well casings are then filled with soil and one-foot of bentonite at the top of casing followed by a slip cap secured with

lag bolts. Republic is asked to explain the difference in the well abandonment procedures of the two reports.

**Response:** Republic developed a Standard Operating Procedure (SOP) for abandoning landfill gas extraction wells (wells) between the time when the wells were abandoned in 2008 and when the wells were abandoned in 2009. The abandonment procedure provided in the 2009 Landfill Gas Construction Certification Report was used to abandon the wells in 2009.

**II. COMMENT TWO, LANDFILL GAS COLLECTION SYSTEM, INSPECTIONS/TESTS.** Section 3.3 "Inspections/Tests", Item 3, page 3-2 states "...The pressure test consisted of applying 10 pounds per square inch (psi) of pressure over one hour period in accordance with quality assurance plan requirements...The pipelines passed the pressure testing with the pressure test results table provided in Appendix I..." Similar language is provided in Section 4-3, page 4-2. As noted in the December 3, 2009 NOD letter for 2008 Gas Certification Report, the source of the quality assurance plan requirements should be provided.

**Response:** The quality assurance plan refers to the Construction Quality Assurance Plan for the Lorain County II Landfill dated May 8, 2009.

**III. COMMENT THREE, CONTROL VALVE INSTALLATION, INTERIM UTILITY FLARE STATION.** The second paragraph of Section 5, "Control Valve Installation", page 5-1, refers to the "removed" interim utility flare station which appears to have remained on RD-1. If the interim station has been removed, a revised plan sheet should include this update.

**Response:** The interim utility flare station has been removed from Drawing RD-1. A copy of the revised Drawing RD-1 is included with the response letter.

**IV. COMMENT FOUR, SYSTEM REPAIRS AND MAINTENANCE DELINEATION.** It is written in the first paragraph of Section 7, "System Repairs and Maintenance", page 7-1, that system maintenance activities were performed in the southwest portion of Lorain II Landfill. DSIWM-NEDO recommends that the area of the repairs and maintenance, including specific components, be identified in some manner on RD-1 either by circling the area or color-coding the items that were repaired and/or maintained.

**Response:** The location of the new 24" x 6" x 24" tees associated with landfill gas extraction wells EW-1 and EW-96 and the location of the southwest leachate sump have been noted on revised Drawing RD-1 included with the response letter.

**V. COMMENT FIVE, FUTURE REVISIONS.** Ohio EPA requests that the future revisions use the proper editing protocol to include the use of strike-outs for prior text, capital letters for new text and all affected pages updated with the new revision date. In addition, the cover and spine sheets on the outside of the binder should include the revision date.

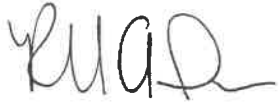
**Response:** Revisions to text narratives of the 2009 Landfill Gas Construction Certification Report (Report) have been made using the format (strikeout and capital letters) requested by the Ohio EPA. A notation "Revised December 11, 2009" has been added to the footer of each revised page. A new Report cover and spine that provides the revision date is included with the response letter.

Mr. Jerry R. Parker  
December 23, 2009  
Page 4

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

Very truly yours,

BROWN AND CALDWELL

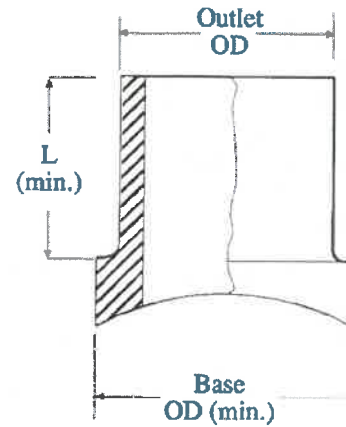
A handwritten signature in dark ink, appearing to read 'R. Isaac', with a stylized flourish at the end.

Richard A. Isaac, P.E.  
Principal Engineer

Enclosures

- c: Chris Jaquet, Republic Services, Inc., Oberlin, OH., w/enc.
- John Szabo, Lorain County Health Department, Elyria, OH., w/enc.
- Elena Goodhall, P.E., Brown and Caldwell, MI., w/o enc.
- Project File

# IPS Branch Saddle



IPS  
HDPE  
Fittings

## IPS Branch Saddle

| Nominal<br>Outlet<br>Size(in) | Outlet<br>OD(in) | DR | Part #  | Dimensions |              | Weight<br>(lbs) | Shipping<br>Method |
|-------------------------------|------------------|----|---------|------------|--------------|-----------------|--------------------|
|                               |                  |    |         | L (in)     | Base OD (in) |                 |                    |
| 2                             | 2.375            | 11 | Varies* | 2.5        | 2.6          | 1               | FedEx              |
| 3                             | 3.5              | 11 | Varies* | 3.13       | 3.88         | 1               | FedEx              |
| 4                             | 4.5              | 11 | Varies* | 3.13       | 4.8          | 2               | FedEx              |
| 6                             | 6.625            | 11 | Varies* | 4.38       | 6.81         | 4               | FedEx              |
| 8                             | 8.625            | 11 | Varies* | 5.5        | 9            | 8               | FedEx              |
| 10                            | 10.76            | 11 | Varies* | 6          | 11.5         | 16              | FedEx              |
| 12                            | 12.75            | 11 | Varies* | 7.5        | 13.35        | 32              | FedEx              |

\* Any size(IPS/DIPS) main available, but must be larger than outlet size. Consideration must be given that heater plate and fusion unit are available for rent.

\*\* Hole saws for field cutting coupons are available for purchase. See fusion equipment section for accessory tooling.

\*\*\* Pressure rating of saddles are equal to pipe DR of main. Other DR outlets may be available. Contact ISCO for availability.

1-800-345-ISCO

www.isco-pipe.com



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November 11, 2009

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

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Subject: **2009 Landfill Gas Construction Certification Report  
Lorain County II Landfill, Lorain County, Oberlin, Ohio**

Dear Mr. Parker:

Brown and Caldwell Ohio, LLC (Brown and Caldwell), on behalf of Republic Services, Inc. (Republic), respectfully submits the 2009 Landfill Gas Construction Certification Report (Certification Report) for the Lorain County II Landfill located in Lorain County, Oberlin, Ohio. One copy of the Certification Report is enclosed for your review.

Please contact me at 614-923-5006, if you have any questions during your review of the Certification Report.

Very truly yours,

BROWN AND CALDWELL OHIO, LLC

Richard A. Isaac, P.E.  
Principal Engineer

Enclosure

c: Chris Jaquet, Republic, Oberlin, OH., w/enc.  
Richard Kostelnick, Republic, Oberlin, OH., w/enc.  
John Sabo, Lorain County Health Department, Elyria, OH., w/enc.  
Project File

#2894  
Environmental Engineers & Consultants

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# 2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT

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## 1. INTRODUCTION

The purpose of this 2009 Landfill Gas Construction Certification Report (Certification Report) is to detail the materials, construction/installation methods, and inspection activities and tests performed for the 2009 Gas Management System Installation Project at the Lorain County II Landfill, Lorain County, Oberlin, Ohio (Landfill). In addition, gas header line system maintenance activities were performed at the Lorain County I Landfill (Closed) on the header line from Condensate Sump CS-1 to EW-64R and for the header line at the flare tie-in. No components were installed or removed during performance of the system maintenance activities at the Lorain County I Landfill (Closed). 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 i and ii, respectively.

The Certification Report includes the following sections:

1. Introduction
2. Landfill Gas Extraction Wells
3. Landfill Gas Collection System
4. Enclosed Flare System
5. Control Valve Installation
6. Final Cover System Repairs
7. System Repairs and Maintenance

A discussion of each new or altered component of the landfill gas management system materials, construction/installation methods, and inspections/tests performed is provided in the appropriate section. Drawings, field logs, photographs, boring logs, laboratory results, test results, and additional relevant information is provided in appendices. The construction drawings entitled "2009 Landfill Gas System Construction" prepared by Brown and Caldwell Ohio, LLC (BC) of Dublin, Ohio depicting the construction/installation activities are provided in Appendix A.

Under the approval of Republic Services, Inc. (Republic), maintenance was performed on the existing landfill gas management system. Seven additional landfill gas extraction wells (extraction wells) were installed and five extraction wells were replaced (refer to the construction drawings in Appendix A for locations) in order to satisfy air compliance requirements. Extraction well (EW) 62R3 and EW-141AR were removed from the 2009 well schedule because their locations were beneath a large soil stockpile. EW-62R3 and EW-141AR will be installed during the next construction phase.

The field work was performed from June 2009 to August 2009 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, alterations, and replacement of the landfill gas management components. BC performed resident inspection services with Jessica Owen, Peter Schlater and Erik McPeck, whom provided day-to-day observations and documentation. Richard A. Isaac, P.E. of BC served as the certifying engineer and Elena Goodhall, P.E. of BC served as project manager. Daily field logs and construction/installation

photographs are included in Appendices B and C, respectively. Qualifications for Ms. Owen, Mr. McPeck, Mr. Schlater, Mr. Isaac, and Ms. Goodhall are included in Appendix D.

## 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 E:

1. The removal and replacement of Containment Sump - CS-7 and associated appurtenances was removed from this phase of construction. Site conditions will be better suited to replace Condensate Sump - CS-7 during future construction events.
2. Due to the location soil stockpiles during the gas extraction well drilling event, EW-62R3 and EW-141AR were removed from the 2009 Gas Management System Installation Program and will be installed at a later date.
3. The lateral between TEW-6R and TEW-8 runs down slope making TEW-8 a down slope well. A remote wellhead was installed for the operation of TEW-8 (see Project Record Drawings in Appendix E). This alteration occurred to prevent the watering in of the lateral due to the position of TEW-8 as a down slope well. A high point in the lateral was installed between TEW-6R and TEW-8.
4. The lateral for TEW-7R was tied into the landfill gas management system via the existing 6-inch lateral riser for EW-125. The original design had the lateral tie-in to the system via an 18" x 6" x 18" tee. This field alteration was made based on field conditions making this a more suitable tie-in location.
5. The blind flange for future expansion on the 18-inch header line was installed on an 18-inch SDR 11 shop-fabricated tee. The 18-inch tee reduces down to a 6-inch line for the lateral run out to EW-57R via SDR 11 reduction fittings butt fused at a 45 degree angle.
  - a. The blind flange for future expansion was installed to a height of 15 feet above ground surface. The original design height was 10 feet. This alteration was made to accommodate the next lift of waste placement.
6. The blind flange for future expansion on the 18-inch header line was installed approximately 10 feet north of EW-130. The original design positioned the future blind flange approximately 200 feet north of EW-130. Due to the continued use of the area as a haul road for trucks and heavy equipment, the blind flange was installed at a location outside of the heavy traffic area.
7. Due to the repositioning of the blind flange for future expansion on the 18-inch header the lateral, tie-in points for EW-52 and EW-57R were repositioned as well. The lateral for EW-57R was installed as detailed in previously discussed Item No. 5. The lateral for EW-527R originates just south of EW-130.
8. Due to the continued use of the area in the vicinity of EW-130 for truck and heavy equipment traffic, the lateral for EW-52 was installed with a 90 degree bend and a 100-foot road crossing spanning the haul road through this area. The original design indicated the location of the lateral on a diagonal between EW-52 and the 18-inch header line.
9. Due to the continued use of the area in the vicinity of EW-130 for truck and heavy equipment traffic, road crossings were installed for laterals EW-52 and EW-57R. Sixty feet of 16 gauge corrugated metal pipe (CMP) encases the 6-inch lateral for EW-57R beginning 10 feet from the 18-inch header.

- line. One hundred feet of 16 gauge CMP encases the 6-inch lateral for EW-52 where it crosses the main haul road.
10. EW-147 was connected into the landfill gas system via the 6-inch lateral for EW-167. The original design indicated the connection to be via EW-145R. EW-145R is a remote wellhead and cannot be used as a connection point into the landfill gas management system.
  11. EW-128 was connected into the landfill gas management system via EW-118 which achieved a slope of 3.7 percent. This alteration occurred to maintain the minimum slope design of three percent.
  12. EW-52 was installed as a remote well. The wellhead is positioned on the 18-inch header (see Project Record Drawings in Appendix E). This alteration occurred to prevent the watering in of the lateral due to the position of EW-52 as a down slope well.
  13. Due to the depth of 16.5 feet below the existing surface for the EW-51R lateral, the lateral was abandoned at the south end of the lateral. The lateral was abandoned approximately three feet below the existing surface north of EW-57R using a butt-fused HDPE end cap.
  14. Following discussions with the John Zinc Company LLC of Tulsa, Oklahoma, the designer and supplier of the flare station, No. 4 stone was used in place of pea gravel inside the bottom of the flare stack to protect the foundation from radiant heat.
  15. Two 24-inch isolation valves were removed from the flare station area during this construction (see Section 5 for details and the Project Record Drawings in Appendix E). The valves were repositioned and installed east of existing high points on the south slope 24-inch header line (see the Project Record Drawings in Appendix E).
  16. A 24-inch isolation valve was installed on the east slope between the site haul road and the northeast 24-inch x 18-inch wye (see Project Record Drawings in Appendix E).



## 2. LANDFILL GAS EXTRACTION WELLS

A total of seven new landfill gas extraction wells (extraction wells) and five replacement extraction wells were installed at the Landfill. The new extraction wells are listed in the following Table 1:

**Table 1. New LFG Extraction Wells**

|        |        |
|--------|--------|
| EW-126 | EW-135 |
| EW-128 | EW-147 |
| EW-129 | EW-167 |
| EW-130 |        |

Existing extraction were abandoned and replaced as listed in the following Table 2.

**Table 2. Existing LFG Extraction Wells**

| <b>Abandoned</b> | <b>Replacement</b> |
|------------------|--------------------|
| TEW-5            | TEW-5R             |
| TEW-6            | TEW-6R             |
| TEW-7            | TEW-7R             |
| EW-53            | EW-53R             |
| EW-58            | EW-58R             |

Existing extraction wells were abandoned by excavating around the existing well casing to an approximate four-foot depth below the existing ground surface. The existing well casing was cut off at the four-foot depth. A polyvinylchloride (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.

Existing extraction well TEW-8 and new extraction wells TEW-6R and EW-126 were tied into the existing 8-inch header line on the southeast slope of the Landfill. Existing extraction wells EW-52 and EW-57R were tied into the new 18-inch HDPE header line that was installed as part of this project (see Section 3). The new and replacement LFG extraction wells listed in Table 1 and Table 2 were connected to the gas management system via shop-fabricated 18" x 6" x 18" HDPE branch saddles, 6-inch HDPE lateral pipelines, tees, and well risers.

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

### 2.1 Materials

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

1. Six-inch diameter solid and perforated SDR 11 HDPE pipe with HDPE bottom caps and temporary Schedule 40 PVC end caps.
2. No. 4 stone (1-inch to 3-inch washed non-carbonate) backfill material.

3. 8-mesh granulated Bentonite.

## 2.2 Construction/Installation Methods

Equipment used to construct/install the extraction wells included a Soilmec SR-30 drill rig, Caterpillar 935C track loader, 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:

1. A field survey was conducted by the Wellert Corporation of Medina, Ohio to stake the design location for each extraction well.
2. Boreholes for the extraction wells were drilled into the waste before the extraction well construction materials and equipment were installed. Drilling was performed using a Soilmec SR-30 drill rig with 36-inch auger to the depth for each individual extraction well indicated in the final extraction well schedule on the project record drawings (see Appendix E).
3. Depth of the borehole was controlled and verified using a weighted tape measure. As the auger advanced, the cuttings were visually inspected to ensure no geosynthetics were encountered (see boring logs in Appendix F).
4. Final borehole depth was confirmed using a weighted tape prior to extraction well casing placement.
5. Solid wall and perforated sections of HDPE pipe were butt-fusion welded to the lengths provided in the survey verified extraction well schedule for placement into the borehole. A typical detail for the extraction well construction is provided as Detail 1 on Drawing RD-2 in Appendix E.
6. Using the Caterpillar 935C track 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.
7. No. 4 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 HDPE casing.
8. Geonet with geotextile heat-bonded to one side of the Geonet was placed over the stone. A one-foot clean soil plug was placed on top of the Geonet.
9. 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 onsite 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 6-inches into the cover soil.
10. Schedule 40 PVC temporary caps were installed using set screws and silicone sealant on top of the casings. Upon completion of the landfill gas collection system discussed in Section 3, Landtec wellheads were installed as permanent replacements for the temporary caps.

## 2.3 Inspections/Tests

The following inspections and tests were performed during the performance of the extraction well construction/installation activities:

1. Materials used in the construction/installation of the extraction wells were visually inspected 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.



2. 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.
3. Boreholes were observed during the drilling to document that the boreholes were completed to the appropriate depth as provided in the field verified extraction well schedule.
4. No. 4 washed non-carbonate stone was used to backfill the annular space between the perforated extraction well casing and the borehole. The analytical test results for the gradation and carbonate content of the No. 4 stone are provided in Appendix G.
5. BC inspectors 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.
6. BC inspectors 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.
7. BC inspectors recorded refuse temperature, composition and degree of moisture at approximately five foot intervals during drilling activities. The data was used to populate BC well logs. Both AEGL and BC well logs are provided in Appendix F.

## 2.4 Air Monitoring

Air monitoring was performed during the drilling of the new and re-drilled extraction wells. A multi-gas VRAE monitoring device, manufactured by RAE, was used to conduct the air monitoring. As specified in the Health and Safety Plan (HASp), 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 BC inspector, determined no levels above safe working conditions. Air monitoring recordings are provided in Appendix H.

## 2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT

### 3. LANDFILL GAS COLLECTION SYSTEM

AEGL installed the landfill gas collection system components required to incorporate the new extraction wells and the re-drilled extraction wells into the existing landfill gas management system. An estimated 3,273 linear feet of HDPE pipe was installed to connect the new extraction wells on line with the existing landfill gas management system. Of that linear footage of pipeline installed, 450 linear feet was 18-inch diameter HDPE header pipe and 2,823 linear feet was 6-inch diameter HDPE laterals. The approximate linear footage of pipeline installed is included in the daily construction logs for BC and AEGL (see Appendix B).

#### 3.1 Materials

The components used to connect the new and re-drilled extraction wells into the existing landfill gas management system included the following:

1. 18-inch diameter solid SDR 17 HDPE pipe.
2. 6-inch diameter solid SDR 17 HDPE pipe.
3. Landtec combination well heads.
4. Various sizes of HDPE reducers, tees, saddle branches, blind flanges, and other fittings and appurtenances.
5. 10-inch diameter 16 gauge galvanized corrugated metal pipe (CMP).

#### 3.2 Construction/Installation Methods

Equipment used to connect the new extraction wells, re-drilled extraction wells, and existing extraction wells into the existing landfill gas management system included a Caterpillar 320C track excavator; John Deere track excavator, JCB 722 articulated dump truck, Caterpillar 725 articulated dump truck, ISCO Hotline HDPE butt-fusion pipe welding equipment, and various hand tools. The general construction/installation methods used to connect the newly installed, existing and re-drilled extraction wells into the existing landfill gas management system were as follows:

1. HDPE pipe of various diameters was delivered to the site and stored in a clean area.
2. The 18-inch and 6-inch HDPE pipe was butt-fusion welded on-site by AEGL:
  - a. Butt-fusion welding was performed inside and outside of the excavated trenches depending on available working area and access to the existing system connections.
3. HDPE pipe was placed in the trenches following completion of the excavation.
  - a. HDPE pipe was installed to achieve the minimum design slopes of three percent.
  - b. Pipe bedding consisted of clean cover soil material removed from the trench excavation.
  - c. 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.
    - i. Installed pipelines, fittings, components, and road crossings were field surveyed after installation from a third order benchmark using global positioning system (GPS) technology.

- d. Locations of the pipelines, components, and appurtenances are provided on Drawing RD-1 of the Project Record Drawings in Appendix E. Installed pipe details are provided on Drawings RD-2 and RD-3 of the Project Record Drawings in Appendix E.
- e. 5-mil x 3-inch underground detectable tape with the words "CAUTION BURIED GAS LINE BELOW" was placed approximately one-foot above the HDPE pipe during backfilling activities.
4. 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.
5. A 100-foot segment of 16 gauge 10-inch diameter CMP was installed at the haul road crossing with the 6-inch HDPE lateral pipeline for EW-52 installed inside the CMP to provide protection from potential vehicular damage. The location of the road crossing is provided on Drawing RD-1 of the Project Record Drawings in Appendix E.
6. A 60-foot segment of 16 gauge 10-inch diameter CMP was installed at the haul road crossing with the 6-inch HDPE lateral pipeline for EW-57R installed inside the CMP to provide protection from potential vehicular damage. The location of the road crossing is provided on Drawing RD-1 of the Project Record Drawings in Appendix E.
7. An 18-inch blind flange for future expansion was installed at the northernmost point on the newly installed 18-inch header line. The 18-inch blind flange was installed at a height of 15-feet above the existing ground surface to accommodate future vertical expansion.

### 3.3 Inspections/Tests

The following inspections and tests were performed when the new and re-drilled extraction wells were connected to the existing landfill gas management system:

1. Pipe was visually inspected 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.
2. Butt-fusion welds were visually inspected prior to back-filling the trenches. BC inspectors observed hot plate temperature, holding times, and welding techniques. The welds were determined to be in conformance with the specifications.
3. Installed landfill gas collection pipelines were pressure tested prior to being connected to the existing landfill gas management system. The pressure test consisted of applying 10 pounds per square inch (psi) of pressure over a one hour period in accordance with the quality assurance plan requirements. Prior to beginning the test, during the test, and following completion of the test, the gauges were inspected for damage and proper units of measurement. The pipelines passed the pressure testing with the pressure test results table provided in Appendix I.

## 2009 LANDFILL GAS CONSTRUCTION CERTIFICATION REPORT

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### 4. ENCLOSED FLARE SYSTEM

AEGL installed a ZTOF® landfill gas enclosed flare system (flare system) including the control system necessary to meet Title V air quality standards. The flare system is the second enclosed flare system at the facility. Butchko Electric of Amherst, Ohio performed the electrical work for the ignition and control station. The location of the flare system is provided on Drawing RD-1 of the Project Record Drawings in Appendix E.

#### 4.1 Materials

The components used to install the flare system included the following:

1. 5,500 scfm ZTOF® landfill gas enclosed flare by John Zink Company LLC of Tulsa, Oklahoma including:
  - a. Waste Gas Blower Package.
  - b. Ignition and Control Station.
  - c. Ancillary Equipment.
2. 24-inch HDPE SDR 17 pipe.
3. 16-inch HDPE SDR 17 pipe.
4. 2-inch HDPE SDR 9 pipe (airline and blower drainage).
5. 4-inch HDPE SDR 11 pipe (blower drainage secondary).
6. Various sizes of HDPE and stainless steel tees, fittings and appurtenances.

#### 4.2 Construction/Installation Methods

Equipment used to install and connect the flare system included a Caterpillar 320C and John Deere 200C LC track excavator; JCB 722 and Caterpillar 725 articulated dump truck, HDPE butt-fusion pipe welding equipment, two cranes and various hand tools. The general construction/installation methods used to install the flare system were as follows:

1. The John Zink flare system equipment was delivered onsite and properly stored.
2. Separate foundations were installed for the blower skid and the enclosed flare during work performed as part of the 2008 Landfill Gas Construction project. Certification of the foundations is included in the 2008 Landfill Gas Construction Certification Report dated March 2009 submitted to the Ohio EPA on March 3, 2009.
3. Two cranes were used to place the blower skid and enclosed flare on the appropriate foundations.
4. The blower skid and enclosed flare were anchored to the foundation and associated components installed.
5. 6-inches of No. 4 stone was spread on the enclosed flare floor as a radiant heat barrier prior to flare door installation.

6. The 16-inch HDPE gas pipe was constructed using butt-fusion welding techniques and pipe supports were installed between the blower skid and the enclosed flare.
7. The gas pipe was connected to the enclosed flare with a 16-inch flange connection. A flame arrestor was installed between the flange and the enclosed flare.
8. 24-inch HDPE pipeline was installed via a flange connection to the existing Condensate Sump CS-18. The 24-inch HDPE pipe was connected to the knockout tank with a 24-inch by 16-inch reducer fitting that ties into the knockout tank on the blower skid. The 16-inch pipe was connected via a 16-inch flange and flange adaptor.
9. A 4-inch by 2-inch HDPE dual contained drainage line was installed between the knockout tank on the blower skid and Condensate Sump CS-18. The drainage line was tied into Condensate Sump CS-18 via a branch saddle weld into the wall of Condensate Sump CS-18. The drainage line was installed below ground surface.
10. A 4-inch by 2-inch HDPE dual contained drainage line was installed between the flame arrestor and each blower via tee connections and was tied into the drainage line for the knockout tank via a tee connection. Stainless steel fittings and ball valves were used aboveground and for connection to the blower drainage fittings. The drainage line was installed below ground surface.
11. A 2-inch HDPE airline was installed between Condensate Sump CS-18 and the air actuated check valve on the blower skid assembly. The airline was connected to the system via a 2-inch flange on a 2-inch future airline installed during the 2008 Enclosed Flare installation.

### 4.3 Inspections/Tests

The following inspections and tests were performed during the installation of the enclosed flare system:

1. The enclosed flare system and components were visually inspected for conformance with the specifications, as well as to verify there were no signs of damage. The enclosed flare system and components were determined to be in conformance with the specifications and no visual damage to the enclosed flare system and components was observed.
2. The HDPE pipe was visually inspected 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.
3. Butt-fusion welds were visually inspected prior to back-filling trenches, placement on pipe supports, or final installation. BC inspector observed hot plate temperature, holding times, and welding techniques. Welds were determined to be in conformance with the welding specifications.
4. Enclosed flare station pipelines, drainage lines and airlines were pressure tested prior to being installed and connected to the Condensate Sump CS-18 and the existing landfill gas management system. The pressure test consisted of applying 10 pounds per square inch (psi) of pressure over a one hour period in accordance with the quality assurance plan requirements. Prior to beginning the test, during the test, and following completion of the test, the gauges were inspected for damage and proper units of measurement. The pipelines passed the pressure testing with the pressure test results table provided in Appendix I.



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### 5. CONTROL VALVE INSTALLATION

Three ASAHI Type 56 gear operated 24-inch control valves (control valves) were installed on the 24-inch header pipeline. Two control valves were installed directly east of the high points on the south slope 24-inch header line. A third control valve was installed between the east haul road and the 24-inch by 18-inch wye in the northeast corner of the Landfill. The location of the control valves is provided on Drawing RD-1 of the Project Record Drawings in Appendix E.

Two of the above mentioned control valves were removed from the enclosed flare area and repositioned as stated above. One control valve was removed at the tie-in with the 24-inch header leading to the removed interim utility flare station. The control valves were replaced with two 24-inch blind flange assemblies. A second control valve was removed at the tie-in with the 24-inch header heading south in the enclosed flare station area. The control valve was replaced with a pre-fabricated 24-inch HDPE pipe section with ductile iron flanges to tie-in place of the valve assembly.

#### 5.1 Materials

The control valve components include the following materials:

1. ASAHI Type 56 gear operated butterfly valve with appurtenant seats and seals.
2. 24-inch diameter solid SDR 17 HDPE pipe flange adapter with ductile iron backup ring and galvanized bolts, nuts, and washers.
3. 24-inch diameter solid Schedule 80 PVC blind flange plates.
4. ASAHI two-piece valve stem extension and casing.
5. Worm-gear valve actuator.
6. ISCO pre-fabricated 24-inch SDR 17 HDPE pipe section with ductile iron flanges for tie in.
7. Central 24-inch electro-fusion coupling.

#### 5.2 Construction/Installation Methods

Equipment used to install the control valves included a Caterpillar 320C and a John Deere 200C LC track excavator, 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 control valves on the existing 24-inch header were as follows:

1. Sections of the existing 24-inch header pipeline were excavated, measured, cut and removed.
2. 24-inch solid HDPE flange adaptors were electro-fused onto the existing 24-inch header pipeline.
3. Using the HDPE flange adaptors, the control valve was bolted to the 24-inch pipe.
4. Valve stem extension, casing, and worm-gear actuator were installed on the control valve.
5. Trenches were backfilled using soil material obtained from the excavation with any waste materials encountered separated and transported for disposal at the active working face of the landfill.

### 5.3 Inspections/Tests

The following inspections and tests were performed during the installation of the control valves into the existing landfill gas management system:

1. Control valves and appurtenances were visually inspected to verify there was no sign of damage. No visual damage to the control valves and appurtenances was observed.
2. Electro-fusion welds were visually inspected and observed to be completed according to the electro-fuse welding specifications.
3. Visual inspection of the control valve assembly was performed to assure that the equipment was installed correctly and was in working order.
4. Backfilling operations were monitored to assure that there were no negative impacts on the valve assemblies and no waste material was included in the backfill soil.



### 6. FINAL COVER SYSTEM REPAIRS

In order to facilitate the repair of a section of existing pipe that had settled and prevented proper gas flow within the lateral approximately 100 feet down slope of EW-141, the geosynthetic components of the final cover system were compromised as the excavator advanced through the final cover system. Settlement of approximately 39 linear feet of 6 inch diameter HDPE pipe was remediated by placing soil material beneath the pipe to eliminate the sag in the pipe. As part of the backfill activities and reconstruction of the final cover system, repair of the geosynthetic components was performed by AEGL. Photographic documentation of the geosynthetic component repairs is provided in Appendix C. This repair method provided a continuous and intact barrier at the location where the pipeline settlement was remediated.

#### 6.1 Materials

Repair of the geosynthetic components of the final cover system were made using the following materials:

1. Nominal 60-mil thick smooth HDPE FML.
2. Geotextile.
3. HDPE extrusion welding rod.
4. Cable ties.

#### 6.2 Construction/Installation Methods

Equipment used to repair the FML component of the final cover system included a DemTech Pro-X extrusion welder and Pro-Tester, Leister hot air tool and various hand tools. The general installation methods used to repair the FML component of the final cover system were as follows:

1. Surface of the existing FML was cleaned of debris.
2. A section of HDPE FML was cut to overlay the damaged area between four to six inches.
3. The HDPE FML was heat bonded to the existing liner.
4. A hand grinder (60 gauge sand paper) was used to prepare the area prior to extrusion welding.
5. Trial welds were performed prior to extrusion welding to the existing FML material. Peel and shear test results are presented in Appendix J.
6. The HDPE FML was extrusion welded to the existing FML component of the existing final cover system.
7. The Geocomposite component was repaired using cable ties to attach the Geotextile of the Geocomposite patch to the Geotextile of the existing Geocomposite material.
8. Vegetative cover soil was placed over the geosynthetics and the area was graded to the adjacent ground surface.

#### 6.3 Inspections/Tests

The following inspections and tests were performed during the installation of the repair of the final cover system geosynthetics:

1. The BC inspector performed visual observation and documentation of the repairs and vacuum box testing.
2. Prior to welding of the HDPE FML to the existing HDPE FML, trial welds were performed using the extrusion welder. Test sections of the welds were cut and a tensiometer was used to perform five peel and five shear tests on the test weld sections. The results of the peel and shear tests are presented in Appendix J.
3. The BC inspector visually observed the overlap of the HDPE FML patch and the Geotextile patch.
4. The BC inspector visually observed the HDPE FML patch welded to the existing HDPE FML component of the final cover system.
5. Vacuum box testing was performed to verify that the HDPE FML welds were free of leaks. The vacuum box testing was performed as follows:
  - a. Soapy solution was applied to the surface of the weld.
  - b. Vacuum box was placed over approximately 12 to 18 inches of the extrusion weld.
  - c. Negative pressure was applied to the vacuum box.
  - d. 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.
6. HDPE FML welds passed the vacuum box testing.
7. The BC inspector visually observed the Geocomposite patch tied to the existing Geocomposite component of the final cover system.
8. The BC inspector visually observed the placement and grading of the vegetative cover soil.

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### 7. SYSTEM REPAIRS AND MAINTENANCE

During the 2009 Gas Management System Installation Project, system maintenance activities were made to correct issues of oxygen introduction into the landfill gas management system occurring on the southwest corner of the Lorain County II Landfill. System maintenance was also performed to correct issues related to the southwest leachate collection sump.

At the southwest corner of the Lorain County II Landfill, two 24" x 6" x 24" tees were replaced to correct issues of oxygen introduction into the landfill gas management system. One 24" x 6" x 24" tee was replaced using two 24-inch electrocouplers on the header line and a 6-inch electrocoupler on the lateral for EW-96. Approximately eight linear feet of 6-inch diameter SDR 17 HDPE pipe was replaced on the EW-96 lateral and connected into the landfill gas management system via a 6-inch electro-coupler. A second 24" x 6" x 24" tee was replaced using a 6-inch to 24-inch branch saddle electro-coupler to replace the leaking branch saddle butt weld on the lateral for EW-1. Approximately two linear feet of 6-inch diameter SDR 17 HDPE was replaced on the lateral to EW-1 and connected into the landfill gas management system via a 6-inch electro-coupler.

System maintenance was performed to extend the southwest leachate sump above the grade of the existing road. A shop-fabricated 48-inch diameter SDR 32.5 HDPE pipe, new pump, dual contained leachate collection pipe and associated appurtenances were installed.

In addition, gas header line remediation was performed at the Lorain County I Landfill (Closed) due to low available vacuum readings on the east slope and flare tie-in areas. The slope for approximately 1000 linear feet of 8-inch SDR 17 HDPE header line was remediated from Condensate Sump CS-1 to EW-64R. Approximately 60 linear feet of 12-inch SDR 17 HDPE header line was remediated at the flare tie-in. Remediation activities were performed as maintenance on an existing header line and no components were installed or removed during performance of the remediation activities.

#### 7.1 Materials

The 24" x 6" x 24" tee replacement components include the following materials:

1. Shop-fabricated 24" x 6" x 24" solid SDR 11 HDPE tees with support gussets.
2. Central 24-inch electro-fusion couplings.
3. Central 6-inch electro-fusion couplings.
4. Central 6-inch to 24-inch branch saddle electro-fusion coupler.
5. 6-inch solid SDR 17 HDPE pipe.

The leachate sump manhole components include the following materials:

1. Shop-fabricated 48-inch SDR 32.5 HDPE manhole riser.
2. 3-inch by 6-inch to 2-inch by 4-inch dual contained reducer.
3. 2-inch SDR 11 HDPE pipe.
4. 4-inch SDR 17 HDPE pipe.
5. HDPE anchor flange.

6. 48-inch water tight flange set.

## 7.2 Construction/Installation Methods

Equipment used to install the replacement tees included a Caterpillar 320C AND John Deere 200C LC track excavator; JCB 722 and Caterpillar 725 articulated dump truck, electro-fusion welding equipment and various hand tools. The general construction/installation methods used to install the replacement tees on the 24-inch header were as follows:

1. Sections of the existing 24-inch header pipeline containing the potentially faulty 24" x 6" x 24" solid HDPE tees were cut and removed.
2. The 24" x 6" x 24" solid HDPE tee was electro-fused into the existing 24-inch header pipeline where the faulty 24" x 6" x 24" had been cut and removed.
3. 6-inch electro-fusion couplers were used to connect laterals for EW-1 and EW-96 into the landfill gas management system.
4. Trenches were backfilled using soil material obtained from the excavation with any waste materials encountered was separated and transported for disposal at the active working face of the Landfill.

The general construction/installation methods used to perform maintenance on the leachate sump manhole riser were as follows:

1. The existing manhole was cleared off and the leachate piping was excavated and exposed.
2. Then new 48-inch manhole riser was set into place on top of the existing manhole cover and was anchored into place using a 48-inch water tight flange set and neoprene gasket. Eight evenly placed 1/2-inch anchor bolts and silicone were used to seal the riser to the concrete.
3. A Mustang pipe crimper was used to pinch off the exposed 3" x 6" HDPE dual-contained force main. The existing 3" x 6" force main was cut at the leachate sump entry point and abandoned in place. A 2" x 4" reduction fitting was installed and additional 2" x 4" dual-contained force main was installed. The new force main enters the sump via the new 48-inch leachate sump riser.
4. The excavation was backfilled using soil material obtained from the excavation and the area was regraded.

The general construction/installation methods used to regrade the 8-inch and 12-inch header line at Lorain County I Landfill (Closed) was as follows:

1. Sections of the 8-inch and 12-inch HDPE header line were excavated and exposed.
2. The exposed sections of header were field surveyed to determine approximate grade and location of any low points and sags in the pipe.
3. Any low areas were brought up to appropriate grade by lifting the center of the pipe in the low point and packing soil under the pipe to build up the grade. The grade (slope) of the pipeline was rechecked to insure at least 3 percent grade was attained.
4. Trenches were backfilled using soil material obtained from the excavation with any waste materials encountered separated and transported for disposal at the active working face of the Landfill.
5. All areas were regraded after backfilling was complete.

## 7.3 Inspections/Tests

The following inspections and tests were performed during the above detailed construction activities:

1. Shop-fabricated tees, electro-couplings, manhole riser, flanges and appurtenances were visually inspected for conformance with the specifications, as well as to verify there was no sign of damage. The Shop-fabricated tees, electro-couplings, manhole riser, flanges and appurtenances and appurtenances were

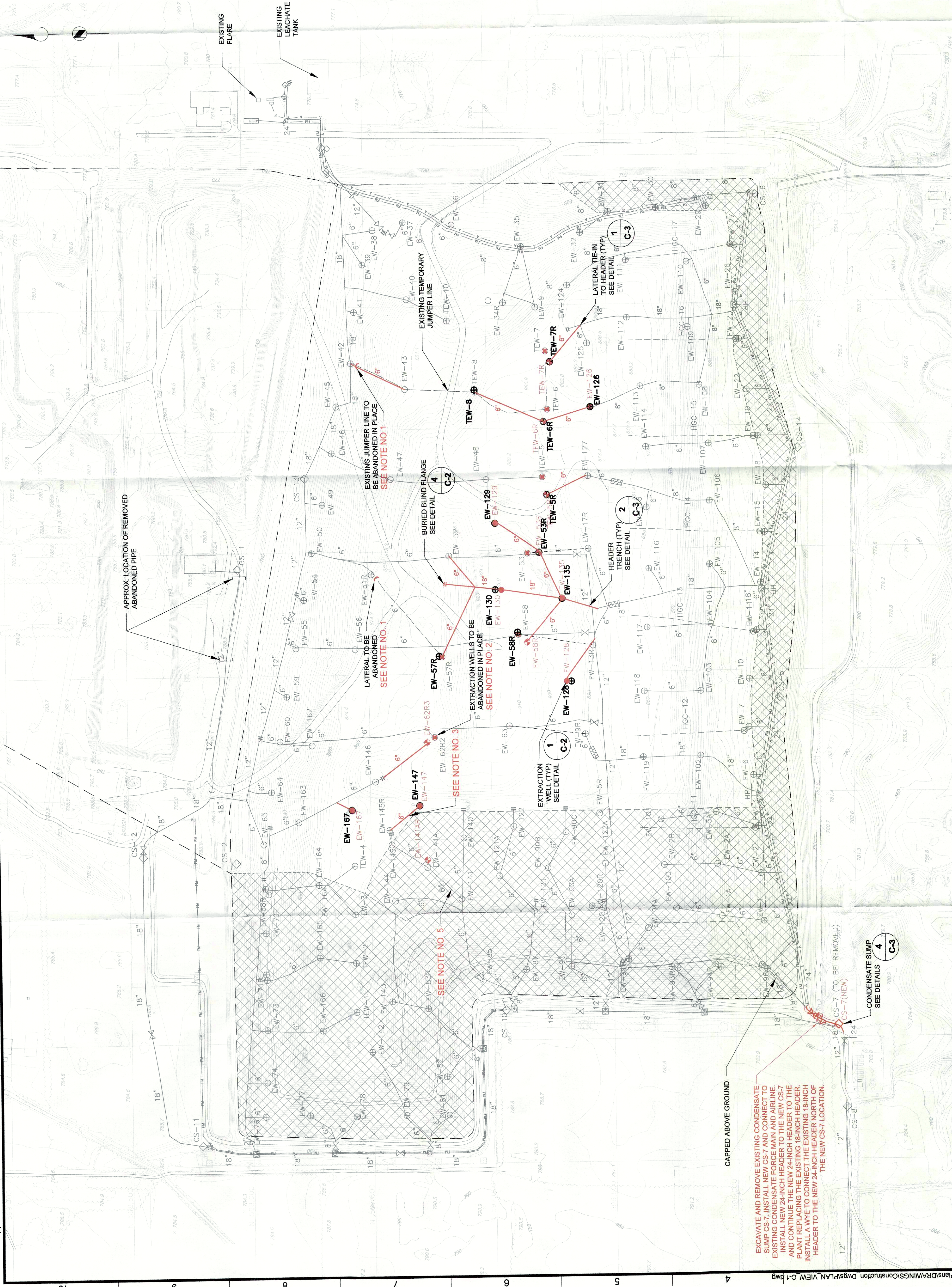
- determined to be in conformance with the specifications and no visual damage to the materials was observed.
2. Electro-fusion welds were visually inspected and observed to be completed according to the electro-fusion welding specifications.
  3. Visual inspection of the tee assemblies were performed to assure that the equipment was installed properly and was in working order.
  4. Visual inspections of the southwest leachate sump maintenance activities were performed to assure that all parts were installed correctly.
  5. Backfilling operations were monitored to assure that there were no negative impacts on the tee assemblies, control valves and header pipelines.
  6. Re-grading on 8-inch and 12-inch header was visually inspected to insure all sags and low areas were removed. Field surveying was performed to insure the appropriate grade of at least 3 percent was attained.

## APPENDIX A

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### **Construction Drawings**





## LEGEND

- | PROPERTY                                           | BOUNDARY |
|----------------------------------------------------|----------|
| EXISTING 10' CONTOUR                               | ---      |
| EXISTING 2' CONTOUR                                | ---      |
| EXISTING LANDFILL GAS HEADER                       | ---      |
| EXISTING CONDENSATE FORCEMAIN                      | ---      |
| EXISTING AREA OF FINAL COVER PLACEMENT             | ---      |
| EXISTING AIRLINE                                   | ---      |
| EXISTING LFG EXTRACTION WELL WITH LANDTEC WELLHEAD | ○ EW-90A |
| EXISTING LFG EXTRACTION WELL                       | ⊕ EW-    |
| EXISTING COMBINATION WELL                          | △ EW-45  |
| EXISTING REMOTE WELLHEAD                           | ⊗        |
| EXISTING HEADER ACCESS RISER                       | ⊠        |
| EXISTING CONTROL VALVE                             | ⋈        |
| EXISTING BLIND FLANGE                              | ⊥        |
| EXISTING FLANGE CONNECTION                         | ⊥        |
| EXISTING CONDENSATE DRIPLEG                        | ⊙        |
| EXISTING CONDENSATE SUMP STATION                   | ◇        |
| PROPOSED LANDFILL GAS HEADER/LATERAL               | ● EW-128 |
| PROPOSED LFG EXTRACTION WELL                       | ⊗ EW-58  |
| PROPOSED LFG WELL - ABANDONMENT                    | ⊕ EW-58R |
| PROPOSED LFG EXTRACTION WELL - REDRILL             | ⊕ CS-7   |
| PROPOSED CONDENSATE SUMP STATION                   | ◇        |
| PROPOSED BLIND FLANGE                              | ⊥        |
| PROPOSED CAP FOR ABANDONMENT                       | ⊥        |

**NOTES:**

1. LATERALS TO BE ABANDONED IN PLACE USING SDR 11 HDPE ENDCAPS AND BUTT-FUSED INTO PLACE.
2. EXTRACTION WELLS TO BE ABANDONED IN PLACE. THE METHOD OF ABANDONMENT IS TO EXCAVATE DOWN TO REFUSE OR A MAXIMUM OF 4 FEET, IF REFUSE IS NOT ENCOUNTERED, CUT OFF WELL AND INSTALL A PVC CAP BY APPLYING A BEAD OF SILICONE GEL INSIDE THE PVC CAP AND ATTACH TO THE WELL CASING WITH 3 LAG SCREWS. ONSITE SOIL BACKFILL SHALL BE USED TO FILL IN AREA TO GROUND SURFACE.
3. USE CAUTION WHILE PERFORMING TRENCH WORK. PROPOSED LATERAL TRENCH IS LOCATED CLOSE TO FINAL COVER PLACEMENT.
4. FIELD GRADES AT TIME OF CONSTRUCTION WILL NEED TO BE CHECKED FOR LATERALS FOR EW-53R, EW-129, EW-62R3 AND EW-52 LATERAL TIE IN. SINCE SITE IS ACTIVELY FILLING IN THESE AREAS AT THE TIME DRAWINGS ARE BEING PREPARED.
5. REPAIR EXISTING LATERAL PIPE GRADE HAS CHANGED (APPROXIMATELY 100 FEET DOWNSLOPE FROM EXISTING EW-141A). REPAIR LINER AFTER EXCAVATION

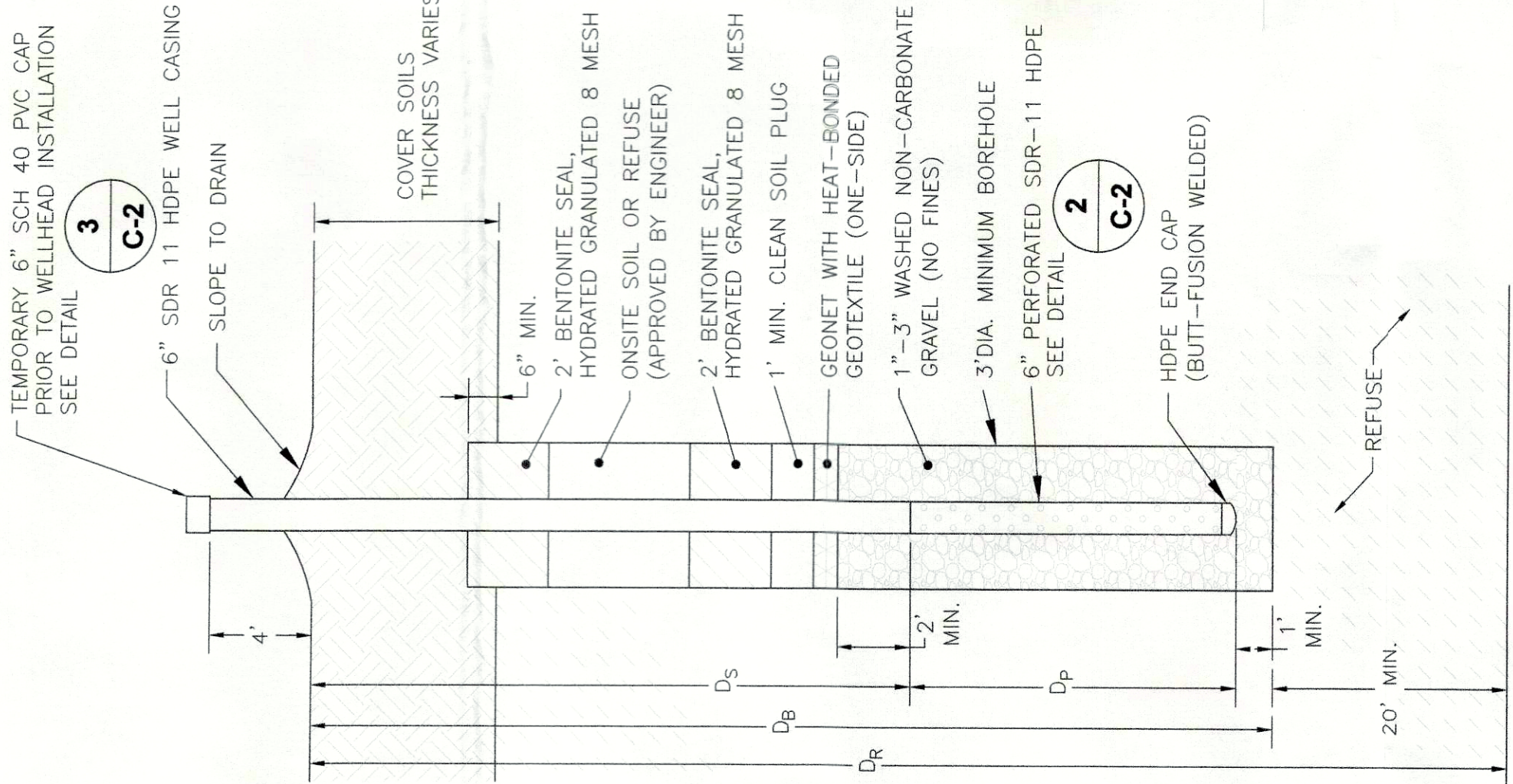
This drawing was prepared solely for Republic Services, Inc. in accordance with professional standards at the time the services were performed and in accordance with the contract between Republic Services, Inc. and Brown and Caldwell. This drawing is governed by the specific scope of work authorized by Republic Services, Inc.; it is not intended to be used, relied upon, or interpreted by any other party except for the scope of work for which it was prepared.

| BROWN AND CALDWELL                                                                                              |  | LINE IS 2 INCHES<br>AT FULL SIZE<br>(IF NOT 2" - SCALE ACCORDINGLY) |  | EXTERNAL REFERENCES            |  | IMAGE REFERENCES |  | REVISIONS |      |             |    |      |
|-----------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------|--|--------------------------------|--|------------------|--|-----------|------|-------------|----|------|
| <b>COLUMBUS, OHIO</b><br><br>SUBMITTED: _____ DATE: _____<br>PROJECT MANAGER<br><br>APPROVED: _____ DATE: _____ |  | DESIGNED: _____                                                     |  | COVER SHEET                    |  |                  |  | ZONE      | REV. | DESCRIPTION | BY | DATE |
|                                                                                                                 |  | DRAWN: _____                                                        |  | WORTHINGTON, J.C. 12-13-58 SHS |  |                  |  |           |      |             |    |      |
|                                                                                                                 |  | EGM                                                                 |  | WORTHINGTON, J.C. 12-13-58 SHS |  |                  |  |           |      |             |    |      |
|                                                                                                                 |  |                                                                     |  | MARTIN, LUTHER AND COMPANY     |  |                  |  |           |      |             |    |      |
|                                                                                                                 |  |                                                                     |  | WORTHINGTON, J.C. 12-13-58 SHS |  |                  |  |           |      |             |    |      |
|                                                                                                                 |  |                                                                     |  | 2004-6056-2 AS-BUILT.dwg       |  |                  |  |           |      |             |    |      |

|                                                                                     |  |                                                                     |  |
|-------------------------------------------------------------------------------------|--|---------------------------------------------------------------------|--|
|  |  | <p> <b>LORAIN COUNTY II LANDFILL</b><br/> <b>OBERLIN, OHIO</b> </p> |  |
| <p> <b>2009 GCCS CONSTRUCTION PLAN</b><br/> <b>PRELIMINARY DESIGN</b> </p>          |  | <p> <b>BC PROJECT NUMBER</b><br/>           137083         </p>     |  |
| <p> <b>CLIENT PROJECT NUMBER</b><br/>           DRAWING NUMBER         </p>         |  | <p> <b>C-1</b> </p>                                                 |  |
| <p> <b>SHEET NUMBER</b><br/>           1 OF 3         </p>                          |  | <p> <b>P</b> </p>                                                   |  |

314712009





EXTRACTION WELL

**DETAIL 1**  
SCALE: NOT TO SCALE C-2

NOTES:

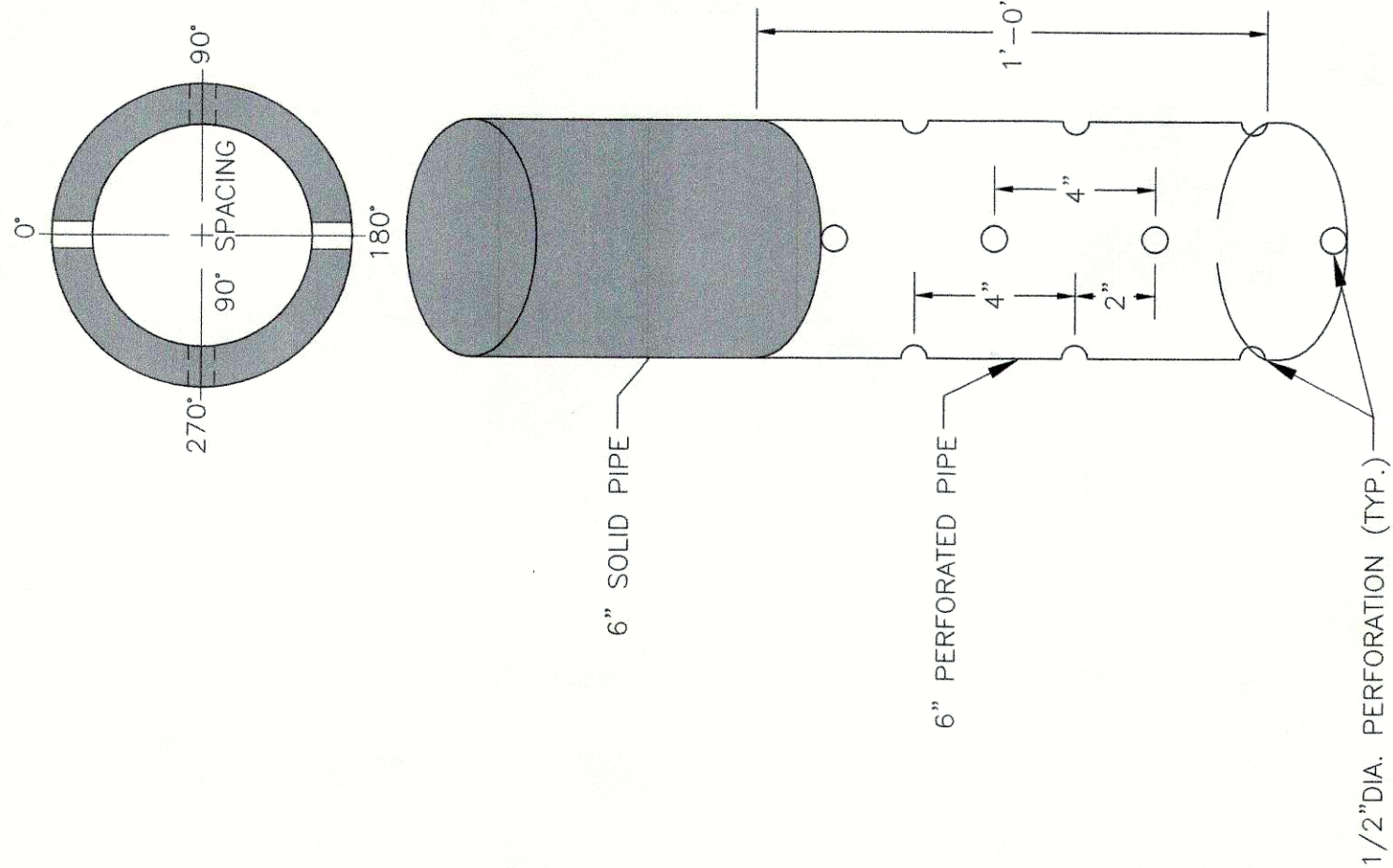
- $D_b$  = DEPTH OF REFUSE  
 $D_b$  = DEPTH OF BORING  
 $D_s$  = DEPTH OF SOLID PIPE (BELOW GRADE)  
 $D_r$  = LENGTH OF PERFORATED PIPE
- MINIMUM 20 FEET SEPARATION BETWEEN BASE OF BORING AND TOP OF LINER SYSTEM.
- WELL DRILLING WILL NOT COMMENCE UNTIL BOTTOM LINER ELEVATIONS ARE IDENTIFIED AND VERIFIED BY PROJECT SURVEYOR, DESIGN ENGINEER, AND COA REPRESENTATIVE.
- WELL DRILLING TABLE WILL BE MANAGED BY ENVIRONMENTAL MANAGER OR DESIGNATED REPRESENTATIVE TO ENSURE ONLY THE VERIFIED WELL DEPTHS ARE PRESENT AND THAT THE DRILLER AND COA REPRESENTATIVE HAVE THE IDENTICAL INFORMATION PRIOR TO DRILLING.
- COORDINATES, ELEVATIONS, AND WELL DEPTH ARE BASED ON INFORMATION OBTAINED FROM AERIAL PHOTOGRAPHY DATED 12-13-08 BY HENDERSON AERIAL SURVEYS, INC. OF GROVE CITY, OHIO. ACTUAL GROUND ELEVATIONS MAY VARY AT TIME OF CONSTRUCTION.
- EXTRACTION WELL LOCATIONS AND ELEVATIONS TO BE FIELD VERIFIED. ALL CHANGES FROM ABOVE WELL SCHEDULE MUST BE APPROVED BY ENGINEER.

LORAIN COUNTY II PROPOSED EXTRACTION WELL SCHEDULE

| Well ID | COORDINATES |         | ELEVATIONS |       | DEPTHS (FT) |        |            |
|---------|-------------|---------|------------|-------|-------------|--------|------------|
|         | North       | East    | Final      | Liner | Refuse      | Boring | Perforated |
| TEW-SR  | 596757      | 2058722 | 892        | 782   | 110         | 90     | 20         |
| TEW-GR  | 596766      | 2059025 | 880        | 782   | 98          | 78     | 20         |
| TEW-7R  | 596737      | 2059267 | 881        | 770   | 111         | 91     | 20         |
| EW-53R  | 596792      | 2058489 | 900        | 780   | 120         | 100    | 20         |
| EW-58R  | 596845      | 2058125 | 911        | 766   | 145         | 125    | 20         |
| EW-62R3 | 597263      | 2057721 | 897        | 764   | 133         | 113    | 20         |
| EW-128  | 596682      | 2057964 | 898        | 755   | 143         | 123    | 20         |
| EW-129  | 596971      | 2058609 | 897        | 765   | 132         | 112    | 20         |
| EW-130  | 596949      | 2058339 | 923        | 768   | 155         | 135    | 20         |
| EW-135  | 596697      | 2058302 | 901        | 753   | 148         | 128    | 20         |
| EW-147  | 597298      | 2057464 | 892        | 760   | 132         | 112    | 20         |
| EW-167  | 597577      | 2057448 | 881        | 765   | 116         | 96     | 20         |
|         |             |         |            |       | TOTAL       | 1303   | 240        |
|         |             |         |            |       |             |        | 1051       |

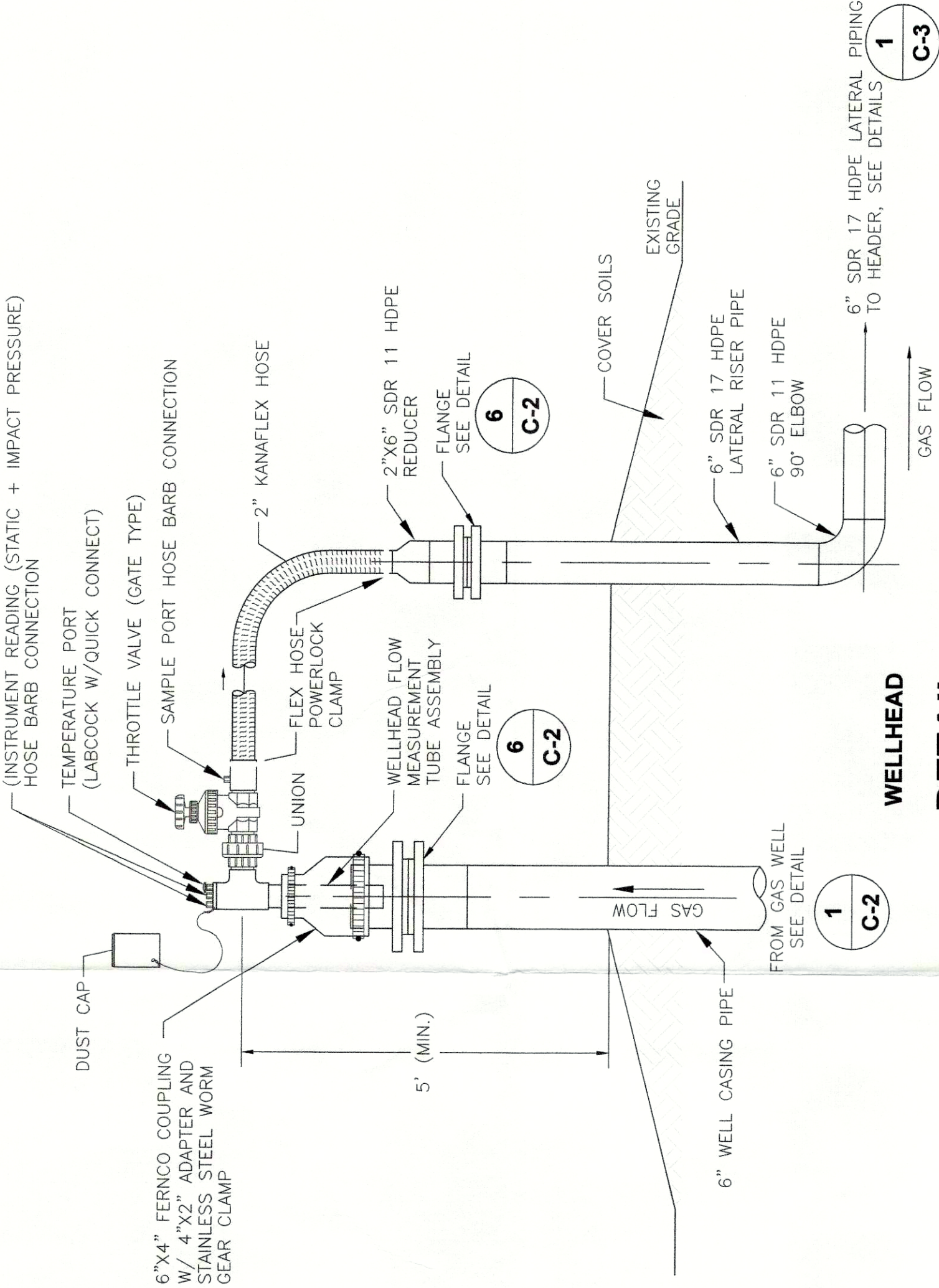
PERFORATED PIPE

**DETAIL 2**  
SCALE: NOT TO SCALE C-2



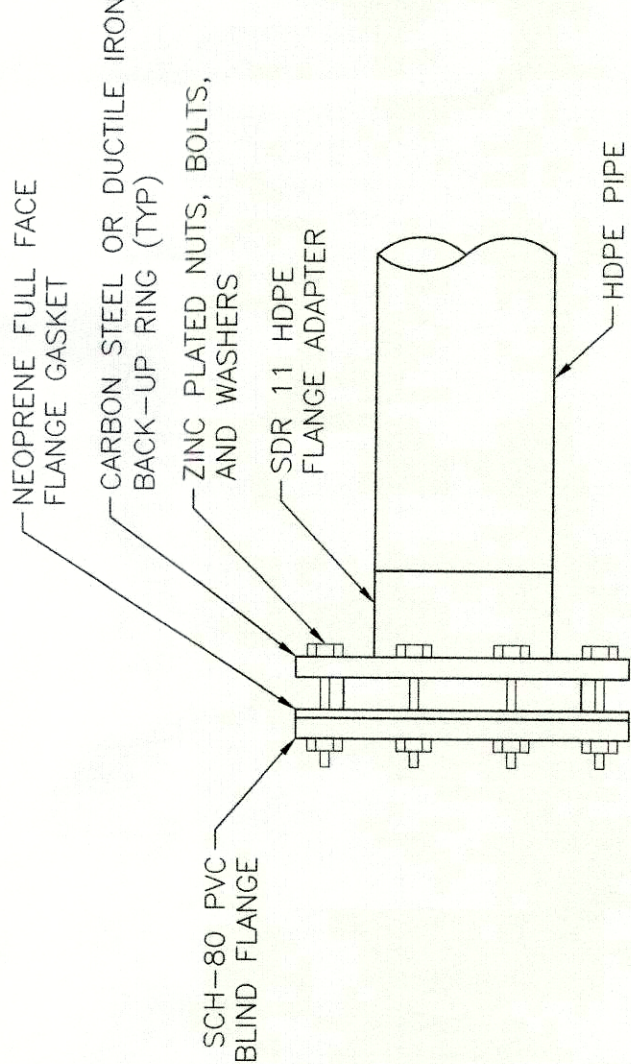
WELLHEAD

**DETAIL 3**  
SCALE: NOT TO SCALE C-2



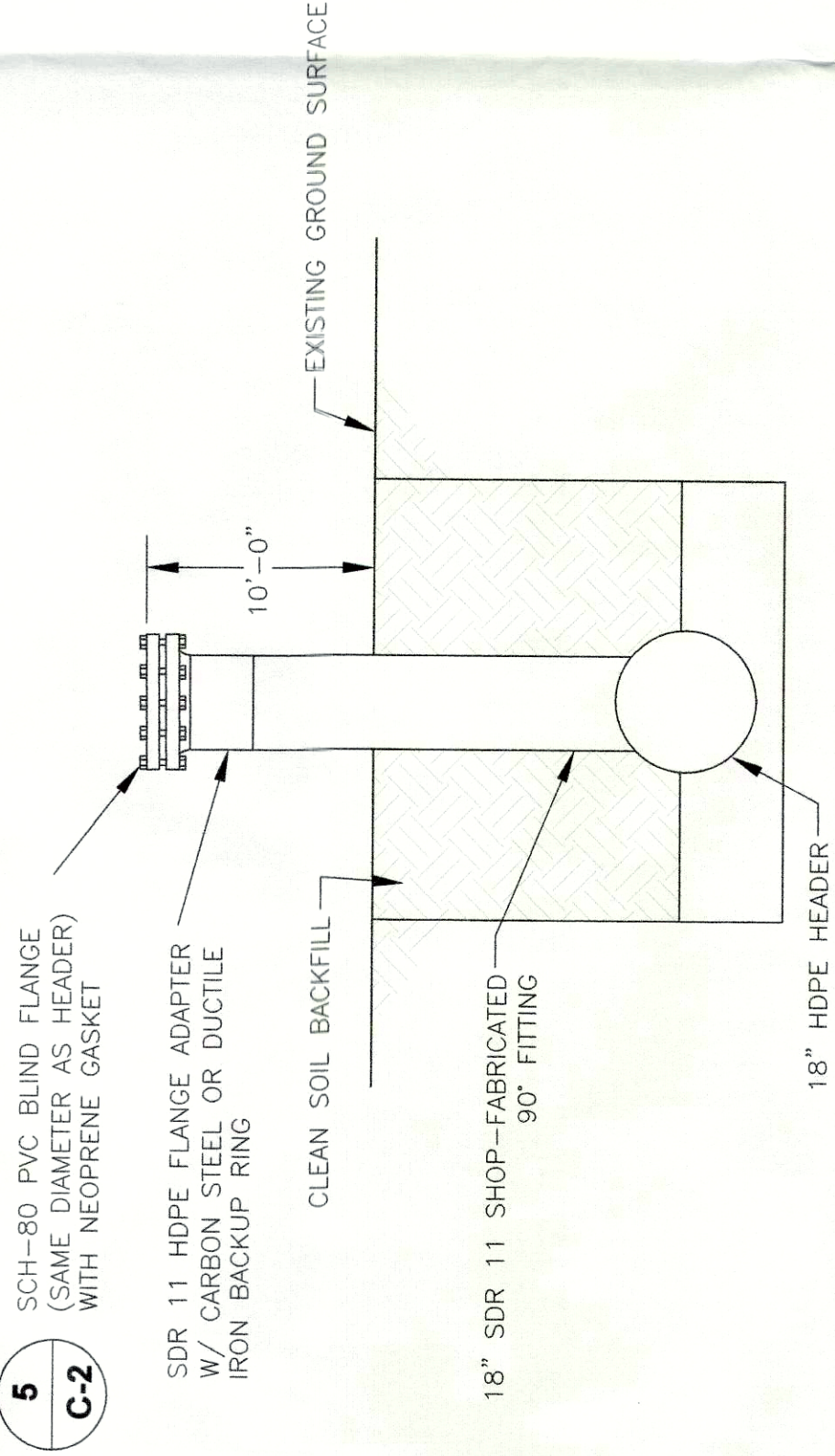
NOTES:

- WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL 200 WELLHEAD ASSEMBLY. TEL. 1-800-LANDTEC, FAX 1-909-825-0591.
- WELLHEAD MAY BE SUBSTITUTED WITH AN APPROVED EQUAL PER ENGINEER.
- PROVIDE HIGH VISIBILITY TAPE OR PAINT AROUND TOP 1-FOOT OF WELL CASING AND LATERAL PIPE.
- CONTRACTOR TO INSURE DRAINAGE OF SURFACE WATER AWAY FROM THE WELLHEAD.
- LATERAL PIPING MUST DRAIN TO THE MAIN HEADER, AWAY FROM THE WELLHEAD, AT A MINIMUM SLOPE OF 3%.



BLIND FLANGE ASSEMBLY

**DETAIL 5**  
SCALE: NOT TO SCALE C-2



BLIND FLANGE FOR FUTURE EXPANSION

**DETAIL 4**  
SCALE: NOT TO SCALE C-2

- ENTIRE SURFACE OF BOLTS, WASHERS, NUTS, AND BACKUP RING SHALL BE THOROUGHLY COATED W/ POLYCOAT RUBBERIZED PRIMER OR EQUAL, AFTER TIGHTENING BOLTS. FLANGE SHALL BE WRAPPED IN PLASTIC WRAP PRIOR TO BACKFILLING.

**BROWN AND CALDWELL**

COLUMBUS, OHIO

SUBMITTED: PROJECT MANAGER DATE:

APPROVED: BROWN AND CALDWELL DATE:

DESIGNED: DRAWN: EGM

CHECKED: CHECKED: APPROVED:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" SCALE ACCORDINGLY)

EXTERNAL REFERENCES IMAGE REFERENCES

COVER SHEET

DESIGNED: DRAWN: EGM

CHECKED: CHECKED: APPROVED:

LORAIN COUNTY II LANDFILL

OVERLIN, OHIO

2009 GCCS CONSTRUCTION PLANS  
DETAILS

FILENAME

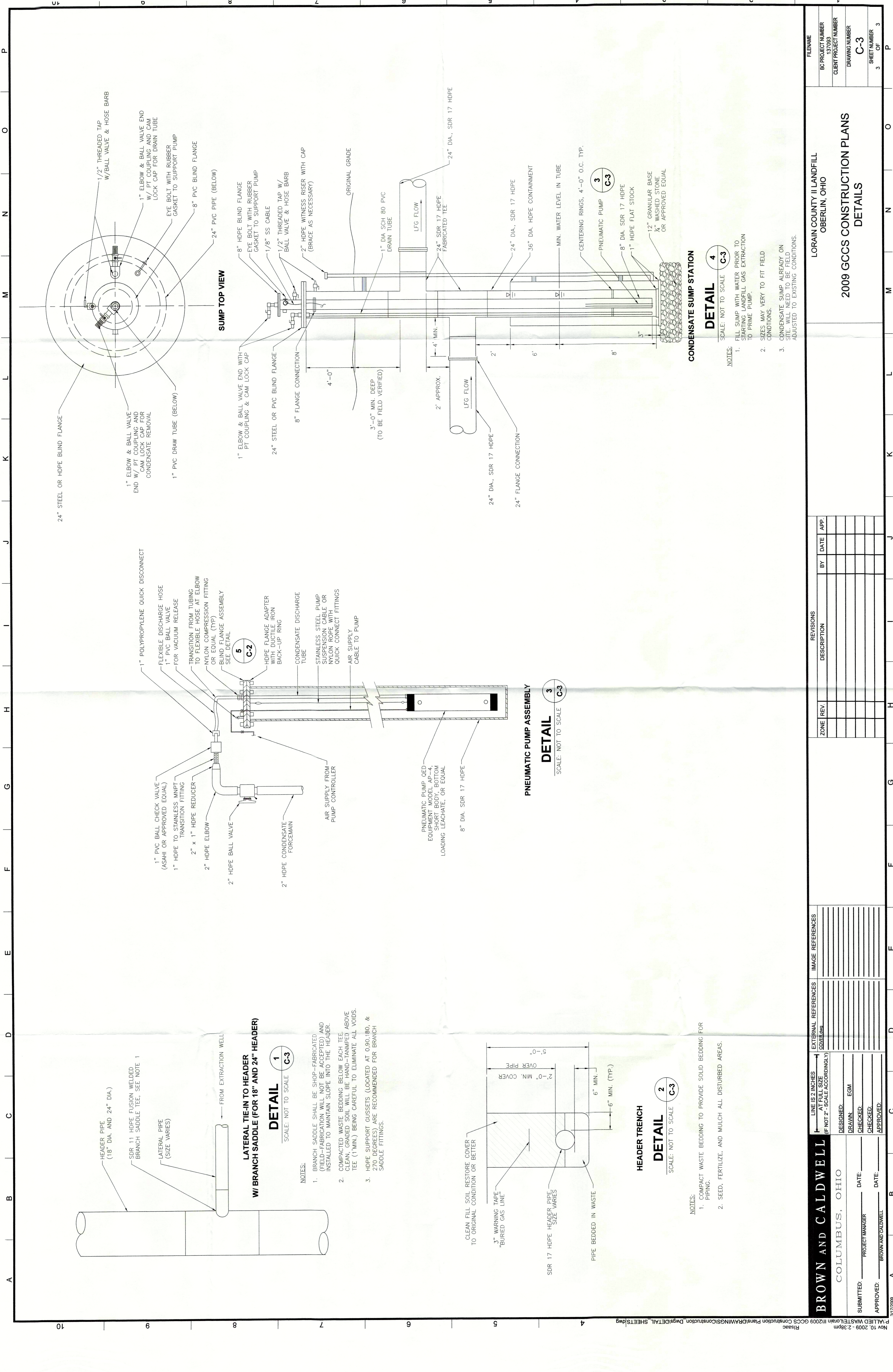
BC PROJECT NUMBER 137093

CLIENT PROJECT NUMBER

DRAWING NUMBER C-2

SHEET NUMBER 2 OF 3





BROWN AND CALDWELL

COLUMBUS, OHIO

SUBMITTED: PROJECT MANAGER DATE: BROWN AND CALDWELL  
APPROVED: DATE:

REVISIONS

| ZONE | REV | DESCRIPTION | BY | DATE | APP. |
|------|-----|-------------|----|------|------|
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LORAIN COUNTY II LANDFILL  
OBERLIN, OHIO

2009 GCCS CONSTRUCTION PLANS  
DETAILS

|           |                             |                       |                       |                        |
|-----------|-----------------------------|-----------------------|-----------------------|------------------------|
| FILE NAME | BO PROJECT NUMBER<br>137093 | CLIENT PROJECT NUMBER | DRAWING NUMBER<br>C-3 | SHEET NUMBER<br>3 OF 3 |
|-----------|-----------------------------|-----------------------|-----------------------|------------------------|



## APPENDIX B

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### **Daily Field Logs**

- 1. Brown and Caldwell**
- 2. American Environmental Group, Ltd.**



**Brown and Caldwell**



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 6/22-6/23 2009

Project Description: Gas Extraction Wells

JAO.

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 1        |                 |
| Pickup Truck | Ford F-350    | 1        |                 |
| Trailer      |               | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION      | NAME         | HOURS ONSITE |
|------------------|--------------|--------------|
| Supervisor       |              |              |
| Driller/Foreman  | Dokk Stanley | 12           |
| Operator/Laborer | Derrik       | 12           |
| Operator/Laborer | Bacon        | 12           |
|                  |              |              |
|                  |              |              |

**COMMENTS:****6/22/2009**

7:00- Onsite. Check in at office. AEGL onsite and prepping equipment to begin drilling activities @ TEW-7R.

13:30- Begin drilling @ TEW-7R.

16:30- Hault drilling activities @ 80 feet. Site does not except trash loads past 16:30. Drill bucket was left in open borehole and surrounded with clay. Caution tape placed around area.

17:30-Offsite

**6/23/2009**

7:00 Onsite. Check in at office. AEG onsite &amp; prepping for continuation of drilling at TEW-7R

7:30- Begin drilling @ TEW-7R.

9:00-Wellert Survey Co. onsite to restake EW-58R, EW-128, EW-130 and to shoot EW-126.

10:00-Reach scheduled depth of 106 feet. Last 26 feet extremely saturated. This well may need a pump in the future.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 6/23/2009

Project Description: Gas Extraction Wells

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 1        |                 |
| Pickup Truck | Ford F-350    | 1        |                 |
| Trailer      |               | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION      | NAME         | HOURS ONSITE |
|------------------|--------------|--------------|
| Supervisor       |              |              |
| Driller/Foreman  | Dokk Stanley | 12           |
| Operator/Laborer | Derrik       | 12           |
| Operator/Laborer | Bacon        | 12           |
|                  |              |              |
|                  |              |              |

**COMMENTS:**

NA See Log for 6/22-6/23/09



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 6/24/2009

Project Description: Gas Extraction Wells

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 1        |                 |
| Pickup Truck | Ford F-350    | 1        |                 |
| Trailer      |               | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION      | NAME         | HOURS ONSITE |
|------------------|--------------|--------------|
| Supervisor       |              |              |
| Driller/Foreman  | Dokk Stanley | 12           |
| Operator/Laborer | Derrik       | 12           |
| Operator/Laborer | Bacon        | 12           |
|                  |              |              |
|                  |              |              |

**COMMENTS:****6/24/2009**

7:00 Onsite. Distribute updated well log to AEGL

7:45 Begin drilling at EW-126 scheduled for 117 feet.

13:00 Reach depth of 117 feet at EW-126

13:20 Begin drilling at TEW-5R scheduled for 101 feet

14:30 Hault drilling at 63 feet. Place bucket in borehole and surround with clay. Place caution tape around borehole.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:  
JAO

Date: 6.25.09

Project Description: Gas Extraction Wells &amp; Pipeline

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 1        |                 |
| Pickup Truck | Ford F-350    | 1        |                 |
| Trailer      |               | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION      | NAME         | HOURS ONSITE |
|------------------|--------------|--------------|
| Supervisor       |              |              |
| Driller/Foreman  | Dokk Stanley | 12           |
| Operator/Laborer | Derrick      | 12           |
| Operator/Laborer | Bacon        | 12           |
| Pipeline Foreman |              |              |
| Laborer          | Mike Dickens | 10           |
| Laborer          | Chris        | 10           |

**COMMENTS:**

7:00 2 Pipeline crew members onsite welding pipe. No excavation for pipeline until tomorrow. Bob Minor (pipeline supervisor onsite tomorrow)

Bob Minor (pipeline supervisor onsite tomorrow)

7:30 Drill crew begin drilling at TEW-5R.



| BROWN and CALDWELL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                 | DAILY CONSTRUCTION LOG |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------|-----------------|
| Project Location:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lorain II County Landfill       | CQA Monitor:<br>JAO    | Date: 6/26/2009 |
| Project Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Gas Extraction Wells & Pipeline |                        |                 |
| Project Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 137719                          |                        |                 |
| <b>EQUIPMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TYPE                            | QUANTITY               | HOURS OPERATION |
| Drill Rig                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SOILMEC SR-30                   | 1                      |                 |
| Loader                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Cat 9530                        | 1                      |                 |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | JCB 718                         | 3                      |                 |
| Pickup Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Ford F-350                      | 2                      |                 |
| Trailer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 | 2                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Cat                             | 1                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Deere                           | 1                      |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                        |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                        |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                        |                 |
| <b>MANPOWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAME                            | HOURS ONSITE           |                 |
| Supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                 |                        |                 |
| Driller/Foreman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Dokk Stanley                    | 12                     |                 |
| Operator/Laborer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Derrik                          | 12                     |                 |
| Operator/Laborer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Bacon                           | 12                     |                 |
| Pipeline Foreman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Bob Minor                       | 12                     |                 |
| Pipeline Operator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Chris                           | 12                     |                 |
| Laborers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 PPL                           | 12                     |                 |
| <b>COMMENTS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                 |                        |                 |
| <p>7:00 Me with Bob Minor in AM. Discussed site rules and work plan. Walked site and determined where certain wells were located. Pipeline to begin on lateral from EW-126 to TEW-6R and on to TEW-8. Because TEW-8 is a down slope well; AEG is installing a remote wellhead. Alteration was approved by site.</p> <p>7:30 Drill crew began drilling at EW-135.</p> <p>9:00 Met with R. Kostelnick and C. Jaquet to discuss gas system shut down for tie-ins. EDI will shut isolation valve for eastern two tie-ins tomorrow morning (sat) and leave closed until Mon morning. AEG will leave tie-in spot open with cover for exposed trash and caution tape around open excavation.</p> <p>14:00 Trench work completed from HP to EW-126. Crew installed butt-fusion welded pipe run into trench.</p> <p>15:00 Pipe crew shot TOP grade and marked out distance at 10' intervals.</p> <p>16:00 EW-135 completed to scheduled depth.</p> <p>17:00 EW-135 installed to spec &amp; labeled<br/> Pipe crew placed survey risers at 50' intervals &amp; at all fittings. Pipeline crew placed caution tape around survey risers ~2' above pipe.</p> <p>18:00 Pipeline crew backfilling &amp; dressing up area.</p> <p>18:30 JAO Offsite</p> |                                 |                        |                 |



| BROWN and CALDWELL                                                                                 |                           | DAILY CONSTRUCTION LOG |                 |
|----------------------------------------------------------------------------------------------------|---------------------------|------------------------|-----------------|
| Project Location:                                                                                  | Lorain II County Landfill | CQA Monitor:           | Date: 6/27/2009 |
| Project Description:                                                                               | Pipeline                  | JAO                    |                 |
| Project Number:                                                                                    | 137719                    |                        |                 |
| EQUIPMENT                                                                                          |                           |                        |                 |
| DESCRIPTION                                                                                        | TYPE                      | QUANTITY               | HOURS OPERATION |
| Drill Rig                                                                                          | SOILMEC SR-30             |                        |                 |
| Loader                                                                                             | Cat 9530                  | 1                      |                 |
| Dump Truck                                                                                         | JCB 718                   | 2                      |                 |
| Pickup Truck                                                                                       | Ford F-350                | 1                      |                 |
| Trailer                                                                                            |                           | 2                      |                 |
| Excavator                                                                                          | Cat                       | 1                      |                 |
| Excavator                                                                                          | Deere                     | 1                      |                 |
|                                                                                                    |                           |                        |                 |
|                                                                                                    |                           |                        |                 |
|                                                                                                    |                           |                        |                 |
| MANPOWER                                                                                           |                           |                        |                 |
| DESCRIPTION                                                                                        | NAME                      | HOURS ONSITE           |                 |
| Supervisor                                                                                         |                           |                        |                 |
| Driller/Foreman                                                                                    | Dokk Stanley              | 0                      |                 |
| Operator/Laborer                                                                                   | Derrik                    | 0                      |                 |
| Operator/Laborer                                                                                   | Bacon                     | 0                      |                 |
| Pipeline Foreman                                                                                   | Bob Minor                 | 12                     |                 |
| Pipeline Operator                                                                                  | Chris                     | 12                     |                 |
| Laborers                                                                                           | 3 PPL                     | 12                     |                 |
| COMMENTS:                                                                                          |                           |                        |                 |
| 7:00 Shawn (EDI) closed isolation valve for portion of wellfield we are tying into today.          |                           |                        |                 |
| 8:00 Pipeline crew opening up tie-in area.                                                         |                           |                        |                 |
| 8:45 Called Shawn to request permission to close wellhead valves. High H2S & LEL reading in trench |                           |                        |                 |
| 9:30 Removed lateral riser and fused tee onto end of riser. Begin airtest for 6" lateral pipe.     |                           |                        |                 |
| 10:30 Fused Tee & riser bak onto lateral.                                                          |                           |                        |                 |
| 10:30 Air test passed (10psi for 1 hour)                                                           |                           |                        |                 |
| 11:30 Fused flange adaptor onto lateral. Made tie-in connection with 6" flange.                    |                           |                        |                 |
| 12:00 Backfill tie-in point and dress up area.                                                     |                           |                        |                 |
| 13:00 JAO and AEG offsite                                                                          |                           |                        |                 |



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 6.29.09

Project Description: Gas Extraction Wells &amp; Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 3        |                 |
| Pickup Truck | Ford F-350    | 2        |                 |
| Trailer      |               | 2        |                 |
| Excavator    | Cat           | 1        |                 |
| Excavator    | Deere         | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrik       | 12           |
| Operator/Laborer  |              |              |
| Pipeline Foreman  | Bob Minor    | 12           |
| Pipeline Operator | Bacon        | 12           |
| Laborers          | 3 PPL        | 12           |

**COMMENTS:**

7:00 Onsite. AEG prepping to trench lateral for TEW-7R. Field Alteration: TEW-7R lateral is tied into the 6" lateral for EW-125.

8:00 AEG Drill crewe began drilling EW-53R

9:00 Driller hot temporary jumper line for EW-53-EW-17R. EDI isolated area. Chris Jaquet requested the repair be made today.

13:00 Airtest performed and passed for lateral TEW-7R.

14:00 AEG has not started repair. Asked B. Minor if he was going to need more time-he said 5:00pm. Relayed request to Andy

16:00 Complete EW-53R to Spec. Begin excavation for repair at 17R. Complete tie-in at EW-125

17:00 AEG did not make repair today. The face closed before repair completed. Chris Jaquet notified.

18:00 AEG backfilling trenchwork &amp; placing caution tape and mounding soil around EW-17R.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 6.30.09

Project Description: Gas Extraction Wells &amp; Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 3        |                 |
| Pickup Truck | Ford F-350    | 2        |                 |
| Trailer      |               | 2        |                 |
| Excavator    | Cat           | 1        |                 |
| Excavator    | Deere         | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrick      | 12           |
| Operator/Laborer  |              |              |
| Pipeline Foreman  | Bob Minor    | 12           |
| Pipeline Operator | Bacon        | 12           |
| Laborers          | 3 PPL        | 12           |

**COMMENTS:**

7:00 Onsite. Shawn from EDI met with me to reopen isolated area. Wellheads returned to open position as well. AEG pipeline working on repair excavation at 17R.

8:00 Drill Crew begin drilling at EW-129.

10:00 Remove lateral riser at 17R. Cap temporary jumper line with pvc endcap and 3 lag bolts.

11:00 Install new 90 fitting and 3' of 6" DR 11 to lateral riser at 17R.

13:00 Tie back into system and backfill area. EDI will reopen isolated area tomorrow morning

14:00 Continue trenchwork for TEW-8 remote wellhead

15:00 Complete EW-129 to Spec

16:30 Complete butt-fusion weld of tee and lateral onto TEW-8

17:00 Backfill, survey risers & caution tape installed on TEW-8 lateral.

19:00 Offsite. Dress up needed of TEW-8 lateral



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.1.09

Project Description: Gas Extraction Wells &amp; Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 3        |                 |
| Pickup Truck | Ford F-350    | 2        |                 |
| Trailer      |               | 2        |                 |
| Excavator    | Cat           | 1        |                 |
| Excavator    | Deere         | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrik       | 12           |
| Operator/Laborer  |              |              |
| Pipeline Foreman  | Bob Minor    | 12           |
| Pipeline Operator | Bacon        | 12           |
| Laborers          | 3 PPL        | 12           |

**COMMENTS:**

7:00 Onsite. AEG prepping to trench lateral for tie-in at EW-127

7:30 AEG dressing up TEW-8 lateral.

8:00 Begin drilling at EW-128

9:00 Begin trench work for EW-127 lateral

13:00 Airtest performed and passed for EW-127 lateral

15:00 Complete EW-128 to spec. Drill rig moving to EW-147

17:00 Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.2.09

Project Description: Gas Extraction Wells &amp; Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 3        |                 |
| Pickup Truck | Ford F-350    | 2        |                 |
| Trailer      |               | 2        |                 |
| Excavator    | Cat           | 1        |                 |
| Excavator    | Deere         | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrik       | 12           |
| Operator/Laborer  | Bacon        | 12           |
| Pipeline Foreman  | Bob Minor    | 12           |
| Pipeline Operator | Chris        | 12           |
| Laborers          | 3 PPL        | 12           |

**COMMENTS:**

7:00 Onsite.

8:00 Begin trenching lateral for EW-128 tie-in.

8:30 Begin drilling at EW-147

12:45 Temporary jumper line hit at EW-13R. Jumper capped off immediately and EDI notified

13:00 Grade between EW-128 and EW-13R tie-in is 1.25%. Grade for tie-in at EW-118 is 3.7%

C. Jaqut notified and authorized a Field Alteration to increase grade on lateral.

14:00 Aeg began trench work between EW-118 and EW-128

16:00 EW-147 installed to spec.

17:30 Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.3.09

Project Description: Gas Extraction Wells &amp; Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE          | QUANTITY | HOURS OPERATION |
|--------------|---------------|----------|-----------------|
| Drill Rig    | SOILMEC SR-30 | 1        |                 |
| Loader       | Cat 9530      | 1        |                 |
| Dump Truck   | JCB 718       | 3        |                 |
| Pickup Truck | Ford F-350    | 2        |                 |
| Trailer      |               | 2        |                 |
| Excavator    | Cat           | 1        |                 |
| Excavator    | Deere         | 1        |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |
|              |               |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrik       | 12           |
| Operator/Laborer  |              |              |
| Pipeline Foreman  | Bob Minor    | 12           |
| Pipeline Operator | Bacon        | 12           |
| Laborers          | 3 PPL        | 12           |

**COMMENTS:**

7:00 Onsite. AEG plans to complete lateral between EW-118 and EW-128 today and dress up the entire area before the holiday weekend.

8:00 Drill crew began drilling at EW-167

9:30 EW-118 to EW-128 lateral completed. Air test performed and passed (7.2.09). All tie-in point area being surrounded by soil and caution tape. The following tie-ins will take place Monday July 6th: EW-128, EW-TEW-5R and the EW-13R repair.

14:30 Complete EW-167 to Spec

15:00 Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

|                      |                           |                     |       |         |
|----------------------|---------------------------|---------------------|-------|---------|
| Project Location:    | Lorain II County Landfill | CQA Monitor:<br>PKS | Date: | 7.06.09 |
| Project Description: | Gas Extraction Pipeline   |                     |       |         |
| Project Number:      | 137719.001                |                     |       |         |

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 2        |                 |
| Trailer      |                    | 2        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
| Dump Truck   | JCB 718            | 1        |                 |
| Loader       | Cat 953C           | 1        |                 |
| Drill Rig    | SOILMEC SR-30      | 1        |                 |

**MANPOWER**

| DESCRIPTION       | NAME         | HOURS ONSITE |
|-------------------|--------------|--------------|
| Supervisor        |              |              |
| Pipeline Foreman  | Tom Denver   | 12           |
| Pipeline Operator | Bacon        | 12           |
| Laborers          | 3 PPL        | 12           |
| Driller/Foreman   | Dokk Stanley | 12           |
| Operator/Laborer  | Derrick      | 12           |

**COMMENTS:**

7:05 Onsite. AEGP working to tie-in EW-118 and EW-127 and make repairs on EW-13R and welding 18" pipe  
8:00 EDI shuts down the flare - AEGD staging to drill EW-58R  
8:45 AEGD begins drilling EW-58R  
9:00 AEGP working to tie-in EW-118  
9:45 AEGP complete EW-118 tie-in and moving to EW-127  
11:20 Tie-in at EW-127 complete - Drilling at EW-58R continues  
11:35 AEGP begin abandonment of TEW-6 and TEW-7  
13:15 Spoke w/ R. Kostelnick about EPA being onsite and dust being a major issue - asked AEGP to shutdown for the day or get a water truck of there own.  
13:20 Spoke w/ T. Denver about the dust issue - they will be shutting down for the afternoon - AEGD continue drilling at EW-58R  
14:15 AEG Pipeline offsite  
15:05 AEGD is at depth and has the well in place and ready to set  
16:30 Well EW-58R install complete - regrading area around the well  
16:45 Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.07.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 2        |                 |
| Trailer      |                    | 2        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
| Dump Truck   | JCB 718            | 1        |                 |
| Loader       | Cat 953C           | 1        |                 |
| Drill Rig    | SOILMEC SR-30      | 1        |                 |

**MANPOWER**

| DESCRIPTION       | NAME          | HOURS ONSITE |
|-------------------|---------------|--------------|
| Supervisor        | Roy McMasters | 12           |
| Pipeline Foreman  | Tom Denver    | 12           |
| Pipeline Operator | Bacon         | 12           |
| Laborers          | 3 PPL         | 12           |
| Driller/Foreman   | Dokk Stanley  | 12           |
| Operator/Laborer  | Derrik        | 12           |

**COMMENTS:**

7:15 Onsite. AEG prepping for the day  
7:30 Roy McMasters onsite - AEGP working to abandon TEW-5,6, and 7 and trenching from EW-43 to EW-42 to install a 6" jumper AEGD setting up at EW-130  
8:45 AEGD begin drilling at EW-130  
9:00 AEGD stop drilling due to mechanical issues  
9:30 Drilling underway  
10:30 AEGD continue drilling effort - AEGP continues trenching and abandonment effort  
12:00 AEGP finished with well abandonment and tie-ins Called Shawn w/EDI about turning on the gas  
12:15 Met w/ Jesse from Wellert (Surveyors) about the survey points for the existing 18" header and 6" lateral for the EW-167 tie-in  
13:15 R. Kostelnick called about the issue on the south side near H-11 (underground fire)  
13:20 Met w/ R. McMasters and Bill (Shaw) to look at the location and determine how a solution - will begin work on 7/8/2009  
13:30 Drilling complete at EW-130  
14:30 AEGP welding 6" lateral between EW-42 and 43  
15:00 AEGD completing well install  
15:20 AEG pipeline sets 6" lateral into trench and survey for grade  
16:00 AEGD complete with well installation and are finished for the day - AEGP pipeline completed surveying and are backfilling between EW-42 and 43  
16:45 AEGP complete backfill and abandoning old 4" forcemain  
17:15 AEGP complete and a wrapping up for the day  
17:30 AEGP and PKS complete and offsite for the day



| BROWN and CALDWELL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           | DAILY CONSTRUCTION LOG |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|-----------------|
| Project Location:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lorain II County Landfill | CQA Monitor:           | Date: 7.08.09   |
| Project Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Gas Extraction Pipeline   | PKS                    |                 |
| Project Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 137719.001                |                        |                 |
| <b>EQUIPMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | TYPE                      | QUANTITY               | HOURS OPERATION |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | JCB 722                   | 1                      |                 |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CAT 725                   | 1                      |                 |
| Pickup Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ford F-550                | 2                      |                 |
| Trailer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           | 2                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Cat 320C                  | 1                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | John Deere 200C LC        | 1                      |                 |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | JCB 718                   | 1                      |                 |
| Loader                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Cat 953C                  | 1                      |                 |
| Drill Rig                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SOILMEC SR-30             | 1                      |                 |
| <b>MANPOWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NAME                      | HOURS ONSITE           |                 |
| Supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Roy McMasters             | 12                     |                 |
| Pipeline Foreman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Tom Denver                | 12                     |                 |
| Pipeline Operator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bacon                     | 12                     |                 |
| Laborers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 PPL                     | 12                     |                 |
| Driller/Foreman                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Dokk Stanley              | 12                     |                 |
| Operator/Laborer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Derrik                    | 12                     |                 |
| <b>COMMENTS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |                        |                 |
| <p>7:10 PKS onsite - AEGD onsite prepping equipment and gear to move offsite - AEGP onsite prepping for the day</p> <p>8:05 AEGP crew excavating to locate the 18" header on the south side</p> <p>8:25 18" header and blind located - Excavating 6" lateral</p> <p>9:30 6" lateral found</p> <p>9:40 AEGP begin excavating trench between EW-147 to EW-167</p> <p>10:30 Trenching continues - welding 6" pipe - AEGD move offsite</p> <p>12:05 Trench continues - welding 6" pipe continues</p> <p>13:30 R. McMasters prepping for flare tower installation on 7/9.</p> <p>*Note: No work will be done regarding the fire near H-11 on the south side until further notice</p> <p>14:20 Trench work continues - 6" lateral in place from EW-147 to EW-167</p> <p>15:00 AEGP backfilling trench and placing shot risers</p> <p>15:30 Blower unit for the new flare is scheduled to be delivered at 17:00</p> <p>16:00 Backfilling is underway</p> <p>16:30 Backfilling is complete - Moving to flare pad to prepare for the delivery of the new flare blower unit</p> <p>17:00 New blower unit is onsite - prepping to unload</p> <p>17:25 Off loading new blower unit</p> <p>18:45 All flare blower unit items off loaded and are ready for install</p> <p>19:00 PKS and AEGP offsite</p> |                           |                        |                 |

| <b>BROWN and CALDWELL</b> |                           | <b>DAILY CONSTRUCTION LOG</b> |              |
|---------------------------|---------------------------|-------------------------------|--------------|
| Project Location:         | Lorain II County Landfill | CQA Monitor:<br>PKS           | Date: 7.9.09 |
| Project Description:      | Gas Extraction Pipeline   |                               |              |
| Project Number:           | 137719.001                |                               |              |

#### EQUIPMENT

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

#### MANPOWER

| DESCRIPTION       | NAME          | HOURS ONSITE |
|-------------------|---------------|--------------|
| Supervisor        | Roy McMasters | 12           |
| Pipeline Foreman  | Tom Denver    | 12           |
| Pipeline Operator | Bacon         | 12           |
| Laborers          | 3 PPL         | 12           |

#### COMMENTS:

7:00 PKS Onsite - AEGP onsite moving the flare blower unit into position onto the blower pad  
 All Erection Crane rental onsite and beginning to setup to lift the LFG flare tower onto the pad  
 7:15 AEGP prepping to trench from EW-147 to EW-167  
 7:45 AEGP setting up to air test tie-in to the existing 6" lateral  
 9:00 AEGP assisting to move the flare into position - AEGP continue tie-in work  
 10:15 AEGP continue assisting in flare installation  
 10:40 Begin air test on 6" lateral for tie-in from EW-147 to EW-167 to existing lateral 1hr @ 10psi  
 11:00 Begin air test on 6" lateral from EW-43 to EW-42 - 1hr @ 10psi  
 11:05 AEGP continues to assist in lifting the new flare into position  
 11:50 Flare in place - AEGP working to epoxy the anchor bolts into place and secure the flare to the pad  
 11:55 End air test @ 6" lateral for tie-in of EW-147 and EW-167 - air test PASS (75min)  
 12:00 AEGP begins the tie-in for EW-167 and EW-147  
 12:05 End air test @ 6" lateral for tie-in of EW-42 and EW-43 - air test PASS (65min)  
 12:50 Flare in position and anchored in place. All Erection and Crane Rental tearing down to move out  
 13:00 AEGP working to tie-in the 6" lateral for EW-147 and EW-167  
 14:15 Tie-in complete  
 14:30 AEGP moving to complete tie-in at EW-43 and EW-42  
 14:40 All Erection Crane Rental offsite  
 15:00 AEGP backfilling trench and excavation areas for EW-147 and EW-167  
 15:30 Backfilling continues  
 15:35 AEGP enlarges area for EW-43 and EW-42 tie-in  
 16:45 AEGP backfilling trench and excavation area of tie-in for EW-147 and EW-167  
 AEGP enlarges area for EW-43 and EW-42 tie-in (7/10)  
 17:45 AEGP completed the excavation for the tie-in at EW-42 and EW-43  
 AEGP finish the grade work at the EW-147 and EW-167 tie-in  
 18:00 AEGP finished for the day  
 18:15 AEGP and PKS offsite



| <b>BROWN and CALDWELL</b> |                           | <b>DAILY CONSTRUCTION LOG</b> |               |
|---------------------------|---------------------------|-------------------------------|---------------|
| Project Location:         | Lorain II County Landfill | CQA Monitor:<br>PKS           | Date: 7.10.09 |
| Project Description:      | Gas Extraction Pipeline   |                               |               |
| Project Number:           | 137719.001                |                               |               |

#### **EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

#### **MANPOWER**

| DESCRIPTION       | NAME          | HOURS ONSITE |
|-------------------|---------------|--------------|
| Supervisor        | Roy McMasters | 12           |
| Pipeline Foreman  | Tom Denver    | 12           |
| Pipeline Operator | Bacon         | 12           |
| Laborers          | 3 PPL         | 12           |

#### **COMMENTS:**

7:05 PKS Onsite - AEGP onsite organizing for the days activities  
 7:45 AEGP excavating for tie-in at EW-42 and EW-43 and checking grade for the 18" lateral tie-in  
 9:00 AEGP crew working on excavating for tie-in at EW-42 and EW-43  
 9:30 AEGP crew checking grade for 18" lateral and all associated new well tie-ins  
 9:50 AEGP continues work to tie-in EW-42 and EW-43  
 10:40 AEGP continues work to tie-in EW-42 and EW-43 - and abandon existing 6" lateral  
 11:00 Met w/ Dan (Republic) and R. McMasters (AEG) about coordinating tie-in of wells in the active area  
     - Will wait until next week to work on that when the working face will be moved  
 11:45 AEGP continues excavation  
 13:00 AEGP continues work on tie-in for EW-42 and EW-43  
 14:00 AEGP continues tie-in work for EW-42 and EW-43 - Existing 6" lateral has been abandoned  
 15:15 Tie-ins complete - surveying points to check grade  
 15:30 Backfilling begins  
 16:30 Backfilling of tie-in excavation area continues - AEG stock piles dirt for future excavation of trenches of the 18" lateral pipe and associated 6" laterals  
 17:10 Backfilling and grading tie-in area around EW-42 and EW-43  
 17:40 AEG finished for the day  
 17:45 PKS and AEG offsite

| BROWN and CALDWELL                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           | DAILY CONSTRUCTION LOG |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|-----------------|
| Project Location:                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lorain II County Landfill | CQA Monitor:<br>PKS    | Date: 7.11.09   |
| Project Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Gas Extraction Pipeline   |                        |                 |
| Project Number:                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 137719.001                |                        |                 |
| <b>EQUIPMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TYPE                      | QUANTITY               | HOURS OPERATION |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | JCB 722                   | 1                      |                 |
| Dump Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CAT 725                   | 1                      |                 |
| Pickup Truck                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ford F-550                | 1                      |                 |
| Trailer                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           | 1                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Cat 320C                  | 1                      |                 |
| Excavator                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | John Deere 200C LC        | 1                      |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                        |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                        |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                        |                 |
| <b>MANPOWER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NAME                      | HOURS ONSITE           |                 |
| Supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |                        |                 |
| Pipeline Foreman                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tom Denver                | 12                     |                 |
| Pipeline Operator                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Bacon                     | 12                     |                 |
| Laborers                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3 PPL                     | 12                     |                 |
| <b>COMMENTS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                        |                 |
| 6:55 PKS onsite<br>7:00 AEGP onsite - organizing and cleaning house<br>7:55 AEGP cleaning house and welding gussets onto 18" X 6" tees<br>8:30 Gusset trial weld on the first 18" X 6" tee - welds fail via a hammer smack test. On Monday (7/13) AEGP will have AEGL onsite who will have the appropriate tools to weld the gussets properly<br>9:30 AEGP continues to clean and organize<br>9:35 Rain starts - thunder and lightning<br>10:05 PKS and AEGP offsite until Monday |                           |                        |                 |



| <b>BROWN and CALDWELL</b>                                                                                                                                                                |                           | <b>DAILY CONSTRUCTION LOG</b> |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|-----------------|
| Project Location:                                                                                                                                                                        | Lorain II County Landfill | CQA Monitor:                  | Date: 7.13.09   |
| Project Description:                                                                                                                                                                     | Gas Extraction Pipeline   | PKS                           |                 |
| Project Number:                                                                                                                                                                          | 137719.001                |                               |                 |
| <b>EQUIPMENT</b>                                                                                                                                                                         |                           |                               |                 |
| DESCRIPTION                                                                                                                                                                              | TYPE                      | QUANTITY                      | HOURS OPERATION |
| Dump Truck                                                                                                                                                                               | JCB 722                   | 1                             |                 |
| Dump Truck                                                                                                                                                                               | CAT 725                   | 1                             |                 |
| Pickup Truck                                                                                                                                                                             | Ford F-550                | 1                             |                 |
| Trailer                                                                                                                                                                                  |                           | 1                             |                 |
| Excavator                                                                                                                                                                                | Cat 320C                  | 1                             |                 |
| Excavator                                                                                                                                                                                | John Deere 200C LC        | 1                             |                 |
|                                                                                                                                                                                          |                           |                               |                 |
|                                                                                                                                                                                          |                           |                               |                 |
|                                                                                                                                                                                          |                           |                               |                 |
| <b>MANPOWER</b>                                                                                                                                                                          |                           |                               |                 |
| DESCRIPTION                                                                                                                                                                              | NAME                      | HOURS ONSITE                  |                 |
| Supervisor                                                                                                                                                                               | Bob Minor                 | 12                            |                 |
| Pipeline Foreman                                                                                                                                                                         | Tom Denver                | 12                            |                 |
| Pipeline Operator                                                                                                                                                                        | Bacon                     | 12                            |                 |
| Laborers                                                                                                                                                                                 | 3 PPL                     | 12                            |                 |
| <b>COMMENTS:</b>                                                                                                                                                                         |                           |                               |                 |
| 7:10 PKS onsite - AEGP onsite conducting morning meeting                                                                                                                                 |                           |                               |                 |
| 7:45 Dan (Republic) stopped by to let myself and AEG know about the construction meeting regarding the thermal event near H-11                                                           |                           |                               |                 |
| 8:00 Construction meeting regarding the possible thermal event in the area of H-11                                                                                                       |                           |                               |                 |
| - Take pictures of excavation and repair, monitor for gas and temp. exceedance                                                                                                           |                           |                               |                 |
| Goal: Cut out wyes section and cap off all exposed 6" pipes - 10-13' hole - keep 3:1 slope                                                                                               |                           |                               |                 |
| Meeting attendance: Bob Minor (AEG), Tom Denver (AEG), Clarissa Gereby (OEPA), Jerry Parker (OEPA), Ray Steins (Weaver Boos), Rick Kostelnick (Republic), Brock Quiantance (MBC)         |                           |                               |                 |
| 8:40 Meeting over                                                                                                                                                                        |                           |                               |                 |
| 9:05 AEGL beginning to excavate to expose liner in the area of HGC-11 to first take temps of the liner                                                                                   |                           |                               |                 |
| - Ground surface temps 68-74F                                                                                                                                                            |                           |                               |                 |
| 9:30 Exposed the first area of liner and took readings - 68-71F at the liner surface                                                                                                     |                           |                               |                 |
| 9:40 Excavation proceeding - EDI, Shaw, Republic, OEPA, AEG, MBC, all have reps on hand watching the excavation                                                                          |                           |                               |                 |
| 10:00 Liner exposed and prepping to puncture the liner to tie-in a gas line to suck out built up gas from under the liner                                                                |                           |                               |                 |
| 10:25 Excavation to expose liner continues - vac line in place to exhaust built up gas from under the liner                                                                              |                           |                               |                 |
| Note: 4" lateral will be capped subsurface, wye pipe will be removed and lines on all sides will be capped via electro fusion couplers (as per agreement w/ R. Kostelnick)               |                           |                               |                 |
| 11:05 AEGP continues to remove surface cover from the liner in the area of concern - Liner temps remain normal - 68-78F - Hotter - in spots due to the sun heating up the liner (80-85F) |                           |                               |                 |
| 11:45 Exposed liner by cutting through the overlying synthetics to record liner temp.                                                                                                    |                           |                               |                 |
| 12:05 AEG cutting into the liner - opening a hole approximately 22' by 24.5' to expose the underlying clay                                                                               |                           |                               |                 |
| 12:25 Begain excavation into the clay to expose the pipework- Monitoring w/ VRAE                                                                                                         |                           |                               |                 |
| 12:50 Excavation into the area continues - trash incountered in being taken to the working face                                                                                          |                           |                               |                 |
| 13:30 AEGP continues to excavate to expose the wye (No gas hits or exceedances)                                                                                                          |                           |                               |                 |
| 13:50 Called R. Isaac w/ update                                                                                                                                                          |                           |                               |                 |
| 14:00 Wye exposed, WEG cleaning and enlarging the area around the wye                                                                                                                    |                           |                               |                 |
| 14:20 Met w/ R. McMasters about EW-52 having a grade of 2.8% in the wrong direction                                                                                                      |                           |                               |                 |
| - need to determine a plan of action to adjsut the tie-in                                                                                                                                |                           |                               |                 |
| 14:30 AEG pulling together materials to cut out and cap the wye section                                                                                                                  |                           |                               |                 |
| 14:55 AEG cut out the wye and riser and are setting up to fusion weld butt caps to the in place pipes                                                                                    |                           |                               |                 |
| 15:00 J. Owen on-site and taking over CQA                                                                                                                                                |                           |                               |                 |
| 16:00 P. Schlater offsite                                                                                                                                                                |                           |                               |                 |
| 16:30 AEGL liner crew to add gussets to tees (18x6)                                                                                                                                      |                           |                               |                 |
| 17:00 R. Kostelnick and J. Parker discussed the H2 collector work                                                                                                                        |                           |                               |                 |
| 18:00 J. Owen ofsite                                                                                                                                                                     |                           |                               |                 |

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:  
JAO

Date: 7.14.09

Project Description: Gas Extraction Wells &amp; Pipeline

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE       | QUANTITY | HOURS OPERATION |
|--------------|------------|----------|-----------------|
| Dump Truck   | JCB 718    | 2        |                 |
| Pickup Truck | Ford F-350 | 1        |                 |
| Trailer      |            | 1        |                 |
| Excavator    | Cat        | 1        |                 |
| Excavator    | Deere      | 1        |                 |
|              |            |          |                 |
|              |            |          |                 |
|              |            |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Denver    | 12           |
| Laborers          | 4 PPL     | 12           |

**COMMENTS:**

7:00 JO Onsite. AEG excavating lateral between EW-129 and EW-53R.

9:00 Liner Crew onsite. Begin extrusion welding support gussets onto 18x6x18 Tees with Branch saddles using gussets cut from a one inch thick HDPE sheet.

13:00 Liner crew completed four tees and mobed to HGC-11 repair site

14:00 AEGL completed lateral trench from EW-129 to EW-135. AEGL left ~100 feet untrenched for tie-in to 18 inch header

15:00 AEGL marked pipe to station 3+50. Caution tape placed ~2 feet above pipe and shot risers placed

15:30 Paul Roush (USEPA) onsite and had questions about wells installed close to the thermal event site.

17:00 AEGL continues hauling soil and backfilling excavation. The working face is moving to the area west of EW-58R.

We will have to hold off on trenching the lateral for EW-58R. AEG to begin trenching on the 18" header tomorrow.

18:00 AEGL continues backfilling. JAO offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.15.09

Project Description: Landfill Gas Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE       | QUANTITY | HOURS OPERATION |
|--------------|------------|----------|-----------------|
| Dump Truck   | JCB 718    | 2        |                 |
| Pickup Truck | Ford F-350 | 1        |                 |
| Trailer      |            | 1        |                 |
| Excavator    | Cat        | 1        |                 |
| Excavator    | Deere      | 1        |                 |
|              |            |          |                 |
|              |            |          |                 |
|              |            |          |                 |
|              |            |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 7            |
| Pipeline Operator | Denver    | 12           |
| Laborers          | 4 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. AEG excavating trench for the 18" header FLANGE TIE-IN POINT

10:00 T/C C. Jaquet. He requested that AEG order CMP for road crossings.

10:30 R. Kostelnick onsite. Discussed placement of CMP. It was decided that a 40 foot section of CMP will be installed on the EW-57R lateral and a 100 foot CMP section installed on the EW-52 lateral.

12:00 18 inch blind flange uncovered and moved into place with the excavator. Continue excavation for 18 inch header

14:00 AEG fusion welding 18 inch flange adaptor onto 18 inch header pipe.

16:00 AEG attached new 18 inch to tie-in point and left the PVC blind in place for air testing of system.

17:00 Shoot top of pipe grade place caution tape and shot risers.

18:00 Continue backfilling excavation

19:00 Offsite.

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

|                      |                                 |                     |               |
|----------------------|---------------------------------|---------------------|---------------|
| Project Location:    | Lorain II County Landfill       | CQA Monitor:<br>JAO | Date: 7.16.09 |
| Project Description: | Gas Extraction Wells & Pipeline |                     |               |
| Project Number:      | 137719                          |                     |               |

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental | 1        |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Denver    | 12           |
| Laborers          | 4 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. Water truck arrived last night as per site request.  
8:00 AEG continuing excavation between 18" tie-in and EW-135  
10:00 Continue above excavation. Trench depth ~10'.  
13:00 Fusion welding three branch saddle tees to 18" header. One each for EW-53R lateral, riser for EW-135 and the lateral for EW-58R.  
16:30 Hault excavation activities and place 18" pipe and fused tees into fusion machine for joining.  
17:00 Begin backfilling excavation and shooting top of pipe grade  
18:00 Continue backfilling excavation.  
18:30 Offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

|                      |                                 |                     |               |
|----------------------|---------------------------------|---------------------|---------------|
| Project Location:    | Lorain II County Landfill       | CQA Monitor:<br>JAO | Date: 7.17.09 |
| Project Description: | Gas Extraction Wells & Pipeline |                     |               |
| Project Number:      | 137719                          |                     |               |

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 7            |
| Pipeline Operator | Denver    | 12           |
| Laborers          | 4 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. AEG continue trench work on 18" header north of EW-135.

8:00 T/C Shawn(EDI). Asked to have EW-42 and EW-43 wellheads placed online. The area has been isolated.

9:30 AEG placed EW-42 and EW-43 online. EDI was notified once tie-in was completed.

EDI provided AEG with a lantec wellhead for the remote wellhead TEW-8.

13:15 T-Storms halted work.

14:00 Rain has stopped. AEG shooting grade from station 2+50 to 3+50 on 18" header.

14:30 One excavator is backfilling while the other excavator is continuing trench work to EW-130.

14:45 T/C R. Kostelnick. Informed him that AEG does not have a 18" 90 degree fitting onsite.

AEG asked for approval o a field alteration. The alteration is to use a 18" Tee portside up for the blind flange.

and then reduce from 18" to 6" for lateral out to EW-57R. R. Kostelnick approved the alteration.

15:00 Danny (Republic) requested the flange be installed at 15' above surface instead of 10' above surface as specified.

16:30 Site approved digging until 17:00.

17:00 Complete trench work on 18" header to 5' north of EW-130. Offsite.

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.18.09

Project Description: EW-52 Road Crossing

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 6            |
| Pipeline Operator | Denver    | 6            |
| Laborers          | 4 PPL     | 6            |

**COMMENTS:**

7:30 Onsite. CMP onsite (delivered 7.16.09) for road crossings. 100' will be used for road crossing for EW-52 remote wellhead. CMP is Severstal 16 gauge galvanized 10" diameter.

AEG trenching road crossing. Cut will be at least 6' in depth.

8:00 Beneath ~4' of crushed material a filter fabric with geocomposite was encountered.

8:30 Additional onsite fabric was located and will be replaced during backfilling work.

8:45 Road crossing excavated to half way point to allow traffic to pass.

40' of CMP placed in trench and collars tightened down. AEG backfilling with clean soil to level of crushed rock. Fabric placed below crushed material and crushed material returned.

9:30 Begin excavating 2nd half of road crossing

11:00 Finish excavation on 2nd half of road crossing.

Install 60' of CMP and tighten down collars.

11:30 Backfill with clean onsite soil to level of crushed material. Return crushed material to road crossing.

12:30 Caution tape open excavation at CMP ends and mound soil around them.

13:00 AEG & JO Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.20.09

Project Description: Gas Extraction Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Denver    | 12           |
| Pipeline Operator | Bacon     | 12           |
| Laborers          | 3 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. AEG beginning excavation on lateral for EW-58R. Site working face moved to the east.

8:00 AEG Butt-fusion welding fittings for 15' blind flange and 18x6x18 tees for use at EW-130 and EW-52 remote wellhead.

| BROWN and CALDWELL                                                                                                                                                                                                                |                           | DAILY CONSTRUCTION LOG |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|-----------------|
| Project Location:                                                                                                                                                                                                                 | Lorain II County Landfill | CQA Monitor:           | Date: 7.21.09   |
| Project Description:                                                                                                                                                                                                              | Gas Extraction Pipeline   | JAO                    |                 |
| Project Number:                                                                                                                                                                                                                   | 137719                    |                        |                 |
| <b>EQUIPMENT</b>                                                                                                                                                                                                                  |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                       | TYPE                      | QUANTITY               | HOURS OPERATION |
| Dump Truck                                                                                                                                                                                                                        | JCB 718                   | 2                      |                 |
| Pickup Truck                                                                                                                                                                                                                      | Ford F-350                | 1                      |                 |
| Trailer                                                                                                                                                                                                                           |                           | 1                      |                 |
| Excavator                                                                                                                                                                                                                         | Cat                       | 1                      |                 |
| Excavator                                                                                                                                                                                                                         | Deere                     | 1                      |                 |
| Water Truck                                                                                                                                                                                                                       | Hertz Rental              |                        |                 |
|                                                                                                                                                                                                                                   |                           |                        |                 |
|                                                                                                                                                                                                                                   |                           |                        |                 |
| <b>MANPOWER</b>                                                                                                                                                                                                                   |                           |                        |                 |
| DESCRIPTION                                                                                                                                                                                                                       | NAME                      | HOURS ONSITE           |                 |
| Supervisor                                                                                                                                                                                                                        |                           |                        |                 |
| Pipeline Foreman                                                                                                                                                                                                                  | Bob Minor                 | 12                     |                 |
| Pipeline Operator                                                                                                                                                                                                                 | Denver                    | 12                     |                 |
| Pipeline Operator                                                                                                                                                                                                                 | Bacon                     | 12                     |                 |
| Laborers                                                                                                                                                                                                                          | 3 PPL                     | 12                     |                 |
| <b>COMMENTS:</b>                                                                                                                                                                                                                  |                           |                        |                 |
| 7:30 AEG beginning trench work for lateral for EW-57R with one excavator                                                                                                                                                          |                           |                        |                 |
| 8:00 AEG beginning trench work for lateral repair 65' SW of EW-141A                                                                                                                                                               |                           |                        |                 |
| Belly in lateral was located with a camera and is 100' from EW-141A                                                                                                                                                               |                           |                        |                 |
| 9:30 Entire lateral uncovered between EW-141A and EW-141. Entire lateral is on grade and EW-141A has good vacuum.                                                                                                                 |                           |                        |                 |
| T/C Elena Goodhall (BC). She is checking gas data and will call back. Halt activity until a response is given.                                                                                                                    |                           |                        |                 |
| 10:00 T/C Elena Goodhall. Belly is 100' downslope of EW-141.                                                                                                                                                                      |                           |                        |                 |
| 12:00 Per Chris Jaquet AEG is to backfill open excavation leaving liner repair areas open. The lateral line to be repaired is 3'8" below grade so should be on top of liner. AEG beginning excavation 85' downslope of EW-141.    |                           |                        |                 |
| 13:00 Lateral for EW-57R will not have required 2' of cover for ~ 100' from blindflange to toe of slope                                                                                                                           |                           |                        |                 |
| 13:15 T/C Danny (republic) said to mound up 2' of soil over pipe and leave survey risers in place. Site is placing more waste in this area in next few months. Markers & mounding will keep compactors from running over 6" line. |                           |                        |                 |
| 14:30 AEG uncovered the 15' belly downslope of EW-141. The lateral was installed over the berm to avoid damaging cap FML.                                                                                                         |                           |                        |                 |
| 15:00 AEG damaged active 6" lateral while uncovering berm area. EDI plant notified.                                                                                                                                               |                           |                        |                 |
| 15:30 John Mason (EDI) isolated area by closing 8" valve on west side.                                                                                                                                                            |                           |                        |                 |
| Bob Minor will be able to make repair by raising the 6" lateral. 9.87% grade on pipe until berm and 5% grade through berm is achievable but cover depth will be 1' and lateral will not be 3' below drainage ditch.               |                           |                        |                 |
| 15:45 C. Jaquet approved repair.                                                                                                                                                                                                  |                           |                        |                 |
| 16:30 Repair Complete. A total of 4 liner repairs will need to be made: 1. lower berm 2. upper berm 3. 150' from 141A 4. 65' from 141A.                                                                                           |                           |                        |                 |
| 17:00 Install 60' of CMP 10' from beginning of 6" lateral as per site request. Collars installed and tightened down.                                                                                                              |                           |                        |                 |
| 17:30 6" HDPE stringer snaked through CMP and butt welded to the 45 degree fitting.                                                                                                                                               |                           |                        |                 |
| 18:00 (2) excavators backfilling 70' section of lateral                                                                                                                                                                           |                           |                        |                 |
| T-storms & Heavy rain                                                                                                                                                                                                             |                           |                        |                 |
| 18:30 Finish backfilling as much as possible with weather                                                                                                                                                                         |                           |                        |                 |
| Offsite.                                                                                                                                                                                                                          |                           |                        |                 |



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.22.09

Project Description: Flare Pipeline

JAO

Project Number: 137719

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 6            |
| Pipeline Operator | Denver    | 6            |
| Pipeline Operator | Bacon     | 6            |
| Laborers          | 3 PPL     | 6            |

**COMMENTS:**

7:30 Onsite.

8:00 24" fusion machine and generator onsite.

8:30 Fusing 24" HDPE pipe. 500 degree F Iron @ 300PSI Fusion pressure

9:30 Begin excavating 24" blind flange on CS-18

10:00 Remove CS-18 encasement &amp; locate blind flange

10:30 Locate air and forcemain endcaps

11:00 Continue excavating around sump and towards blower

12:00 T-storms moving into area. Rain expected to continue throughout day.

12:30 Mound up soil around open excavation and clean up.

13:00 AEG &amp; JAO offsite due to rain.

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.22.09

Project Description: Flare Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor |              |
| Pipeline Operator | Denver    |              |
| Pipeline Operator | Bacon     |              |
| Laborers          | 3 PPL     |              |

**COMMENTS:**

7:30 JAO Onsite. Raining and expected to continue throughout day. AEG crew not onsite.

8:00 T/C Bob Minor. Crew may mobilize to site if rains stop. He will notify me if a crew will be onsite.

8:30 JAO offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.24.09

Project Description: Flare Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Denver    | 12           |
| Pipeline Operator | Bacon     | 12           |
| Laborers          | 3 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. AEG prepping to continue work on 24" between CS-18 and knockout tank on blower skid.

8:30 Progress meeting with C. Jaquet, B. Minor and self. Meeting Notes:

1. Remove both 24" valves from flare station west of CS-17. Install one on 24" on east slope prior to wye with 18" on NE corner. Install other valve east of HP on south slope. Take a third 24" valve from bone yard and install at other HP on south slope.

2. Repair leak at TEE on 24" close to EDI. Uncover to find leaking TEE. Probably will replace TEE.

3. Lorain I has 2 areas that need to be camera'd and then regraded. AEG can do the camera work. One from CS-7 to between control valves. & the other EW-6r along header to past EW-71.

4. Liner repairs for lateral repair @ EW-141 will take place Monday morning. Coordinate with AEG liner crew onsite.

10:30 AEG installing burners in flare, flame arrestor and flare doors and fusing segments of 24" and 18" pipe for flare

12:00 Offsite for lunch

13:00 AEG installing 24 x 16 segment to knockout tank on blower skid via 16" flange connection w/pvc bling in place for air test.

16:00 AEG installing 24" segment to CS-18 via 24" flange with pvc blind in place for air test.

16:30 T/C C. Jaquet. Install taps on blinds for 3rd blower and have them drain into blower/knockout tank drainage system.

18:00 Begin airtest for 24 to 16 inch run between knockout tank and CS-18. 10 PSI

19:00 Air test passed. Holding at 10 PSI

JO & AEG offsite

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

|                      |                                    |              |               |
|----------------------|------------------------------------|--------------|---------------|
| Project Location:    | Lorain II County Landfill          | CQA Monitor: | Date: 7.27.09 |
| Project Description: | Flare Installation & Liner Repairs | JAO          |               |
| Project Number:      | 137791                             |              |               |

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME           | HOURS ONSITE |
|-------------------|----------------|--------------|
| Liner Supervisor  | Jeremy Olivier | 3            |
| Pipeline Foreman  | Bob Minor      | 12           |
| Pipeline Operator | Ricky          | 12           |
| Pipeline Operator | Bacon          | 12           |
| Laborers          | 3 PPL          | 12           |
| Liner Crew        | 3 PPL          | 3            |

**COMMENTS:**

7:30 Onsite. AEG trenching drainage trench from new blower skid to CS-18  
8:30 Liner crew prepping for 5 patches between EW-141A and EW-141 lateral repair area  
9:30 Onsite 60mil smooth textured HDPE geotextile used for patches. Trial welds performed using the onsite material.  
(See liner repair log for details and test results)  
11:30 AEG liner crew completed liner repairs. Double sided onsite geotextile tucked beneath the damaged geotextile.  
Geocomposite overlapped by at least one inch and zip tied into place at 6" intervals.  
12:00 Offsite for lunch  
13:00 Kyle (Wellert Survey Co.) onsite. Wellert shot the following wells and laterals: TEW-8 to EW-126, TEW-5R, EW-7R, EW-118 to EW-128  
14:00 AEG continuing trench work on blower/ko tank drainage line.  
SS cable tubing attached to b. flanges on 3rd blower and tied into drainage via 1/4" valve  
2x4 dual contained drainage saddled onto CS-18 1' beneath 24" flange  
16:00 AEG installed flame arrestor on new flare and installed 16" HDPE line between flame arrestor and blower skid.  
Line installed using flange connections.  
17:00 (3) 2.5 foot segments of 16" HDPE placed beneath 16" HDPE line between flame arrestor and blower skid for pipe stands  
18:00 Backfill area beneath 16" HDPE leaving tops clear for concrete.  
18:30 Prep 2" primary drainage line for air test tomorrow.  
18:45 Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.28.09

Project Description: Flare Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Ricky     | 12           |
| Pipeline Operator | Bacon     | 12           |
| Laborers          | 3 PPL     | 12           |

**COMMENTS:**

7:30 Onsite. AEG prepping to raise EW-47 as per sites request. AEG also prepping for air test on 2" on 2x4 drainage line from blowers & KO tank.

11:00 AEG completed EW-47

12:30 TEW-8 remote wellhead attached. Blind flange installed at TEW-8.

2" air test performed 11:30 - 12:30. (10.5 PSI for 1 hour)

13:45 4" lateral TEW-8 abandoned by butt fusing end cap 2' below surface.

15:00 Blind flanges removed from CS-18 & KO tank following air test and flanges tightened down.

16:00 4" air test performed on 2x4 drainage line from blowers & KO tank 15:00-16:00 (12.3 PSI for 1 hour)

16:30 Following wellheads attached and left in the closed position: TEW-5,6 & 7, EW-126, EW-128.

18:00 2x4 drainage line installed to CS-18 via a 4' saddle 1' beneath the flange connection.

24 to 16 pipe trench backfilled.

18:30 Offsite.

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.29.09

Project Description: Flare Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
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|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Ricky     | 12           |
| Pipeline Operator | Bacon     | 12           |
| Laborers          | 3 PPL     | 12           |

**COMMENTS:**

7:30 JO onsite. T-storms forecasted.

8:30 T/C Shawn (EDI). He is isolating EW-147 &amp; EW-167 for wellhead attachment.

9:45 EW-147 &amp; EW-167 wellheads are on and in the off position. EDI notified.

10:30 Butchko Electric onsite. They need to run electrical conduit beneath the 24" line. AEG will need to uncover area 1' in front of panel on 24" line.

11:30 Offsite for lunch.

12:30 AEG trenching future conduit PVC electrical lines at existing flare panel.

AEG trenching on lateral on EW-57R

14:00 6 future conduit lines uncovered 2' south of existing panel running east @ center of existing 24". 0 future conduits run beneath existing 24" line.

18:00 Lateral installed for EW-57R. Shot risers &amp; caution tape in place. Lateral line backfilled. Areas w/o 2' cover require 2' mounding as per site request. Will do in AM.

19:00 JO &amp; AEG offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.30.09

Project Description: Flare &amp; Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |
|              |              |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Ricky     | 12           |
| Pipeline Operator | Bacon     | 12           |
| Laborers          | 3 PPL     | (2)12 (1)8   |

**COMMENTS:**

7:30 Onsite. AEG prepping equipment.

8:00 R. Kostelnick asked that ponding be addressed at the 18" future blind flange.

8:15 Met with crew-AEG will address ponding and continue mounding on lateral for EW-57R this morning.

11:00 Lateral EW-57R backfilling complete. 60' CMP road crossing risers marked with reflective tape. Ponding addressed.

11:30 Offsite for lunch.

12:30 Asked AEG to address liner repair holes. AEG moving an excavator to address liner repairs

13:30 Flanges with HDPE end caps fused to EW-130 and EW-52 lateral risers.

15:00 2 crew members offsite for repair at Arbor Hills

Other crew members continue dress up of 18" line &amp; prep for air test of 18" and laterals.

17:00 Begin air test on 18" header and laterals (11.2 PSI)

18:00 Air test passed (11.1 PSI)

AEG covering flagging at 18" blind flange tie-in point and hauling soil

18:30 AEG &amp; JO offsite.

| BROWN and CALDWELL   |                           | DAILY CONSTRUCTION LOG |               |
|----------------------|---------------------------|------------------------|---------------|
| Project Location:    | Lorain II County Landfill | CQA Monitor:           | Date: 7.30.09 |
| Project Description: | Flare & Pipeline          | JAO                    |               |
| Project Number:      | 137791                    |                        |               |

#### EQUIPMENT

| DESCRIPTION  | TYPE         | QUANTITY | HOURS OPERATION |
|--------------|--------------|----------|-----------------|
| Dump Truck   | JCB 718      | 2        |                 |
| Pickup Truck | Ford F-350   | 1        |                 |
| Trailer      |              | 1        |                 |
| Excavator    | Cat          | 1        |                 |
| Excavator    | Deere        | 1        |                 |
| Water Truck  | Hertz Rental |          |                 |
|              |              |          |                 |
|              |              |          |                 |

#### MANPOWER

| DESCRIPTION       | NAME      | HOURS ONSITE |
|-------------------|-----------|--------------|
| Supervisor        |           |              |
| Pipeline Foreman  | Bob Minor | 12           |
| Pipeline Operator | Bacon     | 12           |
| Pipeline Operator | Ricky     | 12           |
| Laborers          | 3 PPL     | 12           |

#### COMMENTS:

- 7:30 Onsite. Met with C. Jaquet. He approved the use of #4 stone on the base of the enclosed flare in place of pea gravel. Site would like EW-51R to EW-57R lateral abandoned at the riser at EW-57R instead of digging down to find lateral at EW-51R.
- 8:00 AEG excavating trench for EW-52 lateral. EDI has area isolated for abandonment at EW-57R.
- 9:15 Removed kanaflex at EW-51R lateral to measure depth. Lateral is 16'6" deep.
- 10:30 Lateral riser to be abandoned at EW-57R cut 2' beneath surface. HDPE endcap fused into place.
- 11:00 The valve lever on the wellhead at EW-57R was installed backwards. AEG flipped lever into correct position and left wellhead in closed position.
- 13:00 AEG welded a 6" DR11 90 fitting on to lateral for EW-52. 6" DR17 lateral pipe has been strung through CMP road xing. A endcap has been fused onto 6" lateral at EW-52 and a endcap has been fused at the remote wellhead.
- 14:45 Begin air test for EW-52 lateral (12.0PSI)
- 15:45 Air test passed (1 HR)
- 16:00 AEG welded a DR11 tee fitting onto EW-52 and welded airtested 6" lateral onto tee.
- 17:00 AEG shooting pipe grade, placing shot risers and backfilling excavation
- 19:00 Offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 7.30.09

Project Description: Flare &amp; Pipeline

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE       | QUANTITY | HOURS OPERATION |
|--------------|------------|----------|-----------------|
| Dump Truck   | JCB 718    | 2        |                 |
| Pickup Truck | Ford F-350 | 1        |                 |
| Trailer      |            | 1        |                 |
| Excavator    | Cat        | 1        |                 |
| Excavator    | Deere      | 1        |                 |
|              |            |          |                 |
|              |            |          |                 |
|              |            |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        |            |              |
| Pipeline Foreman  | Bob Minor  | 12           |
| Pipeline Operator | Tom Denver | 12           |
| Pipeline Operator | Ricky      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:30 Onsite. AEG prepping materials to raise EW-42 15' as per site request.

AEG excavating (2) 24" control valves in flare area for placement on 24" on south slope

8:30 Shawn (EDI) informed me that the valve for the 18" header has been closed & we can remove blind.

9:00 EW-42 has been raised. AEG moving over to EW-58R to lower well and attach wellhead.

10:00 EW-58R has great positive pressure and leachate spraying from wellhead. AEG will electrocouple flange & wellhead in order to make a fuse free of liquid.

11:30 6" Electrocouple fuse complete. Wellhead in place and in the off position. Offsite for lunch.

12:30 Excavation for 24" valves has liquid entering it from the direction of the 18" trench. Rich Heir notified to take a look at liquid. Rich asked that we pump liquid into leachate tank secondary containment to be safe.

14:00 AEG has removed blind flange on new 18" header and tightened down bolts. AEG backfilled excavation.

15:00 AEG mobed to site of tee repair on south slope 24" line. EDI notified to close valve in case of air influx once leak is uncovered. EDI informed that blind flange has been removed.

16:00 Leak at electrocoupler for 24x6x24 tee for EW-96 lateral verified. Bob Minor to order a 24x6x24 tee with 5' pups for repair. New tee will be installed with electrocouplers.

17:00 AEG & BC to Lorain I to look at repair areas.

17:30 Excavation for 24" valves continues to have liquid entering excavation. AEG working to uncover valves for removal. JO offsite to copy Lorain I gate key.

| BROWN and CALDWELL   |                           | DAILY CONSTRUCTION LOG |              |
|----------------------|---------------------------|------------------------|--------------|
| Project Location:    | Lorain II County Landfill | CQA Monitor:           | Date: 8.4.09 |
| Project Description: | Lorain I Regrading        | JAO                    |              |
| Project Number:      | 137791                    |                        |              |

| EQUIPMENT    |            |          |                 |
|--------------|------------|----------|-----------------|
| DESCRIPTION  | TYPE       | QUANTITY | HOURS OPERATION |
| Dump Truck   | JCB 718    | 2        |                 |
| Pickup Truck | Ford F-350 | 1        |                 |
| Trailer      |            | 1        |                 |
| Excavator    | Cat        | 1        |                 |
| Excavator    | Deere      | 1        |                 |
|              |            |          |                 |
|              |            |          |                 |
|              |            |          |                 |

| MANPOWER          |            |              |
|-------------------|------------|--------------|
| DESCRIPTION       | NAME       | HOURS ONSITE |
| Supervisor        |            |              |
| Pipeline Foreman  |            |              |
| Pipeline Operator | Tom Denver | 12           |
| Pipeline Operator | Ricky      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:30 Onsite. Opened gate at Lorain I. AEG opening up area between control valves to camera 12" lateral running to blower housing. 2 member of crew spreading #4 stone beneath burners inside enclosed flare..

8:00 Offsite to hardware store. Made 2 copies of Lorain I gate key and returned borrowed key to EDI.  
T/C Bob Minor. He is on rotation remainder of week and available via telephone. Tom Denver is onsite lead.  
Bob Minor also stated that Hertz water truck will be picked up and is no longer charging time.

10:30 AEG uncovered 12x12x12 Tee and will tap into it for camera feed. AEG beginning excavation at lateral for EW-66R.

11:30 Offsite for lunch

12:30 Onsite. AEG camera crew (2) onsite. 12x12x12 tee excavation filled in with water. AEG diverting water to expose tee.

13:00 Tee exposed and tapped into. AEG inserted See Snake camera into tapped hole and ran it south toward the blower.  
Between 25' and 73' water was encountered in header pipe. AEG plugged tap hole with an expansion fitting.

14:00 AEG has 50' of header line exposed between 64R and 67R. Sags are visible on line between 66R and 64R.  
Camera inserted in tap hole on 66R lateral tee and ran it north toward 67. Between 50' and 150' water was encountered.

14:30 T/C Chris Jaquet. From camera findings it appears the entire section (1000') of 8" header requires regrading.  
Chris working with AEG on a contract for the work.

15:00 AEG camera crew offsite.

15:30 Tom Denver and I looked at tee removal at EDI plant. Will need a 16" PVC blind. AEG does not have one onsite. Will add to order.

16:00 AEG uncovering lateral to blower for regrading. Will need to take down fence. I cleared with C. Jaquet.

16:30 4" line to CS-7 encountered one foot above 12" header. Line hit and slightly bent. AEG will need to replace damaged section and put back on grade.  
~10 feet north of fence line electrical conduit runs ~1 foot above 12" header east-west. Conduit encased in fabric and pea gravel. May need to lift this conduit in order to regrade 12" header line.

17:00 1/2" electrical conduit encountered 6" below surface running from blower panel to CS-7. PVC conduit was bent and will be repaired.

17:30 A 2" HDPE line was hit running over 12" header ~2' south of fence line. Line leaking fluid. Line appears to be old drainage associated with a decommissioned system. AEG repaired line with butt fusion weld. C. Jaquet notified.

18:00 Exposed trash covered on excavation side walls. Pooling in trench will be pumped to leachate collection sump in AM

18:30 JO & AEG offsite.



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.5.09

Project Description: Lorain I Regrading

JAO

Project Number: 137791

**EQUIPMENT**

| DESCRIPTION  | TYPE       | QUANTITY | HOURS OPERATION |
|--------------|------------|----------|-----------------|
| Dump Truck   | JCB 718    | 2        |                 |
| Pickup Truck | Ford F-350 | 1        |                 |
| Trailer      |            | 1        |                 |
| Excavator    | Cat        | 1        |                 |
| Excavator    | Deere      | 1        |                 |
|              |            |          |                 |
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|              |            |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        |            |              |
| Pipeline Foreman  |            |              |
| Pipeline Operator | Tom Denver | 12           |
| Pipeline Operator | Ricky      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:30 Onsite. AEG pumping water in 12x12x12 tee excavation to leachate collection sump and uncovering 12" header pipe  
7:45 T/C Chris Jaquet. Let him know 2" line damaged yesterday was repaired. AEG is to repair 4-inch line  
(flare will need to shut down for this work) and move electrical conduit as needed for regrading of 12" header.  
9:00 AEG shot grade on 60 foot of exposed 12" header. Grade is 2.9%. Water still an issue in excavation. Tom Denver  
offsite to rent a larger pump.  
10:00 T/C C. Jaquet. Water still entering excavation and we are filling leachate collection vault. Said to bring in pea gravel  
to bed pipe beneath sagging areas.  
11:00 AEG pumping excavaion with larger pump and beginning regrading work on northeast slope.  
11:30 Offsite for lunch  
12:30 Onsite. Met with Kyle (Wellert) to survey remaining point within limits of waste. Wellert will need to return to shoot flare  
and 24" isolation valves once construction is completed.  
14:00 AEG continuing regrading work on NE slope.  
15:00 AEG ordered one load of pea gravel from JMW (Canton) and it will be delivered tomorrow morning.  
16:00 AEG has regrading 300 feet of the the 8" header on the NE slope. AEG backfilled 18" blind flange  
tie-in after Wellert shot top of flange.  
17:00 AEG backfilling excavation on NE slope and cleaning up.  
17:30 JO offsite.

| <b>BROWN and CALDWELL</b> |                           | <b>DAILY CONSTRUCTION LOG</b> |               |
|---------------------------|---------------------------|-------------------------------|---------------|
| Project Location:         | Lorain II County Landfill | CQA Monitor:                  | Date: 8.10.09 |
| Project Description:      | Gas Extraction Pipeline   | PKS                           |               |
| Project Number:           | 137719.001                |                               |               |

#### **EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

#### **MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

#### **COMMENTS:**

6:50 Onsite. AEG working on dual contained drain pipe at flares and preparing to remove 24" valves  
8:00 EDI shuts down the flare  
10:10 AEG begins air test on all dual contained drain pipe around the flare and blower units (14psi for 1hr)  
11:10 Air test passes (14psi for 1hr)  
11:50 AEG working to remove three 24" valves from the flare area  
15:30 AEG removed two of the three 24" valves and replaced with a section of pipe for one valve and blind flange plate for another.  
16:30 AEG finished with the valve removal and EDI restarts the flare  
17:35 Complete for the day - Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.11.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:00 Onsite. AEG backfilling excavation of 24" valve removal.

8:10 AEG moves to the southwest side near the power plant to remove and replace a faulty leaking tee

9:40 The faulty tee removed and a new factory built replacement is installed with electro-couplers

10:45 AEG begins to electro-fuse the couplers - ~4hr burn time for the two

11:35 Spoke w/ Chris Jaquet about the location of the 24" valves on the south side - valves can go to the east of the CS

12:20 AEG excavating and exposing the 24" header east of the high point and EW-14 to install 24" valve

17:00 AEG working to assemble the 24" valves for installation on the south slope and the northeast slope

17:45 Electro-fusing complete - took longer than expected due to the control box needing to cool down between burns

18:20 Work complete - Offsite

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.12.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:15 Onsite. AEG preparing for 24" valve installation on the south slope east of the high point and EW-14

- Called EDI to have the Gas shut down

8:15 EDI called and the gas is off - AEG begin work to install valve

9:20 Valve installed and putting on electro-couplers

9:40 AEG excavating the second valve location east of high point and EW-24

10:00 AEG fusing the first valve assemble

11:40 Second valve in place and in the process of fusing the first valve

13:00 AEG excavating the third valve location on the NE side and preparing for valve assembly install

14:05 Third valve installed and awaiting fusing of electro-couplers - AEG continues to fuse the first valve assembly

15:00 AEG continues to work at fusing the couplers on the first valve - not sealing completely - re-burning

16:00 Third valve installed and awaiting fusing of electro-couplers

17:00 AEG completing valve installs and clean up

18:00 Off-site



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.13.09

Project Description: Gas Extraction Pipeline

EGM

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:00 Onsite. AEG organizing and prepping

7:30 EDI shuts down flare

8:00 AEG prepping to fuse 24" couplers on the northeast side

- AEG finishing fusing 24" couplers on the south side

- Two fusing machines being used - one to warm up and one to complete the weld

10:00 AEG installs gate valve stem and wheel on 24" header near the northeast corner

11:00 AEG working to seal a leak in one of the new 24" couplers until the fusion is complete - leak cause a small flash fire

12:00 AEG will replace the faulty coupler and not try to patch the leak on the coupler

14:30 AEG prepping to weld coupling - new weld does not work - cut out pipe and install two couplings and 24" sleeve

16:45 AEG starting to fuse the 2 couplers east of the valve - Issue with the flare propane tank - AmeriGas will not fill due to bad fittings

18:30 AEG completes the welds on the new couplers - AEG called EDI about shutting down the flare - left message

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.14.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:15 Onsite. AEG organizing and beginning to backfill excavation of 24" valves

8:30 AEG backfilling and working on installing air lines at the flare pad

10:00 AEG working on grading and backfilling all open valve excavations and installing airlines on the blower unit

12:15 AEG continues work on airlines - rep from AmeriGas on site to fix the propane tank

- AEG moving all extra and leftover parts to the boneyard from around the flare area

14:40 AEG hauling dirt to low spots and continue to haul extra materials to the boneyard

15:25 AmeriGas complete and offsite

16:00 AEG continues to haul parts to the boneyard and fuse 4" and 8" extensions for the site

17:00 Work complet for the day - offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.15.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:00 Onsite. AEG organizing and setting up

8:00 AEG fusing 4" and 8" pipe sections for the site, grading various excavations around the site  
- and installing pipe stands at the 2nd flare

10:25 Air test propane line going from the blower unit to the 2nd flare - 28psi for 1hr

AEG continues to clean up and re-grade and are installing the flare valve actuator

11:25 Air test passed - 1hr @ 29psi - AEG complete with pipe stands - will allow concrete to set

12:10 AEG complete with flare valve install - restarts the flare (down since Friday)

12:30 Offsite

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain I County Landfill

CQA Monitor:  
PKS

Date: 8.17.09

Project Description: Gas Extraction Pipeline Re-Grade

Project Number: 137719.004

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 10           |
| Pipeline Foreman  | Tom Denver | 10           |
| Pipeline Operator | Bacon      | 10           |
| Laborers          | 3 PPL      | 10           |

**COMMENTS:**

7:10 Onsite. AEG setting up at Lorain I for re-grading of 8" header line running along the east slope

9:30 AEG in the process of excavating the 8" header working towards the north

10:15 150ft of pipe exposed and AEG checking the grade and moving the excavation to CS-1 to expose the sump/header tee-in  
- low area found mid way

13:15 AEG fixing the low area by lifting the 8" header with a strap and packing soil underneath it to build it back up to grade

13:50 Correction to 8" header made - AEG re-surveying - grade of header restored to approximately 3%

14:25 Survey complete - AEG backfilling open trench section and continue the excavation at CS-1

15:55 Excavation at CS-1 stopped and tarped to keep overnight rain out - excavation of the 8" header continues

17:00 Work complete - Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain I County Landfill

CQA Monitor:

Date: 8.18.09

Project Description: Gas Extraction Pipeline Re-Grade

PKS

Project Number: 137719.004

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 10           |
| Pipeline Foreman  | Tom Denver | 10           |
| Pipeline Operator | Bacon      | 10           |
| Laborers          | 3 PPL      | 10           |

**COMMENTS:**

7:05 Onsite. AEG organizing for the day  
7:45 AEG @ Lorain I to begin excavation  
8:55 Excavating the 8" header towards the CS-1  
9:15 Shawn and Virgil (EDI) stop to check on progress  
10:15 AEG continues trenching towards CS-1  
11:55 AEG continues trenching towards CS-1  
13:50 Excavating the 8" header towards the CS-1  
15:00 Excavation stops 20ft from CS-1 - 8" header is >3% from this point to the CS-1  
- Sag found in the header pipe in the area where the header pipe pass next to CS-9  
- AEG brought the pipe back to grade by packing dirt under the header pipe  
15:40 AEG begins to backfill all open trench  
17:00 Work complete for the day - Offsite

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:  
PKS

Date: 8.19.09

Project Description: Gas Extraction Pipeline

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:05 Onsite. AEG organizing for the day

7:45 One AEG operator at Lorain I regrading the cover, AEG excavating the leaking 24" to 6" branch and saddle tee

8:50 AEG working to set the electro-coupler in place of the leaking branch and saddle weld

9:10 AEG begin electro fusing the branch and saddle in place and fitting 6" couplers to reconnect the lateral

10:15 All electro fusing complete - backfilling excavation

13:15 AEG at manhole on the west side to prep for 48" riser

16:00 AEG excavating around the base of the manhole to expose all incoming pipe work

17:00 Work complete for the day - Offsite



**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:

Date: 8.20.09

Project Description: Gas Extraction Pipeline

PKS

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 12           |
| Pipeline Foreman  | Tom Denver | 12           |
| Pipeline Operator | Bacon      | 12           |
| Laborers          | 3 PPL      | 12           |

**COMMENTS:**

7:10 Onsite - AEG organizing for the day

7:35 AEG prepping to continue work on the manhole on the Westside

8:00 Meet with Chris Jaquet (Republic) and Bob Minor (AEG) for a final walk through meeting

9:30 Walk through complete

- During the walk through AEG removed a tee from the power plant and installed to block off plates

- AEG continues to work on the manhole

10:00 AEG cut off existing 3X6 dual contained to install a step down fitting to 2X4 which will tie into the new fittings on the manhole riser

10:55 AEG capped off abandoned section 3X6

11:30 AEG installed 2X4 to 3X6 reducer

13:35 Manhole riser moved into place - silicone was used to seal the manhole riser to the existing structure

- 8 holes drilled into the existing concrete manhole structure to anchor the riser in place

14:30 All pipe work complete to the manhole - backing filling all excavation work

15:45 AEG at flare area wrapping up pipe stands and remaining cleanup work

17:00 Work complete - Offsite

**BROWN and CALDWELL****DAILY CONSTRUCTION  
LOG**

Project Location: Lorain II County Landfill

CQA Monitor:  
PKS

Date: 8.21.09

Project Description: Gas Extraction Pipeline

Project Number: 137719.001

**EQUIPMENT**

| DESCRIPTION  | TYPE               | QUANTITY | HOURS OPERATION |
|--------------|--------------------|----------|-----------------|
| Dump Truck   | JCB 722            | 1        |                 |
| Dump Truck   | CAT 725            | 1        |                 |
| Pickup Truck | Ford F-550         | 1        |                 |
| Trailer      |                    | 1        |                 |
| Excavator    | Cat 320C           | 1        |                 |
| Excavator    | John Deere 200C LC | 1        |                 |
|              |                    |          |                 |
|              |                    |          |                 |
|              |                    |          |                 |

**MANPOWER**

| DESCRIPTION       | NAME       | HOURS ONSITE |
|-------------------|------------|--------------|
| Supervisor        | Bob Minor  | 3            |
| Pipeline Foreman  | Tom Denver | 3            |
| Pipeline Operator | Bacon      | 3            |
| Laborers          | 3 PPL      | 2            |

**COMMENTS:**

7:20 Onsite. AEG wrapping up - Regrading around flare area and picking up trash  
7:50 Truck onsite to pick up electro couplers and factory wyes to be returned to ISCO  
8:00 AEG liner crew patching holes on manhole riser  
8:50 All parts loaded - AEG taking all remaining items to the boneyard and organizing  
9:45 All work complete - AEG packing up  
10:20 AEG and PKS offsite

**American Environmental Group, Ltd**



## DAILY DIARY

DATE: 6/19/2009

|              |            |
|--------------|------------|
| PROJECT NAME | Larain     |
| PROJECT#     | 101-09-117 |

| DRILLING                   |                                     | CONSTRUCTION       |                    |
|----------------------------|-------------------------------------|--------------------|--------------------|
| 0' _____                   | LINEAR FEET OF DRILLING             | HEADER # _____     | PIPE DIA. _____    |
| 0' _____                   | LINEAR FEET OF DRILLING-ABANDONMENT | STATION _____      | LINEAR FT. _____   |
| 0' _____                   | LINEAR FEET OF WELL COMPLETION      | STATION _____      | TRENCH DEPTH _____ |
| 0' _____                   | PERFORATED PIPE-DIA.                | HEADER # _____     | PIPE DIA. _____    |
| 0' _____                   | SOLID PIPE -DIA.                    | STATION _____      | LINEAR FT. _____   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION _____      | TRENCH DEPTH _____ |
|                            |                                     | SUBHEADER # _____  | PIPE DIA. _____    |
|                            |                                     | STATION # _____    | LINEAR FT. _____   |
|                            |                                     | LATERAL: # _____   | TRENCH DEPTH _____ |
|                            |                                     | STATION _____      | PIPE DIA. _____    |
|                            |                                     | RISER HEIGHT _____ | LINEAR FT. _____   |
|                            |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____ |
| <b>GENERAL INFORMATION</b> |                                     | LATERAL: # _____   | PIPE DIA. _____    |
| WEATHER CONDITIONS         |                                     | STATION _____      | LINEAR FT. _____   |
|                            |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____ |
|                            |                                     | LATERAL: # _____   | PIPE DIA. _____    |
|                            |                                     | STATION _____      | LINEAR FT. _____   |
|                            |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____ |
| START TIME _____ 7:00 A.M. |                                     | SUMPS _____        | VALVES _____       |
| STOP TIME _____ 5:00 P.M.  |                                     |                    |                    |

**COMMENTS:**

Arrived on site unloaded material pipeline and drilling rigged mobed in off site.

Jessica Owen  
CLIENT REPRESENTATIVE  
DATE 6-29-09  
NAME & TITLE Jessica Owen, CPA monitor, BC

|                      |           |
|----------------------|-----------|
| Dokk                 | 6/19/2009 |
| AEGL SITE SUPERVISOR | DATE      |



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/22/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                               |  | CONSTRUCTION       |                    |
|----------------------------------------|--|--------------------|--------------------|
| 80' LINEAR FEET OF DRILLING            |  | HEADER # _____     | PIPE DIA. _____    |
| 0' LINEAR FEET OF DRILLING-ABANDONMENT |  | STATION _____      | LINEAR FT. _____   |
| 0' LINEAR FEET OF WELL COMPLETION      |  |                    | TRENCH DEPTH _____ |
| 0' PERFORATED PIPE-DIA.                |  | HEADER # _____     | PIPE DIA. _____    |
| 0' SOLID PIPE -DIA.                    |  | STATION _____      | LINEAR FT. _____   |
| COMPLETION: (WELL NUMBERS)             |  |                    | TRENCH DEPTH _____ |
|                                        |  | SUBHEADER # _____  | PIPE DIA. _____    |
|                                        |  | STATION # _____    | LINEAR FT. _____   |
|                                        |  |                    | TRENCH DEPTH _____ |
|                                        |  | LATERAL: # _____   | PIPE DIA. _____    |
|                                        |  | STATION _____      | LINEAR FT. _____   |
|                                        |  | RISER HEIGHT _____ | TRENCH DEPTH _____ |
|                                        |  | LATERAL: # _____   | PIPE DIA. _____    |
|                                        |  | STATION _____      | LINEAR FT. _____   |
|                                        |  | RISER HEIGHT _____ | TRENCH DEPTH _____ |
|                                        |  | LATERAL: # _____   | PIPE DIA. _____    |
|                                        |  | STATION _____      | LINEAR FT. _____   |
|                                        |  | RISER HEIGHT _____ | TRENCH DEPTH _____ |
|                                        |  | SUMPS _____        | VALVES _____       |
| GENERAL INFORMATION                    |  |                    |                    |
| WEATHER CONDITIONS                     |  |                    |                    |
| START TIME 7:00 A.M.                   |  |                    |                    |
| STOP TIME 5:00 P.M.                    |  |                    |                    |

### COMMENTS:

Arrived on site made up wells got rig ready to drill riged up on TEW 7R drilled 0' to 80' sealed well cleaned up off site.

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, QA monitor, BC  
NAME & TITLE

Dokk 6/22/2009  
AEGL SITE SUPERVISOR DATE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/23/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION       |                    |
|----------------------------|-------------------------------------|--------------------|--------------------|
| 123'                       | LINEAR FEET OF DRILLING             | HEADER # _____     | PIPE DIA. _____    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION _____      | LINEAR FT. _____   |
| 208'                       | LINEAR FEET OF WELL COMPLETION      | STATION _____      | TRENCH DEPTH _____ |
| 166'                       | PERFORATED PIPE-DIA.                | HEADER # _____     | PIPE DIA. _____    |
| 48'                        | SOLID PIPE -DIA.                    | STATION _____      | LINEAR FT. _____   |
|                            |                                     | STATION _____      | TRENCH DEPTH _____ |
| COMPLETION: (WELL NUMBERS) |                                     | SUBHEADER # _____  | PIPE DIA. _____    |
| TEW 6R TD 102'             |                                     | STATION # _____    | LINEAR FT. _____   |
| TEW 7R TD 106'             |                                     | STATION # _____    | TRENCH DEPTH _____ |
|                            |                                     | LATERAL: # _____   | PIPE DIA. _____    |
|                            |                                     | STATION _____      | LINEAR FT. _____   |
|                            |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____ |
|                            |                                     | 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 drilled 80' to 106' TD on TEW 7R set and completed to surface moved rig to TEW 6 drilled 0' to 102' TD set and completed to surface cleaned up off site.

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, COA monitor, BC  
NAME & TITLE

Dokk 6/23/2009  
AEGLE SITE SUPERVISOR DATE





American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/24/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 180'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 117'                       | LINEAR FEET OF WELL COMPLETION      | STATION      | TRENCH DEPTH |
| 96'                        | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION      | TRENCH DEPTH |
| EW 126 TD 117'             |                                     | SUBHEADER #  | PIPE DIA.    |
|                            |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| GENERAL INFORMATION        |                                     | LATERAL: #   | TRENCH DEPTH |
| WEATHER CONDITIONS         |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| START TIME 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 117' TD on EW 126 set and completed to surface moved rig to TEW 5R drilled 0' to 63' sealed well cleaned up off site.

Jessica Owen 6-24-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, COA monitor, BC  
NAME & TITLE

Dokk 6/24/2009  
AEGLE SITE SUPERVISOR DATE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/25/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 131'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 101'                       | LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH |              |
| 80'                        | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
|                            |                                     | TRENCH DEPTH |              |
| COMPLETION: (WELL NUMBERS) |                                     | SUBHEADER #  | PIPE DIA.    |
| TEW 5R TD 101'             |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | TRENCH DEPTH |              |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | 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 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 63' to 101' TD on TEW 5R set and completed to surface moved rig to EW 135 drilled 0' to 93'  
sealed well cleaned up off site.

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE

Dokk 6/25/2009  
AEGL SITE SUPERVISOR DATE

Jessica Owen, COA monitor, DC  
NAME & TITLE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/26/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                               |  | CONSTRUCTION |              |
|----------------------------------------|--|--------------|--------------|
| 35' LINEAR FEET OF DRILLING            |  | HEADER #     | PIPE DIA.    |
| 0' LINEAR FEET OF DRILLING-ABANDONMENT |  |              | LINEAR FT.   |
| 128' LINEAR FEET OF WELL COMPLETION    |  | STATION      | TRENCH DEPTH |
| 107' PERFORATED PIPE-DIA.              |  | HEADER #     | PIPE DIA.    |
| 24' SOLID PIPE -DIA.                   |  |              | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS)             |  | STATION      | TRENCH DEPTH |
| EW 128 TD 128'                         |  | SUBHEADER #  | PIPE DIA.    |
|                                        |  |              | LINEAR FT.   |
|                                        |  | STATION #    | TRENCH DEPTH |
|                                        |  | LATERAL: #   | PIPE DIA.    |
|                                        |  | STATION      | LINEAR FT.   |
|                                        |  | RISER HEIGHT | TRENCH DEPTH |
|                                        |  | LATERAL: #   | PIPE DIA.    |
|                                        |  | STATION      | LINEAR FT.   |
|                                        |  | RISER HEIGHT | TRENCH DEPTH |
|                                        |  | LATERAL: #   | PIPE DIA.    |
|                                        |  | STATION      | LINEAR FT.   |
|                                        |  | RISER HEIGHT | TRENCH DEPTH |
|                                        |  | SUMPS        | VALVES       |
| GENERAL INFORMATION                    |  |              |              |
| WEATHER CONDITIONS                     |  |              |              |
| START TIME 7:00 A.M.                   |  |              |              |
| STOP TIME 5:00 P.M.                    |  |              |              |

### COMMENTS:

Arrived on site drilled 93' to 128' TD on EW 135 set and completed to surface moved rig to EW 53R

cleaned up off site.

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CAA monitor, BC  
NAME & TITLE

Dokk 6/26/2009  
AEGLE SITE SUPERVISOR DATE





American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 6/29/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 108'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 108'                       | LINEAR FEET OF WELL COMPLETION      | STATION      | TRENCH DEPTH |
| 87'                        | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION      | TRENCH DEPTH |
| EW 53R TD 108'             |                                     | SUBHEADER #  | PIPE DIA.    |
|                            |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| GENERAL INFORMATION        |                                     | LATERAL: #   | TRENCH DEPTH |
| WEATHER CONDITIONS         |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| START TIME 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 108' TD on EW 53R set and completed to surface moved rig to EW 129

cleaned up off site.

Jessica Dwan 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Dwan, COA monitor, BC  
NAME & TITLE

Dokk 6/29/2009  
AEGLE SITE SUPERVISOR DATE



## DAILY DIARY

**DATE:** 6/30/2009

**PROJECT NAME**

Larain

PROJECT#

101-09-117

| DRILLING                          |                                     | CONSTRUCTION       |                                     |
|-----------------------------------|-------------------------------------|--------------------|-------------------------------------|
| <b>130'</b>                       | LINEAR FEET OF DRILLING             | HEADER # _____     | PIPE DIA. _____<br>LINEAR FT. _____ |
| <b>0'</b>                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION _____      | TRENCH DEPTH _____                  |
| <b>130'</b>                       | LINEAR FEET OF WELL COMPLETION      | HEADER # _____     | PIPE DIA. _____<br>LINEAR FT. _____ |
| <b>109'</b>                       | PERFORATED PIPE-DIA.                | STATION _____      | TRENCH DEPTH _____                  |
| <b>24'</b>                        | SOLID PIPE -DIA.                    | SUBHEADER # _____  | PIPE DIA. _____<br>LINEAR FT. _____ |
| <b>COMPLETION:</b> (WELL NUMBERS) |                                     | STATION # _____    | TRENCH DEPTH _____                  |
| EW 129 TD 130'                    |                                     | LATERAL: # _____   | PIPE DIA. _____<br>LINEAR FT. _____ |
|                                   |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____                  |
|                                   |                                     | LATERAL: # _____   | PIPE DIA. _____<br>LINEAR FT. _____ |
|                                   |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____                  |
| <b>GENERAL INFORMATION</b>        |                                     | LATERAL: # _____   | PIPE DIA. _____<br>LINEAR FT. _____ |
| WEATHER CONDITIONS                |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____                  |
|                                   |                                     | LATERAL: # _____   | PIPE DIA. _____<br>LINEAR FT. _____ |
|                                   |                                     | RISER HEIGHT _____ | TRENCH DEPTH _____                  |
| START TIME _____ 7:00 A.M.        |                                     | SUMPS _____        | VALVES _____                        |
| STOP TIME _____ 5:00 P.M.         |                                     |                    |                                     |

**COMMENTS:**

Arrived on site drilled 0' to 130' TD on EW 129 set and completed to surface moved rig to EW 128

cleaned up off site.

Jessica Or  
CLIENT REPR

CLIENT REPRESENTATIVE

7-6-09  
DATE

## Dokk

**AEGL SITE SUPERVISOR**

6/30/2009

DATE \_\_\_\_\_

Jessica Owen, CoA monitor, BC  
NAME & TITLE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 7/1/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 116'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 116'                       | LINEAR FEET OF WELL COMPLETION      | STATION      | TRENCH DEPTH |
| 95'                        | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION      | TRENCH DEPTH |
| EW 128 TD 116'             |                                     | SUBHEADER #  | PIPE DIA.    |
|                            |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | STATION      | TRENCH DEPTH |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | 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 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 116' TD on EW 128 set and completed to surface moved rig to EW 147

cleaned up off site.

Jessica Owen  
CLIENT REPRESENTATIVE  
NAME & TITLE  
7-6-09  
DATE

Dokk  
AEGLE SITE SUPERVISOR  
7/1/2009  
DATE





American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 7/2/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 109'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 109'                       | LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH |              |
| 88'                        | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
|                            |                                     | TRENCH DEPTH |              |
| COMPLETION: (WELL NUMBERS) |                                     | SUBHEADER #  | PIPE DIA.    |
| EW 147 TD 109'             |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | TRENCH DEPTH |              |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | 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 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 109' TD on EW 147 set and completed to surface moved rig to EW 167

cleaned up off site.

Jessica Owen  
CLIENT REPRESENTATIVE  
NAME & TITLE  
7-6-09  
DATE

Dokk  
AEGL SITE SUPERVISOR  
7/2/2009  
DATE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 7/3/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                                | CONSTRUCTION                          |
|-----------------------------------------|---------------------------------------|
| 103' 95' LINEAR FEET OF DRILLING        | HEADER # _____ PIPE DIA. _____        |
| 0' LINEAR FEET OF DRILLING-ABANDONMENT  | STATION _____ LINEAR FT. _____        |
| 103' 95' LINEAR FEET OF WELL COMPLETION | TRENCH DEPTH _____                    |
| 28' 74' PERFORATED PIPE-DIA.            | HEADER # _____ PIPE DIA. _____        |
| 24' SOLID PIPE -DIA.                    | STATION _____ LINEAR FT. _____        |
| COMPLETION: (WELL NUMBERS)              | TRENCH DEPTH _____                    |
| EW 167 TD 95'                           | SUBHEADER # _____ PIPE DIA. _____     |
|                                         | STATION # _____ LINEAR FT. _____      |
|                                         | TRENCH DEPTH _____                    |
|                                         | LATERAL: # _____ PIPE DIA. _____      |
|                                         | STATION _____ LINEAR FT. _____        |
|                                         | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                         | LATERAL: # _____ PIPE DIA. _____      |
|                                         | STATION _____ LINEAR FT. _____        |
|                                         | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                         | LATERAL: # _____ PIPE DIA. _____      |
|                                         | STATION _____ LINEAR FT. _____        |
|                                         | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                         | SUMPS _____ VALVES _____              |
| GENERAL INFORMATION                     |                                       |
| WEATHER CONDITIONS                      |                                       |
| START TIME 7:00 A.M.                    |                                       |
| STOP TIME 5:00 P.M.                     |                                       |

### COMMENTS:

Arrived on site drilled 0' to 95' TD on EW 167 set and completed to surface moved rig to EW 58R

cleaned up off site.

Jessica Owen  
CLIENT REPRESENTATIVE 7-6-09  
DATE  
Jessica Owen, co-monitor, BC  
NAME & TITLE

Dokk 7/3/2009  
AEGLE SITE SUPERVISOR DATE



American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 7/6/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 122'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 122'                       | LINEAR FEET OF WELL COMPLETION      | STATION      | TRENCH DEPTH |
| 101'                       | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION      | TRENCH DEPTH |
| EW 58R TD 122'             |                                     | SUBHEADER #  | PIPE DIA.    |
|                            |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| GENERAL INFORMATION        |                                     | LATERAL: #   | TRENCH DEPTH |
| WEATHER CONDITIONS         |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
|                            |                                     | LATERAL: #   | TRENCH DEPTH |
|                            |                                     | STATION      | PIPE DIA.    |
|                            |                                     | RISER HEIGHT | LINEAR FT.   |
| START TIME 7:00 A.M.       |                                     | SUMPS        | VALVES       |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 122' TD on EW 58R set and completed to surface moved rig to EW Ew 130 also 1hr  
benching cleaned up off site.

Jessica Owen 7-8-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, can monitor, BC  
NAME & TITLE

Dokk 7/6/2009  
AEGL SITE SUPERVISOR DATE





American  
Environmental  
Group Ltd.

## DAILY DIARY

DATE: 7/7/2009

PROJECT NAME Larain  
PROJECT# 101-09-117

| DRILLING                   |                                     | CONSTRUCTION |              |
|----------------------------|-------------------------------------|--------------|--------------|
| 125'                       | LINEAR FEET OF DRILLING             | HEADER #     | PIPE DIA.    |
| 0'                         | LINEAR FEET OF DRILLING-ABANDONMENT | STATION      | LINEAR FT.   |
| 125'                       | LINEAR FEET OF WELL COMPLETION      | STATION      | TRENCH DEPTH |
| 104'                       | PERFORATED PIPE-DIA.                | HEADER #     | PIPE DIA.    |
| 24'                        | SOLID PIPE -DIA.                    | STATION      | LINEAR FT.   |
| COMPLETION: (WELL NUMBERS) |                                     | STATION      | TRENCH DEPTH |
| EW 130 TD 125'             |                                     | SUBHEADER #  | PIPE DIA.    |
|                            |                                     | STATION #    | LINEAR FT.   |
|                            |                                     | STATION      | TRENCH DEPTH |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | TRENCH DEPTH |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | TRENCH DEPTH |
|                            |                                     | LATERAL: #   | PIPE DIA.    |
|                            |                                     | STATION      | LINEAR FT.   |
|                            |                                     | RISER HEIGHT | TRENCH DEPTH |
|                            |                                     | SUMPS        | VALVES       |
| GENERAL INFORMATION        |                                     |              |              |
| WEATHER CONDITIONS         |                                     |              |              |
| START TIME 7:00 A.M.       |                                     |              |              |
| STOP TIME 5:00 P.M.        |                                     |              |              |

### COMMENTS:

Arrived on site drilled 0' to 125' TD on EW 130 set and completed to surface moved rig off hill project complete  
cleaned up off site.

Jessica Owen  
CLIENT REPRESENTATIVE  
NAME & TITLE

7-8-09  
DATE

Dokk  
AEGL SITE SUPERVISOR  
DATE

7/7/2009



# DAILY DIARY

DATE: 8/3/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION LINEAR FT.        |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH              |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | STATION LINEAR FT.        |
| COMPLETION: (WELL NUMBERS)          | TRENCH DEPTH              |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | STATION LINEAR FT.        |
|                                     | TRENCH DEPTH              |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| GENERAL INFORMATION                 | LATERAL: # PIPE DIA.      |
| WEATHER CONDITIONS                  | STATION LINEAR FT.        |
| Sunny                               | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| START TIME 7:00am                   | SUMPS VALVES              |
| STOP TIME 7:00pm                    |                           |

## COMMENTS:

Started the day at 7am with the tailgate safety meeting. Made up 2 piece's of 6" pipe 15 feet long with flange's on both end's.  
Went to the active face and raised well # 42 15 feet using the 8" fusing machine and the 200 john deere excavator to hard weld the well.  
And bolted the vacuum side. Went to well #58R and lowered it 4 feet using a 6" electro fusion coupler to weld the well head back on do  
to high pressure and spitting leachate. Excavated around the 2-24" valve's at the flare pad exposing the 24" pipe and the 2" air and force  
main. Opening up a hole 25'X25'X5' deep to remove the two valve's. Removed the 18" blind from the tie-in and bolted it back together.  
Went down and exposed the 24"X6" tee that runs to well # ew-96 and found that it was leaking. Ordered the part's to repair it.

CLIENT REPRESENTATIVE DATE

AEGL SITE SUPERVISOR DATE

NAME & TITLE



# DAILY DIARY

DATE: 8/4/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION LINEAR FT.        |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH              |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | STATION LINEAR FT.        |
| COMPLETION: (WELL NUMBERS)          | TRENCH DEPTH              |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | STATION LINEAR FT.        |
|                                     | TRENCH DEPTH              |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| GENERAL INFORMATION                 | LATERAL: # PIPE DIA.      |
| WEATHER CONDITIONS                  | STATION LINEAR FT.        |
| Sunny                               | RISER HEIGHT TRENCH DEPTH |
| START TIME 7:00am                   | LATERAL: # PIPE DIA.      |
| STOP TIME 6:15pm                    | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | SUMPS VALVES              |

## COMMENTS:

Started the day at 7am with the tailgate safety meeting, Exposed the 12" pipe that run's to the flare and sump at Lorain #1, Finding the 2" air line and the 2" force main at the 12" tee. Continued exposing the 12" pipe toward the flare. Found a 4" line @ 30 feet from the 12" tee. Continued toward the flare finding 2- electrical conduit running east and west @ 35 feet from the 12" tee. Continued toward the flare finding a 2" line@ 65 feet from the 12" tee. Ran the camera in the 12" pipe toward the flare finding the sag between 20'-60'. Ran the camera in the 8" pipe on the east side of the hill, Going 150 feet to the north finding a sag between 90' and 150'. Also found a sag in the pipe between 30' and 75' going south. Finished the day exposing 300 feet of the 8" pipe on the eastside of the hill.

CLIENT REPRESENTATIVE DATE

AEGL SITE SUPERVISOR DATE

NAME & TITLE





## DAILY DIARY

DATE: 8/5/2009

PROJECT NAME Lorain Landfill #1  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      |               | TRENCH DEPTH |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Regraded 300 feet of the 8" pipe on the eastside of lorain 1, lifting the sag's and packing dirt under the pipe. Hauled 3 loads of dirt from lorain 2 and backfilled. Pumped leachate from the excavation by the flare into the vault and cleaned off the 12" pipe that needs to be regraded. Ordered 20 tons of # 9 stone per chris's request to place under 12" pipe do to the amount leachate that was coming out of the stone around the header. J.M.W. is delivering 8/6/09. Finished the day hauling 3 loads of dirt and backfilling the 18" tie-in on lorain 2.

CLIENT REPRESENTATIVE DATE

AEGL SITE SUPERVISOR DATE

NAME & TITLE



## DAILY DIARY

DATE: 8/6/2009

PROJECT NAME Lorain Landfill #1  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | LINEAR FT.                |
| LINEAR FEET OF WELL COMPLETION      | STATION TRENCH DEPTH      |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | LINEAR FT.                |
| COMPLETION: (WELL NUMBERS)          | STATION TRENCH DEPTH      |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | LINEAR FT.                |
|                                     | STATION TRENCH DEPTH      |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| GENERAL INFORMATION                 | LATERAL: # PIPE DIA.      |
| WEATHER CONDITIONS                  | STATION LINEAR FT.        |
| Sunny                               | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| START TIME 7:00am                   | SUMPS VALVES              |
| STOP TIME 5:30pm                    |                           |

### COMMENTS:

Started the day with the tailgate safety meeting at 7a.m., Continued digging up and regrading the 8" pipe on the eastside going toward the sump on lorain 1. regrading 2 sag's in 125 feet. Started pumping out the excavaion by the flare to regrade the 12" pipe the leachate was coming in faster than we could get rid of it. Jessica called in a leachate truck to pump it in to. J.M.W delivered the # 9 stone at 2 p.m. lifted the pipe and placed the stone under the pipe. Marked off and shot the pipe every 10 feet to conform grade. Placed 1 foot of stone over the pipe and hauled 4 loads of dirt to finish backfilling the hole. Finished the day backfilling the 125 feet of open trench on the east slope.

CLIENT REPRESENTATIVE DATE

AEGL SITE SUPERVISOR DATE

NAME & TITLE



## DAILY DIARY

DATE: 8/7/2009

PROJECT NAME Lorain Landfill

PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION LINEAR FT.        |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH              |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | STATION LINEAR FT.        |
| COMPLETION: (WELL NUMBERS)          | TRENCH DEPTH              |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | STATION LINEAR FT.        |
|                                     | TRENCH DEPTH              |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | SUMPS VALVES              |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting. Went down to the flare and finished placing the # 57 stone in the bottom of the inclosed flare and installed the doors on the outside. Dug up around the 4"X2" dual contained drain line at the K.O.P on the blower skid for flare # 1 and trenched up to the flame arrester. Started making up the 4"X2" dual contained drain line from the three blowers and the flame arrester using 3- 4"X2" dual contained tee's a 4"X2" dual contained 90 degree elbow and 4- 4"X2" dual contained end seals. Finished the day helping shawn try to get the flare to start back up. Off site at 7p.m.

CLIENT REPRESENTATIVE DATE

AEGL SITE SUPERVISOR DATE

NAME & TITLE





## DAILY DIARY

DATE: 8/10/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH  |              |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Pumped water from the excavation at the flare to remove the 2-24" valve's  
Removed the first 24" valve, and installed a 24" spool that was 10'7" long where the valve was. Removed the second valve and installed  
2-24" blind's on the flange's to be abandon. Started backfilling the excavation and the trench's around the flare. Air tested the 4x2 dual  
contained drain line for the blower's and the flame arrester. Cleaned up the area and off site at 5:30pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE



## DAILY DIARY

DATE: 8/11/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH  |              |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting. Cut out the 24"x6" tee in the southwest corner. Installing a new 24"x6" tee using 2-24" electro-couplers on the 24" header and 2-6" electro-couplers to tie in the 6" existing lateral. Dug up the 24" header east of the high-point at well EW-14 and east of high-point at well EW-6 to install 24" valve's. Bolted up 2-24" valves to the 24" flange's with 2 foot pups to be installed on the south slope. Finished the day backfilling the excavation from removing the 2-24" valves at the flare area. Cleaned up and off site at 5:30pm.

CLIENT REPRESENTATIVE \_\_\_\_\_ DATE \_\_\_\_\_

AEGL SITE FOREMEN \_\_\_\_\_ DATE \_\_\_\_\_

NAME & TITLE \_\_\_\_\_



## DAILY DIARY

DATE: 8/12/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | LINEAR FT.                |
| LINEAR FEET OF WELL COMPLETION      | STATION TRENCH DEPTH      |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | LINEAR FT.                |
| COMPLETION: (WELL NUMBERS)          | STATION TRENCH DEPTH      |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | LINEAR FT.                |
|                                     | STATION # TRENCH DEPTH    |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | SUMPS VALVES              |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Tracked the excavator and are tool's to the high point by well EW-14 and cut out a 8 foot section of the 24" header and installed a 24" valve using 2-24" electro-couplers. Started burning the electro-couplers. Moved east of the high point by well EW-13 and cut out a 8 foot section of the 24" header and installed a 24" valve using 2-24" electro-couplers. Moved to the northeast corner by well EW-37 and cut out a 6 foot section of the 24" header and installed a 24" valve using 2-24" electro-couplers, continued burning the couplers having problems with the box over heating .

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE





## DAILY DIARY

DATE: 8/13/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION                          |
|-------------------------------------|---------------------------------------|
| LINEAR FEET OF DRILLING             | HEADER # _____ PIPE DIA. _____        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION _____ LINEAR FT. _____        |
| LINEAR FEET OF WELL COMPLETION      | STATION _____ TRENCH DEPTH _____      |
| PERFORATED PIPE-DIA.                | HEADER # _____ PIPE DIA. _____        |
| SOLID PIPE -DIA.                    | STATION _____ LINEAR FT. _____        |
| COMPLETION: (WELL NUMBERS)          | STATION _____ TRENCH DEPTH _____      |
|                                     | SUBHEADER # _____ PIPE DIA. _____     |
|                                     | STATION # _____ LINEAR FT. _____      |
|                                     | STATION # _____ TRENCH DEPTH _____    |
|                                     | Road Crossing _____ PIPE DIA. _____   |
|                                     | STATION _____ LINEAR FT. _____        |
|                                     | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                     | LATERAL: # _____ PIPE DIA. _____      |
|                                     | STATION _____ LINEAR FT. _____        |
|                                     | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                     | LATERAL: # _____ PIPE DIA. _____      |
|                                     | STATION _____ LINEAR FT. _____        |
|                                     | RISER HEIGHT _____ TRENCH DEPTH _____ |
|                                     | SUMPS _____ VALVES _____              |
| WEATHER CONDITIONS<br>Sunny         |                                       |
| START TIME <u>7:00am</u>            |                                       |
| STOP TIME <u>7:00pm</u>             |                                       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Continued burning the 24" electro-couplers on the 24" valves that were installed 8/12/2009. Cut one electro-coupler out that did not take using a 4 foot piece of pipe and 2-24" electro-couplers to replace it, at the high point by well EW-13, continued burning the couplers. Pulled all the shot risers that had been surveyed, taking them to the bone yard. Installed valve stems on the three 24" valve's, and backfilled the 24"x6" tee by the compressor station and the 24" valve by well EW-14. Finished the getting the flare restarted. Off site at 7pm.

CLIENT REPRESENTATIVE \_\_\_\_\_ DATE \_\_\_\_\_

AEGL SITE FOREMEN \_\_\_\_\_ DATE \_\_\_\_\_

NAME & TITLE \_\_\_\_\_



# DAILY DIARY

DATE: 8/14/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | LINEAR FT.                |
| LINEAR FEET OF WELL COMPLETION      | STATION TRENCH DEPTH      |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | LINEAR FT.                |
| COMPLETION: (WELL NUMBERS)          | STATION TRENCH DEPTH      |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | LINEAR FT.                |
|                                     | STATION # TRENCH DEPTH    |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
|                                     | SUMPS VALVES              |

## COMMENTS:

Started the day at 7am with the tailgate safety meeting, Installed valve sample risers one the three 24" valves, Made up 8- 6" spools 10 feet long with flanges on both ends and 6-4" spools 10 feet long with flanges on both ends for the site, cleaned up all the pipe and fittings taking the smaller parts to the bone yard and the 24" pipe and fittings and a 18" stringer to the southwest corner, Started backfilling the propane lines at the flare. Made up the 2" airline for flare # 1. Off site at 5pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE



## DAILY DIARY

DATE: 8/15/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH  |              |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     | TRENCH DEPTH  |              |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Air tested the propane line at flare 2, at 28 psi for 1 hour. Backfilled the propane line and the east side of flare 2. Made up the remainder of the 6" and 4" spools totaling 7 each for the site. And placing them in the bone yard. Finished hooking up the 2" airline's on flares 1 and 2, Made up the pipe stands for the 16" pipe that runs from the blower skid to the flame arrester using 9- bags of concrete, 3-1-1/2" nipples, 3-pieces of 1" square stock and 2" straps, Finished the day cleaning up the work area's. Off site at 1pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE





## DAILY DIARY

DATE: 8/17/2009

PROJECT NAME Lorain Landfill 1  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      |               | TRENCH DEPTH |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Moved the equipment over to Lorain 1 and started exposing the 8" pipe on the east slope going toward CS1 that was @ 6 feet deep. Opened up 170 feet finding two sag's. lifted the pipe and regraded the trench using the #9 stone that was around the pipe. Marked the pipe off every ten feet and shot it with the eye level to conform grade. Placed one foot of dirt over the pipe and layed the caution tape,hauled 4 loads of dirt and backfilled the trench using the excavator. Finished the day exposing the 8" pipe at CS1 and hauling 3 loads of dirt to dike up around the excavation in case of rain. Placed a tarp over the excavation for odors. Off site at 5pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE



# DAILY DIARY

DATE: 8/18/2009

PROJECT NAME Lorain Landfill 1  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION LINEAR FT.        |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH              |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | STATION LINEAR FT.        |
| COMPLETION: (WELL NUMBERS)          | TRENCH DEPTH              |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | STATION LINEAR FT.        |
|                                     | TRENCH DEPTH              |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| GENERAL INFORMATION                 | LATERAL: # PIPE DIA.      |
| WEATHER CONDITIONS                  | STATION LINEAR FT.        |
| Sunny                               | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| START TIME 7:00am                   | SUMPS VALVES              |
| STOP TIME 5:00pm                    |                           |

## COMMENTS:

Started the day at 7am with the tailgate safety meeting, Continued exposing the 8" pipe on the east slope, opening up 300 feet down to CS1 finding one sag in the line. Lifted the pipe and regraded the trench using the existing #9 stone that was around the pipe. Used the laser set up at 2.7% to conform grade. Placed one foot of dirt over the pipe and layed the caution tape, started backfilling hauling 6 loads of dirt from lorain 2. using both excavators to backfill. Cleaned up the work area and off site at 5pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE



## DAILY DIARY

DATE: 8/19/2009

PROJECT NAME Lorain Landfill 1&2  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION              |
|-------------------------------------|---------------------------|
| LINEAR FEET OF DRILLING             | HEADER # PIPE DIA.        |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION LINEAR FT.        |
| LINEAR FEET OF WELL COMPLETION      | TRENCH DEPTH              |
| PERFORATED PIPE-DIA.                | HEADER # PIPE DIA.        |
| SOLID PIPE -DIA.                    | STATION LINEAR FT.        |
| COMPLETION: (WELL NUMBERS)          | TRENCH DEPTH              |
|                                     | SUBHEADER # PIPE DIA.     |
|                                     | STATION LINEAR FT.        |
|                                     | TRENCH DEPTH              |
|                                     | Road Crossing PIPE DIA.   |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| GENERAL INFORMATION                 | LATERAL: # PIPE DIA.      |
| WEATHER CONDITIONS                  | STATION LINEAR FT.        |
| Sunny                               | RISER HEIGHT TRENCH DEPTH |
|                                     | LATERAL: # PIPE DIA.      |
|                                     | STATION LINEAR FT.        |
|                                     | RISER HEIGHT TRENCH DEPTH |
| START TIME 7:00am                   | SUMPS VALVES              |
| STOP TIME 5:00pm                    |                           |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Finished backfilling at lorain1 hauling 5 loads of dirt and dressing the road up between lorain 1 and 2. using the second excavator we exposed the 18"X8" saddle tee that runs to well EW-1 that was broke repairing by cutting the saddle off and cleaning it up with a grinder and electrofusing a 6" saddle over the hole and reconnecting the 6" lateral with a 2 foot piece of pipe and two 6" electrofuse couplers. Checked for leaks after the 20 minute cool time and backfilled the hole, dressed up the 18" header line with 4 loads of dirt. Finished the day exposing the 6"X3" dual contained force main at southwest condensate sump. Sent one guy to apps to pick up parts needed to complete the sump riser and one guy to pick up the pipe pinchers for the force main tie-in.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE





## DAILY DIARY

DATE: 8/20/2009

PROJECT NAME Lorain Landfill  
PROJECT# 20209122

| DRILLING                            | CONSTRUCTION  |              |
|-------------------------------------|---------------|--------------|
| LINEAR FEET OF DRILLING             | HEADER #      | PIPE DIA.    |
| LINEAR FEET OF DRILLING-ABANDONMENT | STATION       | LINEAR FT.   |
| LINEAR FEET OF WELL COMPLETION      |               | TRENCH DEPTH |
| PERFORATED PIPE-DIA.                | HEADER #      | PIPE DIA.    |
| SOLID PIPE -DIA.                    | STATION       | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
| COMPLETION: (WELL NUMBERS)          | SUBHEADER #   | PIPE DIA.    |
|                                     | STATION #     | LINEAR FT.   |
|                                     |               | TRENCH DEPTH |
|                                     | Road Crossing | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | LATERAL: #    | PIPE DIA.    |
|                                     | STATION       | LINEAR FT.   |
|                                     | RISER HEIGHT  | TRENCH DEPTH |
|                                     | SUMPS         | VALVES       |

### COMMENTS:

Started the day at 7am with the tailgate safety meeting, Tracked the excavator to the power plant and unbolted the 14" tee using the excavator to lift it out, removed a 14" valve and placed a 14" blind on one side and a 16" blind on the side going into the building.

Tracked the excavator over to the southwest sump and pinched the force main using the mustang pipe pincher, cut the line and hard fused a 6"X3" to 4"X2" reducer with a 90 degree elbow up and a 90 degree elbow going into the sump riser end with a 4"X2" end seal and a 2" transition fitting with a SS 2" ball valve. Set the riser using silicone on the bottom and anchor bolts to seal it down. Went to flare#2 and finished the pipe stands and some clean up in the work area's and finished backfilling the trenches for the drain lines.

Rain set in and off site at 5pm.

CLIENT REPRESENTATIVE DATE

AEGL SITE FOREMEN DATE

NAME & TITLE

LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                   | ORIENTATION |
|----------|-----------------------------------------------|-------------|
| 6.23.09  | 2 18" HDPE DR11 WYES                          |             |
| 6.23.09  | 3 DR11 6" TEES                                |             |
| 6.23.09  | 6 ASahi BUTTERFLY VALVE                       |             |
| 6.23.09  | 7 8-MESH BENTONITE 50LB BAGS                  |             |
| 6.23.09  | 8 8-MESH BENTONITE 50LB BAGS                  |             |
| 6.23.09  | 9 24" FRIALEN ELECTROCOUPLER                  |             |
| 6.23.09  | 10 18X18X18 SHOP FAB TEE                      |             |
| 6.23.09  | 11' 18" DR17 HDPE PIPE                        |             |
| 6.23.09  | 12 2" AND 4" HDPE PIPE                        |             |
| 6.23.09  | 13 ASSORTED PIPE SIZES                        |             |
| 6.23.09  | 14 6" DR17 HDPE PIPE                          |             |
| 6.23.09  | 15 ASSORTED PIPE SIZES                        |             |
| 6.23.09  | 17 TEW-7R HDPE ENDCAP                         |             |
| 6.23.09  | 18 TEW-7R CONSTRUCTED WELL                    |             |
| 6.23.09  | 19 TEW-7R                                     | W           |
| 6.23.09  | 20 DRILL ACTIVITY @ TEW-6R                    | W           |
| 6.23.09  | 22 DRILL ACTIVITY @ TEW-6R                    | SW          |
| 6.23.09  | 24 BENTONITE SET UP FOR SEALS TEW-6R          | W           |
| 6.26.09  | 5 DRILL SPOILS AT EW-135                      | W           |
| 6.26.09  | 6 DESIGNATED HAUL ROAD FOR AEG                | E           |
| 6.26.09  | 7 EW-135 STONE INSTALLATION                   | S           |
| 6.26.09  | 9 TEW-5R TOP BENTONITE SEAL                   | E           |
| 6.26.09  | 10 LATERAL TRENCH EW-126 TO TEW-6R            | S           |
| 6.26.09  | 11 EW-126 EXISTING 90 (REPLACED W TEE)        | N           |
| 6.26.09  | 12 LATERAL TRENCH EW-126 TO TEW-6R            |             |
| 6.26.09  | 13 TEW-6R LATERAL & RISER                     | N           |
| 6.26.09  | 14 EW-126 90 FITTING REMOVAL (REPLACED W TEE) | N           |
| 6.26.09  | 15 EW-126 TEE INSTALLATION                    | S           |
| 6.29.09  | 1 DRILLING ACTIVITY @ EW-53R                  | S           |
| 6.29.09  | 2 LATERAL TRENCH TEW-5R                       | NW          |
| 6.29.09  | 3 LAERAL TRENCH TO TIE IN AT EW-125           | N           |
| 6.29.09  | 4 LATERAL AND RISER AT TEW-5R                 | SE          |
| 6.29.09  | 5 LATERAL AND RISER AT TEW-5R                 | N           |
| 6.30.09  | 2 DRILL ACTIVITY @ EW-129                     | N           |

LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                        | ORIENTATION |
|----------|----------------------------------------------------|-------------|
| 6.30.09  | 5 JUMPER REPAIR @ EW-17R                           |             |
| 6.30.09  | 6 JUMPER REPAIR @ EW-17R                           |             |
| 6.30.09  | 7 JUMPER REPAIR @ EW-17R                           |             |
| 7.8.09   | 2 TRENCH EXCAVATION FROM EW-147 TO EW-167          | N           |
| 7.8.09   | 3 EXCAVATING TRENCH AS EW-147                      | N           |
| 7.8.09   | 4 FLARE BLOWER UNIT ARRIVAL                        | NW          |
| 7.8.09   | 5 FLARE BLOWER UNIT UNLOADING                      | SW          |
| 7.9.09   | 1 LIFTING THE FLARE TOWER INTO POSITION            | W           |
| 7.9.09   | 2 TIE-IN OF LATERAL TO EW-147 AND EW-167           | SW          |
| 7.9.09   | 3 WELDING THE TIE IN                               | SW          |
| 7.9.09   | 4 BACKFILLING AROUND THE COMPLETED TIE-IN          | NW          |
| 7.10.09  | 1 LATERAL EXCAVATION FOR TIE IN AT EW-42 AND EW-43 | N           |
| 7.10.09  | 2 TIE IN OF EW-42 AND 43                           | N           |
| 7.10.09  | 3 COMPLETED TIE-IN                                 | N           |
| 7.10.09  | 4 BACKFILLING COMPLETED TIE-IN OF EW-42 AND EW-43  | NE          |
| 7.14.09  | 10 24X1 HDPE SHEETUSED FOR GUSSETS                 |             |
| 7.14.09  | 12 24X1 HDPE SHEETUSED FOR GUSSETS                 |             |
| 7.14.09  | 13 GUSSET SIZE COMPARISON                          |             |
| 7.14.09  | 14 EXTRUSION WELDED B SADDLE GUSSETS               |             |
| 7.14.09  | 15 EXTRUSION WELDED B SADDLE GUSSETS               |             |
| 7.14.09  | 16 LATERAL TRENCH FROM EW-129                      |             |
| 7.14.09  | 17 LATERAL TRENCH AND 6" HDPE PIPE                 |             |
| 7.14.09  | 18 TEE AND RISER @ EW-53R                          | S           |
| 7.14.09  | 22 BURIED GAS LINE TAPE IN TRENCH AT EW-135        | S           |
| 7.17.09  | 1 Station 2+50 on 18" Header                       | W           |
| 7.17.09  | 2 18" TRENCH 2+50 TO 3+50                          | SW          |
| 7.17.09  | 3 STATION 4+00 ON 18" HEADER                       | N           |
| 7.17.09  | 4 SDR 11 18" TO 6" B. FUSED REDUCTION FITTING      |             |
| 7.18.09  | 1 DRAINAGE LINER @ ROAD CROSS FOR EW-52            | N           |
| 7.18.09  | 2 DRAINAGE LINER @ ROAD CROSS FOR EW-52            | N           |
| 7.18.09  | 3 8 20' SEGMENTS OF 16 GAUGE CMP                   | E           |
| 7.18.09  | 4 CMP INSTALLATION @ ROAD CROSS FOR EW-52          | S           |
| 7.18.09  | 5 BACKFILLED CMP TRENCH @ ROAD CROSS EW-52         | N           |
| 7.18.09  | 6 BACKFILLED CMP TRENCH @ ROAD CROSS EW-52         | N           |



# LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                                      | ORIENTATION |
|----------|------------------------------------------------------------------|-------------|
| 7.18.09  | 7 INSTALLATION OF REPLACEMENT DRAINAGE LINER                     | N           |
| 7.18.09  | 8 INSTALLATION OF REPLACEMENT DRAINAGE LINER                     | N           |
| 7.18.09  | 9 EW-52 LATERAL TRENCH                                           | N           |
| 7.18.09  | 10 INSTALLATION OF REPLACEMENT DRAINAGE LINER                    | E           |
| 7.18.09  | 11 CMP END AT EW-52                                              | E           |
| 7.20.09  | 1 EW-58R PRIOR TO ABANDONMENT                                    | W           |
| 7.20.09  | 2 EW-58R PRIOR TO ABANDONMENT                                    | W           |
| 7.20.09  | 3 EW-130 LATERAL RISER, EW-52 REMOTE WELLHEAD & 18" FUTURE BLIND | N           |
| 7.20.09  | 4 EW-130 LATERAL RISER, EW-52 REMOTE WELLHEAD & 18" FUTURE BLIND | N           |
| 7.20.09  | 5 EW-130 LATERAL RISER, EW-52 REMOTE WELLHEAD & 18" FUTURE BLIND | N           |
| 7.20.09  | 6 18" FUTURE BLIND & 18 TO 6 REDUCTION FITTING                   | SW          |
| 7.20.09  | 7 18" FUTURE BLIND & 18 TO 6 REDUCTION FITTING                   | SW          |
| 7.20.09  | 8 6" LATERAL FOR EW-58R                                          | W           |
| 7.20.09  | 9 EW-58 ABANDONMENT                                              | W           |
| 7.20.09  | 10 EW-58R TIE IN TO 18" HEADER                                   | S           |
| 7.21.09  | 1 LINER REPAIR 65' SW OF EW-141A                                 | W           |
| 7.21.09  | 2 LINER REPAIR 65' SW OF EW-141A                                 | W           |
| 7.21.09  | 4 LINER REPAIR 100' SW OF EW-141A                                | N           |
| 7.21.09  | 5 LATERAL REPAIR WEST OF EW-141                                  | SW          |
| 7.21.09  | 6 LATERAL REPAIR WEST OF EW-141                                  | SW          |
| 7.21.09  | 7 LATERAL REPAIR WEST OF EW-141                                  | NW          |
| 7.21.09  | 8 LATERAL REPAIR WEST OF EW-141                                  | SW          |
| 7.21.09  | 9 LATERAL REPAIR WEST OF EW-141                                  | NW          |
| 7.21.09  | 10 60' OF CMP INSTALLED ON 6" LATERAL FOR EW-57R                 | NW          |
| 7.21.09  | 11 60' OF CMP INSTALLED ON 6" LATERAL FOR EW-57R                 | W           |
| 7.24.09  | 1 NEW FLARE BLOWER SKID                                          | SE          |
| 7.24.09  | 2 CS-18 SUMP COVER REMOVAL                                       | E           |
| 7.24.09  | 3 BURNER FLANGE INSTALLATION                                     | N           |
| 7.24.09  | 4 NEW FLARE BLOWER SKID                                          | SE          |
| 7.24.09  | 5 24 TO 16 PIPE BETWEEN CS-18 AND KNOCKOUT TANK                  | NE          |
| 7.24.09  | 7 BLOWER 1/4 INCH VALVE FOR DRAINAGE                             | S           |
| 7.24.09  | 8 BLOWER 1/4 INCH VALVE FOR DRAINAGE                             | S           |
| 7.24.09  | 9 HSI BLOWER                                                     | S           |
| 7.24.09  | 10 2 INCH AIRLINE FROM CS-18 TO CHECK VALVE ON SKID              | N           |

LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                                   | ORIENTATION |
|----------|---------------------------------------------------------------|-------------|
| 7.27.09  | 1 LINER REPAIR #1                                             |             |
| 7.27.09  | 2 LINER REPAIR #1                                             |             |
| 7.27.09  | 3 LINER REPAIR #2                                             |             |
| 7.27.09  | 4 LINER REPAIR #2                                             |             |
| 7.27.09  | 5 LINER REPAIR #4                                             |             |
| 7.27.09  | 6 VACUUM BOX TESTING #4                                       |             |
| 7.27.09  | 7 LINER REPAIR #3                                             |             |
| 7.27.09  | 8 LINER REPAIR #3                                             |             |
| 7.27.09  | 9 LINER REPAIR #5                                             |             |
| 7.27.09  | 10 LINER REPAIR #5                                            |             |
| 7.27.09  | 11 GEOTEXTILE REPLACEMENT #5                                  |             |
| 7.27.09  | 12 2X4 DUAL CONTAINED BLOWER DRAINAGE                         |             |
| 7.27.09  | 13 2X4 DUAL CONTAINED BLOWER AND KO TANK DRAINAGE             |             |
| 7.27.09  | 14 90 DEGREE 24 TO 16 REDUCTION INTO KO TANK                  |             |
| 7.27.09  | 15 CS-18 FLANGE CONNECTION WITH PVC BLIND FOR AIR TEST        |             |
| 7.28.09  | 1 TEW-8 REMOTE WELLHEAD                                       | SE          |
| 7.28.09  | 2 ABANDONED LATERAL AT TEW-8                                  | SE          |
| 7.28.09  | 3 TEW-8 WELL WITH BLIND FLANGE                                | N           |
| 7.28.09  | 4 TEW-7R WELLHEAD                                             | NW          |
| 7.28.09  | 5 EW-126 WELLHEAD                                             | W           |
| 7.28.09  | 6 TEW-5R WELLHEAD                                             |             |
| 7.29.09  | 1 TRENCH EXCAVATION EW-57R                                    | N           |
| 7.29.09  | 2 EXCAVATION FOR ELECTRICAL AT FLARE                          | S           |
| 7.29.09  | 3 SIX FUTURE CONDUIT EXCAVATED (2 FOR EACH FLARE)             | SW          |
| 7.29.09  | 4 EXISTING 24 INCH TO EXISTING KO TANK EXPOSED TO RUN CONDUIT | E           |
| 7.29.09  | 5 EXISTING 24 INCH TO EXISTING KO TANK EXPOSED TO RUN CONDUIT | N           |
| 7.29.09  | 6 EXISTING 24 INCH TO EXISTING KO TANK EXPOSED TO RUN CONDUIT | E           |
| 7.29.09  | 7 EXISTING 24 INCH TO EXISTING KO TANK EXPOSED TO RUN CONDUIT | N           |
| 7.29.09  | 8 SIX FUTURE CONDUIT EXCAVATED (2 FOR EACH FLARE)             | N           |
| 7.29.09  | 10 SIX FUTURE CONDUIT EXCAVATED (2 FOR EACH FLARE)            | N           |
| 7.31.09  | 1 LATERAL TRENCH FOR EW-52 REMOTE WELLHEAD                    |             |
| 7.31.09  | 2 ACCU-DRIVE 30PSI TEST GAUGE FOR AIRTEST ON EW-52 LATERAL    | W           |
| 7.31.09  | 3 ACCU-DRIVE 30PSI TEST GAUGE FOR AIRTEST ON EW-52 LATERAL    |             |
| 7.31.09  | 4 ACCU-DRIVE 30PSI TEST GAUGE FOR AIRTEST ON EW-52 LATERAL    |             |

# LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                                              | ORIENTATION |
|----------|--------------------------------------------------------------------------|-------------|
| 7.31.09  | 5 DR 11 90 DEGREE FITTING BEFORE CMP CROSSING TO EW-52                   | NE          |
| 7.31.09  | 6 TEE INTO EW-52 INSTALLATION                                            |             |
| 7.31.09  | 7 TEE INTO EW-52 INSTALLATION AND LATERAL ABANDONMENT                    |             |
| 7.31.09  | 8 TEE INTO EW-52 INSTALLATION AND LATERAL ABANDONMENT                    |             |
| 7.31.09  | 9 DRAINAGE FOR 3RD BLOWER NOT CURRENTLY INSTALLED                        | W           |
| 7.31.09  | 10 DRAINAGE FOR 3RD BLOWER NOT CURRENTLY INSTALLED                       |             |
| 7.31.09  | 11 DRAINAGE FOR 3RD BLOWER NOT CURRENTLY INSTALLED                       |             |
| 8.3.09   | 1 24 INCH FLANGE CONNECTION UNCOVERED FOR VALVE REMOVAL                  | S           |
| 8.3.09   | 2 2 24 INCH VALVES UNCOVERED FOR REMOVAL AND INSTALLATION ON SOUTH SLOPE | E           |
| 8.3.09   | 3 24 INCH FLANGE CONNECTION UNCOVERED FOR VALVE REMOVAL                  | S           |
| 8.3.09   | 4 24 INCH FLANGE CONNECTION UNCOVERED FOR VALVE REMOVAL                  | NW          |
| 8.3.09   | 5 LINER A 24X6X24 TEE REPAIR SITE SW CORNER                              | S           |
| 8.3.09   | 6 LINER A 24X6X24 TEE REPAIR SITE SW CORNER                              | E           |
| 8.3.09   | 7 ELECTROCOUPLERS AND 24X6X24 TEE ON SW CORNER                           | N           |
| 8.4.09   | 1 EDI BLOWER HOUSING WITH TEE                                            |             |
| 8.4.09   | 2 EDI BLOWER HOUSING WITH TEE                                            |             |
| 8.10.09  | 1 FLARE TOWER ASSEMBLY                                                   | NE          |
| 8.10.09  | 2 REMOVING 24" PIPE AND VALVE NEXT TO FLARE TOWERS                       | NW          |
| 8.10.09  | 3 PIPE AND 24" VALVE REMOVED                                             | N           |
| 8.10.09  | 4 INSTALLING REPLACEMENT SECTION OF PIPE                                 | NW          |
| 8.10.09  | 5 BOLTING IN PIPE SECTION                                                | N           |
| 8.10.09  | 6 REMOVING 24" VALVE NEXT TO FLARE TOWERS                                | W           |
| 8.10.09  | 7 24" VALVE REMOVED                                                      | W           |
| 8.10.09  | 8 INSTALLING FLANGE PLATES INPLACE OF VALVE                              | N           |
| 8.11.09  | 1 EXPOSING LEAKING 18"X18"X6" TEE ON THE SW CORNER                       | SW          |
| 8.11.09  | 2 REMOVING LEAKING TEE                                                   | W           |
| 8.11.09  | 3 SETTING NEW TEE AND INSTALLING ELECTRO-COUPERS                         | S           |
| 8.11.09  | 4 NEW TEE INPLACE AND FRYING COUPLERS                                    | S           |
| 8.12.09  | 1 INSTALLING 24" VALVE ON THE SOUTH SLOPE EAST OF EW-14                  | SE          |
| 8.12.09  | 2 INSTALLING 24" VALVE ON THE SOUTH SLOPE EAST OF EW-24                  | W           |
| 8.12.09  | 3 SETTING 24" VALVE EAST OF EW-24                                        | S           |
| 8.14.09  | 1 FABRICATING 4" AND 8" EXTENSION PIPES FOR THE SITE                     | W           |
| 8.15.09  | 1 INSTALLING PIPE STANDS AT THE SECOND FLARE TOWER                       | NW          |
| 8.19.09  | 1 EXCAVATING LEAKING TEE NEAR THE SW CORNER - 18"X18"X6"                 | SW          |



LORAIN II LANDFILL LFG-CQA 2009 PHOTO LOG

| PHOTO ID | DESCRIPTION                                              | ORIENTATION |
|----------|----------------------------------------------------------|-------------|
| 8.19.09  | 2 INSTALLING A 6" BRANCH AND SADDLE ELECTRO COUPLE       | W           |
| 8.19.09  | 3 SETTING 6" BRANCH AND SADDLE                           | E           |
| 8.19.09  | 4 BRANCH AND SADDLE IN PLACE AND ELECTRO FUSING COMPLETE | W           |
| 8.20.09  | 5 PIPE STANDS COMPLETED ON SECOND FLARE TOWER            | W           |
| 8.21.09  | 2 FINAL GRADING AROUND FLARE TOWERS                      | E           |
| 8.21.09  | 3 FLARE TOWERS AND BLOWER UNITS COMPLETED                | E           |
| 8.21.09  | 4 FINAL GRADING AROUND SECOND FLARE TOWER                | S           |
| 8.21.09  | 5 GRADE WORK AROUND THE FIRST BLOWER UNIT COMPLETED      | S           |
| 8.21.09  | 6 GRADE WORK AROUND THE SECOND FLARE TOWER               | NW          |
| 8.21.09  | 7 GRADE WORK AROUND THE SECOND BLOWER UNIT COMPLETED     | W           |

## APPENDIX D

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### **Resumes for CQA Certifying Engineer and Inspectors**

**Richard A. Isaac, P.E.**



## Experience Summary

Mr. Isaac has extensive experience managing investigation and remediation projects for public and private industrial facilities; engineering design and permitting of new land disposal and other solid and hazardous waste management facilities; and site assessment selection. 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 CERCLA and state-led remedial sites, as well as managing corrective measures studies (CMS) and implementation of remediation systems for operating facilities under RCRA. Mr. Isaac 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. Mr. Isaac participates in and/or conducts pre-bid and pre-construction meetings, bid review, evaluation, and recommendation, and contract award. He also manages and provides inspection, oversight, and certification for construction/demolition projects.

### Assignment

*Certifying Engineer*

### Education

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

### Registration

*Registered Professional Engineer in Ohio and Pennsylvania; West Virginia (retired status); Virginia (retired status); Colorado (retired status); Wyoming (retired status); and Montana (retired status)*

### Experience

*29 years*

### Joined Firm

*2007*

### Training

*OSHA 29 CFR 1910.120, Health and Safety Training*

### Relevant Expertise

- Solid and Hazardous Waste Management
- CERCLA, RCRA, and Remediation
- Site Assessments and Investigations
- Regulatory Compliance
- Storm Water/Surface Water Management
- Abandoned Mine Lands and Mining

## Solid and Hazardous Waste Management

### Hazardous Waste Landfill Remediation, Laufen International, Inc., East Sparta, Ohio

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

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**

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**

Managed the closure and closure certification of a construction and demolition debris (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. The Closure Certification Report was submitted to the Portage County Health Department.

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

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**

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**

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**

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**

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**

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. The closure plans were designed, and permit applications were prepared as "fast track" projects in order to meet imposed regulatory deadlines.

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

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**

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**

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**

Managed the design and permitting for a Construction and Demolition Debris (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**

Managed the design and permitting for a Construction and Demolition Debris (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**

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****Preparation of Remedial Design/Remedial Action (RD/RA) for Former Tar and Chemical Facility, Reilly Industries, Inc., Dover, Ohio**

Managed the preparation of the Remedial Design/Remedial Action (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 PAHs, and 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 POTW; and placement of soil cover.

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

Managed the performance of a hydrogeologic site investigation and preparation of a "focused" Feasibility Study (FS) for a lagoon contaminated with polynuclear aromatic hydrocarbons (PARs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) at a major coke-producing facility. The FS was performed to adhere to the requirements of the 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**

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**

Managed the preparation of a Feasibility Study (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 materials and demolition debris area, and the backwash area required remediation for fluoride, cyanide, and volatile organic compounds (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**

Managed the preparation of a "focused" Corrective Measures Study (CMS) for a hazardous materials recycling facility in the State of Ohio. Interim corrective measures were implemented, including groundwater recovery wells and low-profile air stripper with a groundwater cut-off wall. The CMS evaluated alternatives for remediating volatile organic compounds (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**

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 volatile organic compounds (VOCs) and semi-volatile organic compounds (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**

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**

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

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**

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**

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 Environmental Protection Agency (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.** The Phase I Environmental Site Assessment (ESA) was performed 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 Environmental Protection Agency (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 Environmental Site Assessment (ESA) of Short Street in Columbus, Ohio. The Phase I ESA was performed for the City of Columbus Street Design Department as part of the street-widening program. ASTM E1527-00 Standard Practice for

Environmental Site Assessments: Phase I Environmental Site Assessment Process was used 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. Work was performed 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. A Phase II Environmental Site Investigation Report was prepared 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. The work was performed 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. Geoprobe technology was used 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. The vault was cleaned by power washing and vacuuming with off-site disposal of the resulting sludge and rinsate waters.

**Compliance**

**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 Environmental Protection Agency (Ohio EPA). As a condition of the General Permit, prepared the Storm Water Pollution Prevention Plan (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 Spill Prevention, Control, and Countermeasure (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 to update 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 Spill Prevention, Control, and Countermeasure (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 to update 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 Spill Prevention, Control, and Countermeasure (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 to update 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 National Pollutant Discharge Elimination System (NPDES), Storm Water Phase II Final Rule – Conditional No Exposure Exclusion for Industrial Activity as administered by the Ohio Environmental Protection Agency (Ohio EPA). The initial facility inspections were used 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 Spill Prevention, Control, and Countermeasures (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 Storm Water Pollution Prevention Plans (SWP3s) for a major automotive parts manufacturer in Northeast Ohio. The SWP3s were reviewed and revised in accordance with the facilities General Permit Authorization to Discharge Storm Water Associated with Industrial Activity under the National Pollutant Discharge Elimination System (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 Environmental Protection Agency (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. Stream banks and sediment were contaminated with lead, copper, zinc, and PCBs. 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. Project was completed 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. The basin was treated 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. The openings were resealed, and an

underdrain system was employed to drain the back yards of the houses and former mine openings. The underdrain system was designed 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. Technical specifications, prepared in accordance with the Ohio Department of Natural Resources (ODNR) protocols, grading plans, and surface water control plans were developed 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. Topsoil borrow area plans (from adjacent undisturbed properties) were developed, including sampling plans, volume estimates, grading plans, and surface water control plans. Technical specifications, prepared in accordance with the Ohio Department of Natural Resources (ODNR) protocols, grading plans, and surface water control plans were developed 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 acid mine drainage (AMD) from an old abandoned auger mining pit in Missouri. Acid mine drainage (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, a major creek was relocated to allow for maximum recovery of the coal seam. As the creek was being stripped, the material comprising the creek, i.e., sands, gravels, etc., were selectively handled and stockpiled for reconstruction during the reclamation process for this area. Following coal removal, the stream was reconstructed in its former location, with each lithologic unit replaced to recreate the stream before mining events took place.

**Publications**

1. "Construction and Demolition Debris Rules in Ohio," Concrete Connection, Ohio Ready Mixed Concrete Association (ORMCA), November 1998
2. "Simplifying Environmental Planning Requirements," FOUNDRY Management & Technology, pp. 20-23, April 1999.



**Elena Goodhall, P.E.**

## Experience Summary

Ms. Goodhall is a Project Manager with 15 years of experience in landfill environmental management and environmental remediation. For the past five years, she has been an Environmental Manager and Regional Environmental Manager for Republic Services Inc. (Republic, formerly Allied Waste Services, Inc.). Ms. Goodhall began with Allied Waste as an Environmental Manager in Ohio and has successfully developed an excellent relationship with all levels of OEPA personnel. As Regional Manager, Ms. Goodhall addressed compliance, engineering, and construction issues for the region and developed and implemented leachate tracking logs; soil tracking, soil usage and tonnage policy; and aerial calculation review procedures for the region. Ms. Goodhall has successfully handled environmental permitting for Republic, including solid waste and air permits-to-install and zoning and wetland permitting. She also obtained the first and second Director's Exemptions granted in Ohio for siting landfills over 100-GPM aquifers. Ms. Goodhall has served in an engineering and management role on landfill construction and development projects, including waste relocation, cell construction and expansion, landfill gas and leachate management systems. Ms. Goodhall also served as lead Compliance and Quality Assurance manager and lead Liner Manager on several construction and development projects. Her landfill management experience includes groundwater monitoring programs, stormwater management programs, and the development of emergency action plans. Prior to her solid waste work for Republic, Ms. Goodhall had 10 years of experience investigating hazardous waste sites and brownfields, developing corrective actions, and overseeing the implementation of corrective measures at numerous sites in California, Michigan, and Ohio.

### Assignment

*Task Leader – Landfill Design, Closure, and Construction*

### Education

*M.S., Hazardous Waste Management, Wayne State University, 2003*

*B.S. Civil Engineering, University of Michigan, 1994*

### Registration

*Professional Engineer, Michigan*

### Certifications

*40-hour HAZWOPER with current 8-hour Refresher*

*First Aid and CPR Training*

*Nuclear Densimeter Gauge Certification*

### Experience

*15 years*

### Joined Firm

*2009*

### Relevant Expertise

- Solid Waste Facility Design and Construction
- Hazardous Waste Management
- Brownfield Redevelopment

### Allied Waste Services, Inc., Erie, Michigan

As a Regional Environmental Manager for Allied Waste Services, Ms. Goodhall was responsible for the regional management of landfill capital, closure and post-closure budgets, landfill development and construction, environmental compliance, and facility expansions for the 27 active landfills, 36 closed landfills, two closed hazardous waste landfills, 44 transfer stations/recycling stations and 62 hauling companies located in the Northeast and Eastern regions of the United States. She also developed and implemented regional initiatives to conduct training sessions for environmental managers, operations personnel, and consultants.

In this role, Ms. Goodhall accomplished several key activities including:

- Developing and implementing leachate tracking log spreadsheets for 35 active landfills,
- Drafting and enforcing regional soil tracking, soil usage, and non-deplete tonnage policies,
- Developing, implementing and reviewing aerial calculation review spreadsheets for 35 landfills.

### Conestoga Landfill, Allied Waste, Inc., Pennsylvania

**Environmental Manager and Construction Manager.** Ms. Goodhall managed a 22-acre time-critical cell construction project, initiated in 2008. Numerous challenges were encountered and successfully overcome during construction in early spring, and the cell was certified in time to prevent

waste diversion to another facility. Ground water seeps encountered in the cell floor required redesign in the field. Ms. Goodhall was responsible for pursuing and obtaining permit modifications, saving the facility approximately \$4,000,000. She continues to provide construction management services to the facility on their 2009 17-acre time critical cell construction involving 500,000 CY of structural fill placement.

**Lorain II and Lorain I Landfills, Allied Waste Services, Inc., Oberlin, Ohio**

**Engineer.** Ms. Goodhall completed a 20-acre closure project and substantial gas system improvements to address odor complaints at the Lorain County II Landfill. At Lorain I, Ms. Goodhall completed engineering oversight on a cap improvement project to minimize infiltration and leachate generation from this landfill. She also completed installation of combination gas wells and POTW projects involving leachate collection and disposal systems.

**County Environmental of Wyandot Landfill, Inc., Allied Waste, Inc., Carey, Ohio**

**Engineer.** Ms. Goodhall managed the relocation of approximately 1.4 million cubic yards of waste from an unlined portion of the facility to the lined portion of the facility. This waste relocation was successful in reducing the groundwater impacts identified at the facility.

**Celina Sanitary Landfill, Allied Waste, Inc., Celina, Ohio**

**Engineer.** Ms. Goodhall's efforts resulted in successful expansion of the Celina Sanitary Landfill, adding nine years of site life to the facility. This work included obtaining a host agreement, a zoning permit, solid waste and air permits-to-install, and the first Director's exemption for siting a landfill over a 100-gpm aquifer granted in Ohio.

**Cherokee Run Landfill, Allied Waste, Inc., Bellefontaine, Ohio**

**Engineer.** Ms. Goodhall was responsible for the successful expansion of Cherokee Run Landfill, adding 10 years of site life to the facility. This work included obtaining solid waste and air permits-to-install, and the second Director's exemption for siting a landfill over a 100-gpm aquifer granted in Ohio.

**Noble Road Landfill, Allied Waste, Inc., Shiloh, Ohio**

**Engineer.** Ms. Goodhall was responsible for the continued pursuit of a vertical expansion, including design completion, hydrogeologic investigations, and wetland and air permitting. PTI approval is expected in March 2009. Ms. Goodhall managed the permitting, design, construction, and startup of the gas system at Noble Road Landfill, which recently triggered regulatory requirements for an active gas system.

**Celina and Cherokee Landfills, Allied Waste, Inc., Ohio**

**Engineer.** Ms. Goodhall was responsible for the continued pursuit of two lateral expansions, including design completion, hydrogeologic investigations, and wetland, air, and zoning permitting.



**Landfill Construction, Allied Waste, Inc.**

**Engineer.** Ms. Goodhall managed landfill construction projects, including eight cells, three caps, ten landfill gas systems, two flare installations, and three leachate system improvements. Three of these were time-critical off-season cell construction projects. As Ohio District Engineer, Ms. Goodhall was responsible for the permitting, construction, and compliance for six active landfills, three closed landfills, seven transfer stations, and two recycling facilities. In this role, she completed landfill expansions and construction projects, and delivered cost savings and improvements to several landfill sites.

**Cell Redesign, Construction, and Interim Cover Staking Plan, CEMEX Type III Landfill, MACTEC Engineering and Consulting, Inc., Charlevoix, Michigan**

**Technical Lead and Certifying Engineer.** Ms. Goodhall served as Technical Lead for this 8-acre cell construction for a cement kiln dust landfill which is located just north of CEMEX's limestone quarry on Lake Michigan. She was responsible for a fast-track redesign of the Phase II cell due required by verification surveying revealing that the quarry wall had been mined 150 feet into the Phase II cell area. The redesign was accomplished while the contractor continued onsite work, with no resulting downtime. Ms. Goodhall also served as the Lead Liner during installation of the geosynthetic clay liner and 60-mil HDPE geomembrane.

**Fort Gratiot Type II Landfill Remedial Design, MACTEC Engineering and Consulting, Inc., Port Huron, Michigan**

**Technical Lead, Engineer of Record.** Ms. Goodhall served as Project Manager for remedial activities at this 18-acre Part 201 Landfill. These activities included installation of a passive landfill gas venting control system, geosynthetic cover system, storm water controls, and leachate control system. She also served as Lead Liner during installation of the 40-mil LLDPE geomembrane and geocomposite layer.

**Gratiot County Landfill Cap Repair and Emergency Methane Corrective Action, MACTEC Engineering and Consulting, Inc., Gratiot County, Michigan**

**Project Manager.** Ms. Goodhall served as Project Manager for remedial activities at this 42-acre landfill containing municipal and industrial waste including polybrominated biphenyl wastes. She identified methane concentrations in the explosive range at the property boundaries, developed design of an emergency corrective action, and coordinated monitoring of the corrective action. Ms. Goodhall was also responsible for the coordination of quarterly groundwater sampling associated with the operating groundwater extraction treatment system, and supervising cap repairs that were necessary due to differential settlement.

**Characterization Survey and Decommissioning Plan, Tobico Marsh State Game Area Landfill, Kawkawlin Township, Michigan**

Ms. Goodhall was responsible for the completion of the radiological characterization survey and decommissioning plan in pursuit of the termination of the client's Nuclear Regulatory Commission license at a

three-acre low-level radioactive waste landfill. She served as Field Operations Leader during the six month site characterization field work, which was completed in Level B PPE with radiological controls.

**Peat and Marl Removal, Cell Excavation, and Berm Construction, Allied Waste, Inc., Citizens Disposal, Grand Blanc, Michigan**  
**Project Manager and Certifying Engineer** for the removal of a non-regulated wetland within the footprint of the landfill, as well as cell excavation and berm construction.

**Brownfield Redevelopment, Former Eaton Transmission Facility, Kalamazoo, Michigan**

**Technical Lead.** This demolition project involved a 645,000-sq. ft. former transmission facility. Ms. Goodhall served as the Field Operations Leader during the pre-demolition sampling event, which involved coordinating activities for two sampling crews and two Geoprobe® rigs across the 50-acre site. She also coordinated the preparation of the demolition bid specifications and assisted the client during the procurement process for the demolition Trade Contractor. Ms. Goodhall acted as a liaison between the client and the contractor, monitoring compliance with contract specifications, reviewing and negotiating change orders, and reviewing and approving payment requests and associated documentation.

**Brownfield Redevelopment, Welcome Center for Ambassador Properties, Detroit, Michigan**

**Technical Lead.** This Brownfield project encompassed nearly 200 residential and commercial lots which were proposed for development as a Michigan DOT Welcome Center. Ms. Goodhall developed the Focused Feasibility Study for the parcels identified as Michigan Part 201 facilities, coordinated additional sampling at the site to determine the boundaries of the area to be excavated, and prepared of bid specifications for the contaminated soil removal. She provided construction oversight services during the soil removal.

**Toledo Tie Treatment Site, Hull & Associates, Inc., Toledo, Ohio**

**Project Engineer.** Ms. Goodhall supervised construction quality control and documentation of all field activities for a \$7 million CERCLA directed, time-critical removal action. She negotiated with regulators during the implementation of the time critical removal action, and designed appropriate engineering controls to mitigate remaining contamination.

**Miscellaneous Solid Waste Landfills in Michigan and Ohio**

**Design Engineer.** Ms. Goodhall served as a Design Engineer for several landfill sites throughout Michigan and Ohio. Her responsibilities included:

- Performing landfill construction quality assurance during geosynthetic liner installation,
- Designing landfill staking plans and landfill stormwater improvement projects,
- Preparing landfill construction documentation reports, and

- Performing engineering calculations required for landfill permit applications.

#### **U.S. Army Forces Command Installation Restoration Program Support Manager**

- Developed and analyzed Forces Command's Cost to Complete Budget totaling \$550 million.
- Developed 26 Installation Action Plans to address 5,000 former hazardous waste disposal sites.
- Provided technical and program support to 28 Installation Restoration Project Managers.

#### **Fort Irwin Installation Restoration Program Manager**

- Investigated former hazardous waste disposal sites at Fort Irwin, a 1,000 square mile installation.
- Managed over \$14.5 million of Defense Environmental Restoration Program funds.
- Negotiated with various California regulatory agencies on behalf of Fort Irwin and the U.S. Army.
- Developed and implemented the Installation Action Plan.
- Implemented the Community Relations Plan for the Installation Restoration Program.
- Coordinated the field work for site inspections, remedial investigations, and remedial actions.

#### **Bridge Scour Analyses - Michigan DOT**

Performed 160 Level I and 37 Level II Bridge Scour Analyses. These included developing cross sections of the river upstream and downstream of the bridge, calculating the depth of scour, comparing to bridge foundation depth, and determining if corrective actions are required.

#### **Vandevenne Drain Improvements**

Modeled the existing conditions using HEC-2 and designed improvements to the drain cross section to facilitate additional development in the area.

#### **Rouge River Valley CSO Study**

Evaluated proposed surface water monitoring locations, installed sampling equipment, and conducted sampling events during rain events. Also conducted Combined Sewer Overflow (CSO) studies for Michigan municipalities.



**Jessica Owen**

## Experience Summary

Jessica Owen brings six years experience in environmental engineering. Before joining Brown and Caldwell, she served as an environmental scientist for three years with the Collier County Pollution Control and Prevention Department of Naples, Florida and the Florida Department of Environmental Protection. While working for the Collier County Department, Ms. Owen conducted inspections of above and under ground pollutant storage tanks and both installation and closure inspections of storage tank systems in compliance with Contamination Cleanup Regulations. She also provided environmental compliance assistance for various county-owned and retail facilities. As an environmental specialist for the Florida Department of Environmental Protection, Ms. Owen assisted in the review of reports submitted to the department including: Phase I and II environmental assessments and Site Assessment Reports. These reports were based on compliance with Florida Contamination Clean-up Regulations and Storage Tank Regulations. She is familiar with Delineation of Landward Extent of Wetland and Surface Waters, the identification of wetland soils and plants, Florida Department of Environmental Protection (FDEP) Sampling standard operating procedures, and well installation requirements.

### Assignment

*Field Inspector*

### Education

*B.S., Environmental Studies,*

*NOVA Southeastern University, 2002*

*A.A., Broward Community College, 1999*

### Experience

*4 years*

### Joined Firm

*2007*

### Training

- 40 Hour OSHA HAZWOPR Certification
- 8 Hour OSHA Site Supervisor Certification
- Florida Department of Environmental Protection Pollutant Storage Tank Inspector Course Beginner and Advanced
- Oil Spill Responder Training
- FEMA Emergency Responder certified

### Relevant Expertise

- Compliance with environmental regulations
- Installation and inspection of storage tank systems
- Identification of wetland soil and plants
- Response to pollution spills and complaints

## RCRA/Landfill Experience

### Countywide Recycling and Disposal Facility, Stark County, Ohio

**Environmental Scientist II.** Ms. Owen provided CQA oversight for the installation of landfill gas extraction system components. This included air monitoring, HDPE and PVC extraction well installation, extraction pipe fusion welding and installation, condensate sump installation, leachate sump installation and pipe pressure testing. After completion of the project I assisted in preparing the Certification Reports.

### Lorain County I & II, Lorain County, Ohio

**Environmental Scientist.** Ms. Owen provided CQA oversight for the installation of landfill gas extraction system components. This included air monitoring, HDPE extraction well installation, extraction pipe fusion welding and installation, leachate tank installation, enclosed flare system installation, condensate sump installations and pipe pressure testing. After completion of the project I assisted in preparing the Certification Reports.

### Preble County Sanitary Landfill, Preble County, Ohio

**Environmental Scientist.** Ms. Owen provided assistance with the Groundwater Monitoring Program. Her responsibilities included Groundwater Sampling in accordance with OAC 3745-27-10-(B) through (D), statistical analysis assistance, and other general assistance.

### Celina Landfill, Mercer County, Ohio

**Environmental Scientist.** Ms. Owen provided assistance with the Groundwater Monitoring Program. Her responsibilities included Groundwater Sampling in accordance with OAC 3745-27-10-(B) through (D), statistical analysis assistance, and other general assistance.

### Lorain County II Landfill, Lorain County, Ohio

**Environmental Scientist.** Ms. Owen provided assistance with the Groundwater Monitoring Program. Her responsibilities included

Groundwater Sampling in accordance with OAC 3745-27-10-(B) through (D), statistical analysis assistance, and other general assistance.

**Lorain County I Landfill, Lorain County, Ohio**

**Environmental Scientist.** Ms. Owen provided assistance with the Groundwater Monitoring Program. Her responsibilities included Groundwater Sampling in accordance with OAC 3745-27-10-(B) through (D), statistical analysis assistance, and other general assistance.

**Meritor Heavy Vehicle Systems, Arvin Meritor, Heath, Ohio**

**Environmental Scientist.** Ms. Owen provided assistance in the bioremediation and extraction of LNAPL plumes. Her duties included periodic monitoring of molasses injections through GW parameter sampling at designated test wells and O&M of onsite LNAPL extraction systems.

**Collier County Pollution Control and Prevention Department, Naples, Florida**

**Environmental Specialist.** Ms. Owen conducted inspections of above and under ground pollutant storage tank systems to ensure compliance with Florida Administrative Codes 62-761 and 62-762. She also conducted installation and closure inspections of storage tank systems including Closure Assessment Report review for compliance with 62-770, Petroleum Contamination Cleanup Regulations and dewatering over site. She provided environmental compliance assistance for county-owned facilities, retail facilities and coastal facilities in need of spill response (SPCC Plans) and release detection guidance. She collaborated with the Air Quality Division to research, compose and implement a county ordinance that required the use of Phase I vapor recovery during fuel delivery. Ms. Owen was also responsible for responding to pollutant spills, pollution complaints, general public environmental assistance, and gathering historical environmental data for Phase I environmental assessments.

**Florida Department of Environmental Protection, Fort Meyers, Florida**

**Environmental Specialist.** Ms. Owen managed the enforcement of cases referred for non-compliance with the Florida Administrative Code. She also scheduled and led enforcement meetings, prepared legal documents for enforcement actions including Environmental Litigation Reform Act (ELRA) based penalty worksheets and consent orders. She gathered historical data for Phase I environmental assessments and assisted in the review of reports submitted to the department including: Phase I and II environmental assessments, Site Assessment Reports, Contamination Assessment Reports Remedial Action Plans and Closure Assessments. These reviews were based on compliance with 62-770 and 62-777 Florida Contamination Clean-up Regulations and 62-761 and 62-762 Storage Tank Regulations. She provided general public environmental assistance and worked with regulated facilities to achieve compliance.

Ms. Owen is familiar with 62-340 Delineation of Landward Extent of Wetland and Surface Waters and the identification of wetland soils and



plants through interdepartmental cross training efforts. She also became familiar with FDEP Sampling standard operating procedures and well installation requirements.

**Erik McPeck**

## Experience Summary

Mr. McPeek is a civil engineer with Brown and Caldwell. He brings 5 years of experience in environmental and civil engineering related projects. His experience encompasses areas of site remediation, solid waste and other projects related to environmental services. Since joining Brown and Caldwell, Mr. McPeek has been involved with groundwater monitoring and hazardous waste disposal projects, design and as-built certification drawings, and has served as an on-site field engineer for several construction projects.

### Assignment

*Field Inspector*

### Education

*M.S., Civil Engineering, Ohio University,  
(2008)*

*B.S., Civil Engineering, Ohio University,  
(2005)*

### Registration/Certification

*Registered Professional Engineer, Ohio  
(2009)*

*Registered LEED Green Associate (2009)*

*Radiation Safety Officer*

*HAZWOPER Site Supervisor*

### Experience

*5 years*

### Joined Firm

*2006*

## Remediation Experience

### **Grenada Stamping Plant Site, ArvinMeritor, Grenada, Mississippi Project Engineer.**

Mr. McPeek served as project engineer for this site monitoring project. The monitoring program consists of semi-annual groundwater and surface water sampling. Mr. McPeek also served as site supervisor during sampling activities and assembled the reports submitted to the MDEQ on behalf of the client.

### **Grenada Lake Closed Landfill, ArvinMeritor, Grenada, Mississippi Project Engineer.**

Mr. McPeek served as project engineer for this site monitoring project. The monitoring program consists of semi-annual groundwater sampling. RCRA Hazardous waste collection. Mr. McPeek also served as site supervisor during sampling activities and assembled the reports submitted to the MDEQ on behalf of the client.

### **Lagoon Closure Design, Arvin Meritor, Grenada, Mississippi**

**Project Engineer.** Mr. McPeek worked with a supervising engineer to design the layout and details associated with a Lagoon closure final cover system. This included generating surfaces for volumes and cross-sections using AutoCAD Civil3D software. Mr. McPeek also aided in assembling the bid documents for contractor estimation.

### **Meritor Heavy Vehicle Systems, Arvin Meritor, Heath, Ohio**

**Project Engineer.** Mr. McPeek is currently providing assistance in the bioremediation and extraction of LNAPL plumes at an ongoing project. Responsibilities included O&M of LNAPL extraction systems, product thickness monitoring, and recovery system modification for oil extraction optimization.

### **Pfizer Barrier Wall Design, Pfizer, Holland, Michigan**

**Project Engineer.** Mr. McPeek worked with a supervising engineer to design the layout and details associated with an underground barrier wall. This included geologic cross-sections and generating surfaces for volumes and cross-sections using AutoCAD Civil3D software.

### **The Ohio State University Airport, Columbus, Ohio**

**On-Site Field Engineer.** Mr. McPeek performed storm water sampling for requirements associated with the client's NPDES permit. Samples were collected using automated storm water samplers to collect samples during a storm event meeting certain duration and intensity criteria.



#### **Altivity Packaging, Altivity, Carol Stream, Illinois**

**On-Site Field Engineer.** Mr. McPeek performed field oversight of soil investigation activities which included sample collection by geo-probe in order to locate potential remedial action locations in the area of a former UST. Mr. McPeek also oversaw the excavation of potential contaminated material and performed soil sampling in the boundary of the remediated area.

#### **Various Projects, Delaware County, Ohio**

As an engineering intern for Delaware County in the Sanitary Engineers Department, Mr. McPeek was responsible for the following:

- Study of the sewer master plan for the villages within the county suspected of pollution.
- Using geographic information system (GIS) applications and AutoCAD to conduct studies and perform general work.
- Collecting surface water samples and conducting fecal coliform testing.

### **Solid Waste Experience**

#### **Noble Road Berm Design, Shiloh, Ohio**

**Project Engineer.** Mr. McPeek worked with a supervising engineer to design the layout and details associated with a landfill berm design. The large size and location within the landfill were unique to this project as it will serve as support for vertical expansion of the landfill. This work included generating surfaces for volumes and cross-sections using AutoCAD Civil3D software.

#### **Landfill Gas Control and Collection System Construction Drawings, Republic, Ohio**

**Project Engineer.** Mr. McPeek worked with a supervising engineer to design the layout and details associated with several landfill gas collection systems for construction in 2009. This work included reviewing the landfills' operating permit and review of existing site conditions and topography in order to update the gas plans for best constructability.

#### **Lorain County I Landfill Leachate Sampling, Lorain County, Ohio**

**On-Site Field Engineer.** Mr. McPeek conducted sampling activities for leachate generated at this closed landfill. As part of this monthly sampling event a 24-Hour composite sample is collected using an auto sampler, grab samples are also collected. Leachate samples are then split with the County's WWTP laboratory and sent to a third party laboratory for analysis.

#### **Countywide Landfill, Republic Waste Services, Stark County, Ohio**

**On-Site Field Engineer.** Mr. McPeek provided oversight for an isolation break and FML installation that was designed to halt an internal landfill reaction caused by Alum Dross that was previously placed in the landfill. This was a high profile project with a rushed schedule. The landfill was

under a consent order from the EPA to complete the work in a short amount of time with high quality expectations.

#### **Landfill Leachate Tank Facility, Lorain County, Ohio**

**On-Site Field Engineer.** Mr. McPeek Mr. McPeek worked with a supervising engineer to design the layout and details associated with a new leachate collection tank facility. An Alteration Request to the landfill's operating PFI was submitted to the Ohio EPA for construction of the new tank facility. Mr. McPeek also aided in the preparation of bid documents, drawings for construction, and some of the on-site field CQA work.

#### **New Solid Waste Landfill Cell, Carey, Ohio**

**On-Site Field Engineer.** Mr. McPeek served as an onsite field engineer for the construction of a new 9-acre cell. The new cell construction included the installation of structural fill, added geologic material (AGM), recompacted clay liner, geomembrane, leachate collection system, and associated activities. The project was performed under a very compressed schedule to meet an emergency need of the client. Mr. McPeek was responsible for on-site field monitoring, which included installation of the landfill liner system and leachate collection system, to assure that the new cell was constructed in accordance with the design plans and technical specifications.

#### **Sanitary Landfill Vertical Expansion, Celina, Ohio**

**On-Site Field Engineer.** Mr. McPeek served as an onsite field engineer for the construction of an 8.5-acre vertical expansion cell. Construction activities included placement of structural fill, recompacted soil liner, and a leachate collection system. Mr. McPeek was responsible for on-site field monitoring of soil placement, periodic groundwater measurements to monitor the affect of well pumping activities, and preparation of the certification report including As-Built drawings. During construction of the vertical expansion cell, field conditions reveled several variances in the design parametes determined by the designing consultant. Because of this Mr. McPeek worked with his supervising engineer as well as the client and the contractor to assure that the project schedule remained intact and all construction activities met technical specifications and satisfied the regulatory agencies requirements.

#### **Vertical Expansion Investigation, Allied Waste, Celina, Ohio**

**Project Engineer.** Mr. McPeek performed an engineering review for a landfill in Ohio which included a review of another consultant's construction plans, the landfill's operating permit, and existing site conditions. The review was performed to evaluate the actual remaining vertical expansion area for the landfill against the area estimated by another consultant. This review resulted in proof that the other consultant over estimated the area remaining for vertical expansion. This conclusion allowed the landfill to make beneficial changes to their construction schedule outlook.

**Lorain County I & II Landfills, Lorain County, Ohio**

**On-Site Field Engineer.** Provided CQA oversight for the installation of a landfill gas extraction system. This included HDPE pipe installation, extraction pipe fusion welding installation, pipe pressure testing and collection sump installation. After completion of the project Mr. McPeek assisted in preparing the Certification Report(s).

**Miscellaneous Landfills, Various Clients, Ohio**

**Construction Inspector.** Prior to joining Brown and Caldwell, Mr. McPeek served as a construction inspector for several landfill sites in Ohio. He was responsible for daily quality control inspections including nuclear density testing, synthetic materials inspection, and observation inspection.

Project sites included the following:

- Lorain II County Landfill, BFI, Oberlin, Ohio
- Waste Management Landfill, New Springfield, Ohio
- FGD Landfill, American Electric Power Company, Conesville, Ohio

**Additional Experience**

Mr. McPeek's experience also includes:

- Using AutoCAD on site plans, plan sheets, survey data, flood inundation maps and geological information.
- Preparation of quantity reports for proposed and designed projects.
- Field experience, including compaction testing.
- Performing lab analysis of soils and concrete.

**Software**

ArcGIS  
AutoCAD Civil 3D  
Surfer  
MatLAB  
MathCAD  
HEC RAS  
SAP2000

**Memberships**

- American Society of Civil Engineers (ASCE)
- Water Management Association of Ohio (WMAO)

**Publications/Presentations**

- **Presentation:** 3D Spatial Analysis by GIS for Bedrock and Ground Water. Erik McPeek, Brown and Caldwell and Dr. Tiao J. Chang, Ohio University. Water Management Association of Ohio (WMAO) Conference. 2008

**Peter Schlater**



## Experience Summary

Peter Schlater provides technical field support on environmental and geologic investigations including supervision of drilling operations, soil and groundwater sampling, operation and maintenance of remediation systems, and health and safety monitoring. Mr. Schlater also supports reporting efforts including preparing boring and well construction logs, generating groundwater and/or bedrock contour maps, data management, and preparation of QA/QC certification reports.

### Assignment

*Field Inspector*

### Education

*M.S. Geology, 2007, Wright State University, Dayton, Ohio (In Progress)*

*B.S. Geology, 2004, North Dakota State University, Fargo, North Dakota*

*A.S. Mechanical Engineering, 2001, Cincinnati State Technical and Community College, Cincinnati, Ohio*

### Training

*40-Hour OSHA Health & Safety Training*

*Troxler Nuclear Density Gauge Certified*

### Experience

*1 year*

### Joined Firm

*2006*

### Biannual Groundwater Sampling, OxyChem (Durez), Kenton, Ohio

**Geologist.** Participated in groundwater sampling event of monitoring wells, in addition to gathering field measurements of capped sludge lagoons.

### Biannual Groundwater Sampling, ELANO, Alpha, Ohio

**Geologist.** Participated in groundwater sampling for VOC's of monitoring wells, in addition to gathering field measurements.

### Recovery System, ArvinMeritor, Heath, Ohio

**Geologist.** Performed operations and maintenance tasks associated with the in-situ groundwater bioremediation system and PCB contaminated NAPL recovery system at the operating industrial facility.

### Remedial Investigation, LCP Chemicals Superfund Site, Linden, New Jersey

**Geologist.** Project included the sampling of soil gas, groundwater, surface water, and sediments at this former chlor-alkali manufacturing facility. The primary constituents of concern include free metallic mercury, PAHs, and also includes extensive distribution of PCBs in shallow soils as a result of the numerous, large electrical substations that were part of the former manufacturing operation. Groundwater sampling at this site required extensive use of the following procedures; New Jersey Field Lab Method, Ultra Low Flow Groundwater Sampling Method, and Clean Hands/Dirty Hands Sampling Method.

### Horizontal Drilling, LCP Chemicals Superfund Site, Linden, New Jersey

**Geologist.** Conducted oversight of horizontal boring activities, including soil sampling. Drilling and soil sampling were collected under reactor buildings using a Ditch Witch JT2720 Mach 1 Directional Drill and associated sampling device.

### Quarterly Groundwater Sampling, New Lyme Landfill Superfund, New Lyme, Ohio

**Geologist.** Conducted groundwater sampling at a closed landfill in accordance with the Ohio EPA-approved Post-Closure Plan.

### Remedial Investigation, ArvinMeritor, Grenada, Mississippi

**Geologist.** Conducted oversight during the installation of several piezometers up and down gradient of an existing Permeable Reactive Barrier (PRB) wall using a Geoprobe. Collected groundwater level

measurements from the piezometers in order to map the hydraulic gradient through the PRB wall.

**Landfill Gas Collection System Expansion, County Environmental of Wyandot – Allied Waste Services, Carey, Ohio**

**Geologist.** Performed on-site QA/QC activities during the construction and installation of the landfill gas collection system and all associated system upgrades and repairs. Responsible for on-site field monitoring to ensure that the new system was constructed in accordance with the design plans and technical specifications. Prepared Certification Report for submission to Ohio EPA.

**Monitoring Well Deepening, Rockwood Landfill, Allied Waste Services, Newport, Michigan**

**Geologist.** Conducted oversight of monitoring well deepening activities around the perimeter of a C/D landfill to meet the regulations set forth by Michigan Department of Environmental Quality. Responsible for revising the associated well logs, resetting the depths of the pumps, and coordinating all on-site drilling activities associated with the project.

**BiAnnual Groundwater Sampling, North Cove Landfill, Ohio Department of Transportation, Toledo, Ohio**

**Geologist.** Ongoing groundwater detection monitoring, sampling, and reporting for the sanitary landfill per Ohio EPA Solid Waste Regulations.

**Phytoremediation Tree Planting, ArvinMeritor, Heath, Ohio**

**Geologist.** Headed up and organized the phytoremediation tree planting project used to off set contaminated groundwater with PCB contaminated NAPL.

**Remedial Investigation, Westway Terminals, Saint Paul, Minnesota**

**Geologist.** Conducted oversight during the installation of several monitoring wells up and down gradient of a B100 Bio-Diesel spill site using a PowerProbe 9630 (Geoprobe). Collected groundwater and product thickness level measurements and groundwater samples from the monitoring wells in order to characterize the site and determine the extent of the B100.

**Masters Thesis Research at Wright State University, Dayton, Ohio**

**Graduate Student.** Treatment of VOC contaminated groundwater using an artificial wetland, located at Wright Patterson AFB. This work included monthly sampling of 99 piezometers for VOC's. Analysis was performed on a HP/Agilent 6980 Gas Chromatograph and Velocity XPT Purge and Trap. Field data measurements were gathered on a monthly bases prior to the GW samples being collected.

**Engineering Geology Field Camp, South Dakota School of Mines and Technology, Rapid City, South Dakota/Beulah, Wyoming**

**Graduate Student.** Participated in an engineering geology field course that provide an intense 5 week field and laboratory experience.

The Precambrian metamorphic, Phanerozoic sedimentary, and Tertiary igneous rocks of the Black Hills set the stage for the field course. The course provides a varied and challenging setting for the instruction and practice in geologic mapping at various scales, using topographic maps and aerial photographs as base maps.

The first two weeks include preparation of stratigraphic columns, geologic maps, structural cross sections, and completion of formal reports for selected locations in the Black Hills. Practical applications of environmental problems were emphasized. The last three weeks are devoted to engineering problems including surface-water and ground-water hydrology, geomechanics, and mineral resource assessment in the northern Black Hills and northeastern Wyoming.

### **Memberships**

Geological Society of America

National Ground Water Association

## APPENDIX E

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### **Project Record Drawings**







| Well ID | COORDINATES |          |  | ELEVATIONS |        |  | DEPTHS (FT) |         |        |            |
|---------|-------------|----------|--|------------|--------|--|-------------|---------|--------|------------|
|         | North       | East     |  | Final      | Linear |  | Refuse      | Boring  | Solid  | Perforated |
| TEW-5R  | 596755      | 2058722  |  | 902.73     | 782.00 |  | 120.73      | 101.00  | 20.00  | 80.00      |
| TEW-6R  | 596765      | 2059255  |  | 903.91     | 782.00 |  | 121.91      | 102.00  | 20.00  | 81.00      |
| TEW-7R  | 596737      | 2059268  |  | 896.17     | 770.00 |  | 126.17      | 106.00  | 20.00  | 85.00      |
| EW-53R  | 596792      | 2058490  |  | 907.72     | 780.00 |  | 127.72      | 108.00  | 20.00  | 87.00      |
| EW-58R  | 596894      | 2058166  |  | 908.00     | 766.00 |  | 142.00      | 122.00  | 20.00  | 101.00     |
| EW-126  | 596572      | 2059083  |  | 892.00     | 755.00 |  | 137.00      | 117.00  | 20.00  | 96.00      |
| EW-128  | 596663      | 20597963 |  | 891.36     | 755.00 |  | 136.36      | 116.00  | 20.00  | 95.00      |
| EW-129  | 596892      | 2058608  |  | 914.72     | 765.00 |  | 149.72      | 130.00  | 20.00  | 109.00     |
| EW-130  | 596974      | 2058339  |  | 912.75     | 768.00 |  | 144.75      | 125.00  | 20.00  | 104.00     |
| EW-135  | 596698      | 2058301  |  | 901.36     | 753.00 |  | 148.36      | 128.00  | 20.00  | 107.00     |
| EW-147  | 597298      | 2057464  |  | 889.26     | 760.00 |  | 129.26      | 109.00  | 20.00  | 88.00      |
| EW-167  | 597578      | 2057448  |  | 879.87     | 765.00 |  | 114.87      | 95.00   | 20.00  | 74.00      |
|         |             |          |  |            |        |  | TOTAL       | 1358.00 | 240.00 | 1107.00    |

[illegible][illegible]

BROWN AND CALDWELL  
COLUMBUS, OHIO

SUBMITTED: \_\_\_\_\_ DATE: \_\_\_\_\_  
PROJECT MANAGER

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
BROWN AND CALDWELL

LORAIN COUNTY II LANDFILL  
OBERLIN, OHIO

2009 GCCS CONSTRUCTION DETAILS  
PROJECT RECORD DRAWING

|                             |
|-----------------------------|
| FILENAME                    |
| BC PROJECT NUMBER<br>137719 |
| CLIENT PROJECT NUMBER       |
| DRAWING NUMBER<br>RD-2      |
| SHEET NUMBER<br>2 OF 3      |
| P                           |

**NOTES:**

1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL 200 WELLHEAD ASSEMBLY, TEL. 1-800-LANDTEC. FAX 1-909-825-0591.

2. CONTRACTOR PROVIDED HIGH VISIBILITY TAPE OR PAINT AROUND TOP 1-FOOT OF WELL CASING AND LATERAL PIPE.
3. CONTRACTOR GRADED FOR DRAINAGE OF SURFACE WATER AWAY FROM THE WELLHEAD.

NOTES:

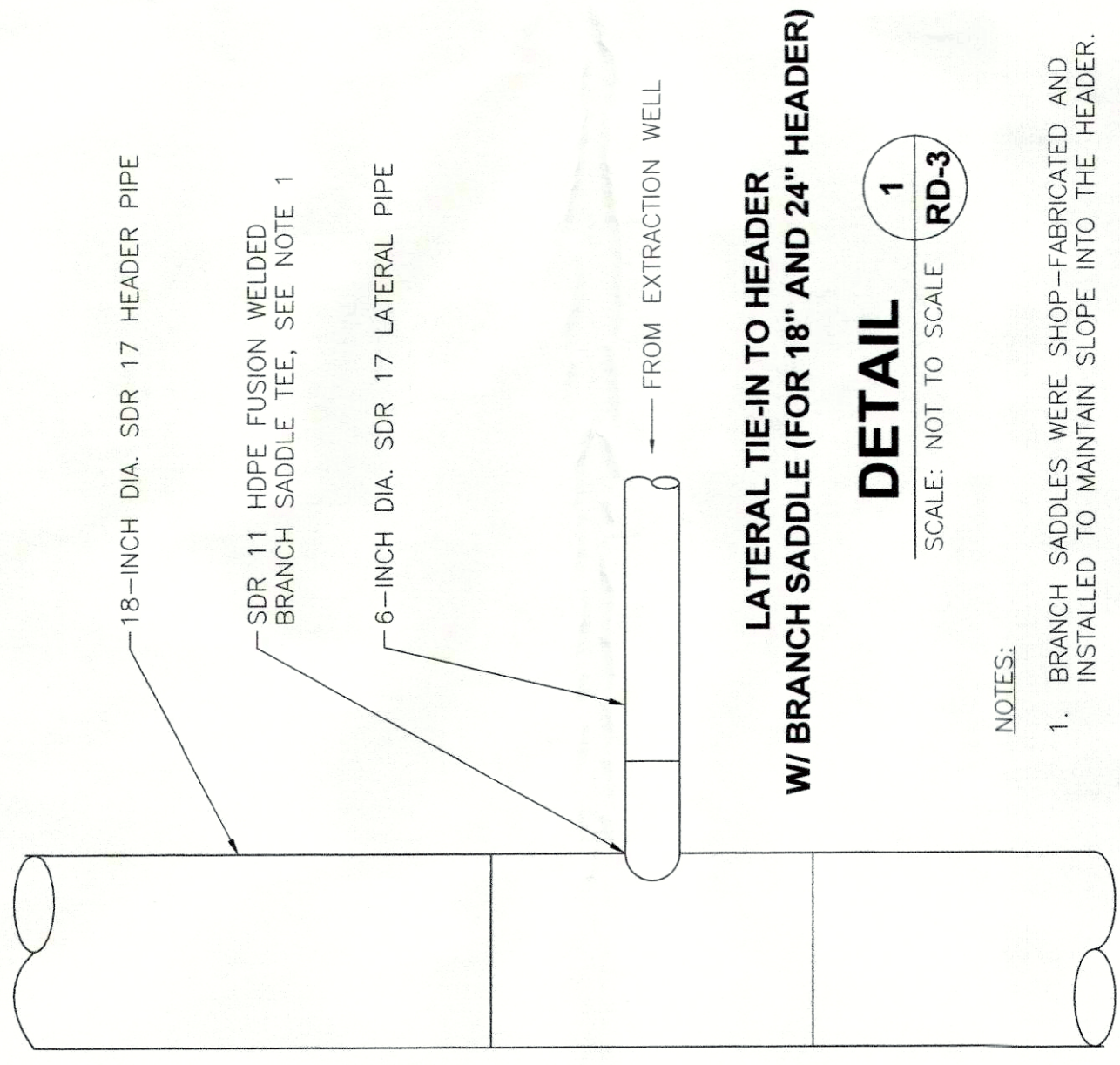
1. WELLHEAD ASSEMBLY SHOWN REPRESENTS 2" LANDTEC ACCU-FLO MODEL 200 WELLHEAD ASSEMBLY, TEL: 1-800-1-LANDTEC. FAX 1-909-825-0591.

2. CONTRACTOR PROVIDED HIGH VISIBILITY TAPE OR PAINT AROUND TOP 1-FOOT OF WELL CASING AND LATERAL PIPE.
3. CONTRACTOR GRADED JOB BEHIND OF SURFACE WATER AWAY FROM THE WELL HEAD.

3 CONTRACTOR GRADED FOR DRAINAGE OF SURFACE WATER AWAY FROM THE WELLHEAD.

4. LATERAL PIPING DRAINS TO THE MAIN HEADER, AWAY FROM THE WELL HEAD, AT A MINIMUM SLOPE OF 3 PERCENT.





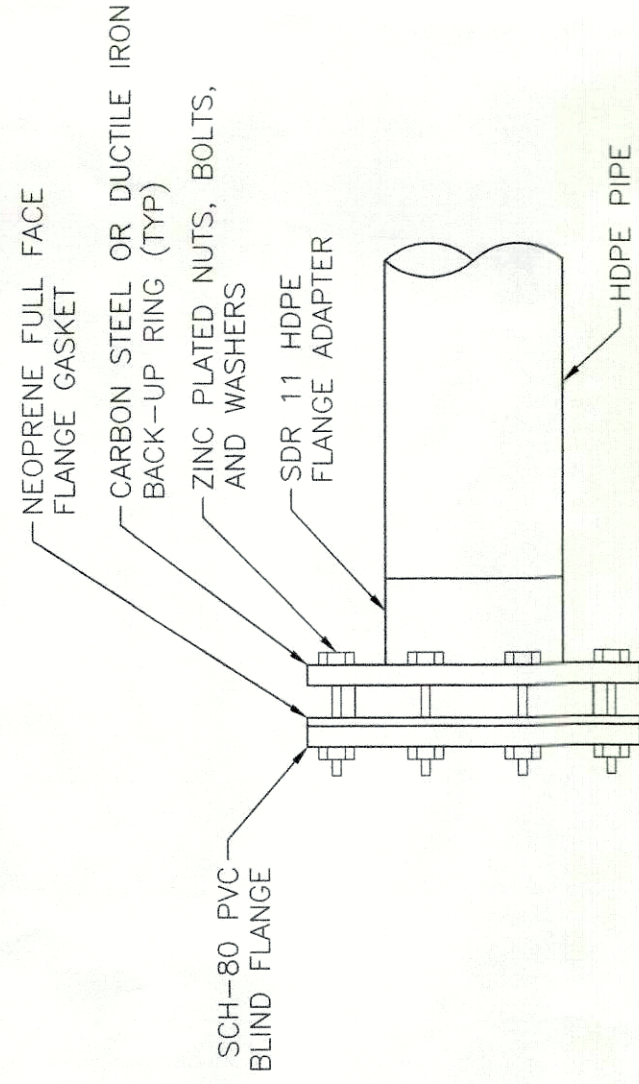
**LATERAL TIE-IN TO HEADER  
W/ BRANCH SADDLE (FOR 18" AND 24" HEADER)**

## DETAIL 1

SCALE: NOT TO SCALE

NOTES:

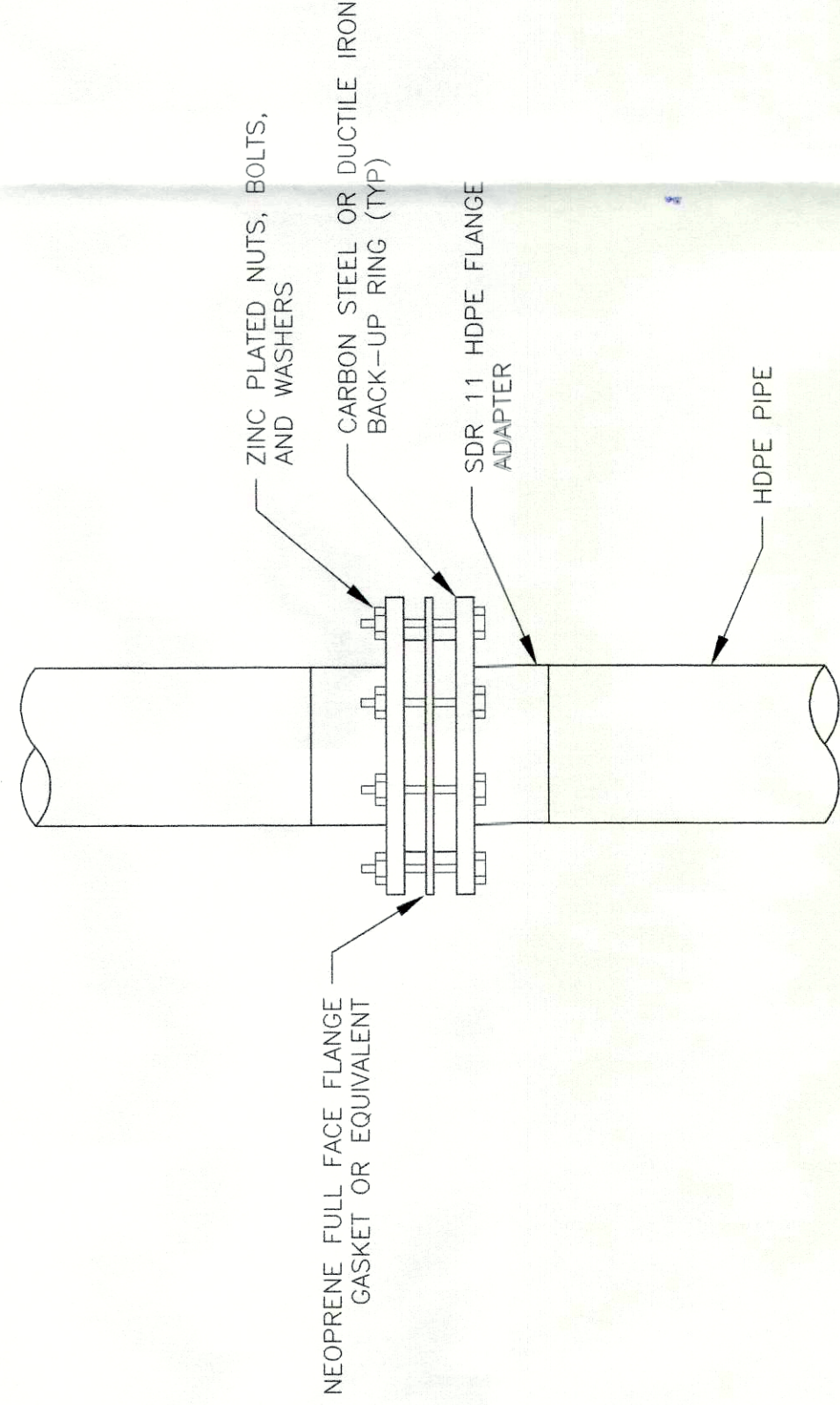
1. BRANCH SADDLES WERE SHOP-FABRICATED AND INSTALLED TO MAINTAIN SLOPE INTO THE HEADER.
2. COMPACTED WASTE BEDDING WAS USED BELOW EACH TEE. CLEAN, GRADED SOIL WAS HAND-TAMPED ABOVE TEE (1" MIN.) BEING CAREFUL TO ELIMINATE ALL VOIDS.
3. HOPE SUPPORT GUSSETS (LOCATED AT 0, 90, 180, & 270 DEGREES) ON BRANCH SADDLE FITTINGS.



## BLIND FLANGE ASSEMBLY

## DETAIL

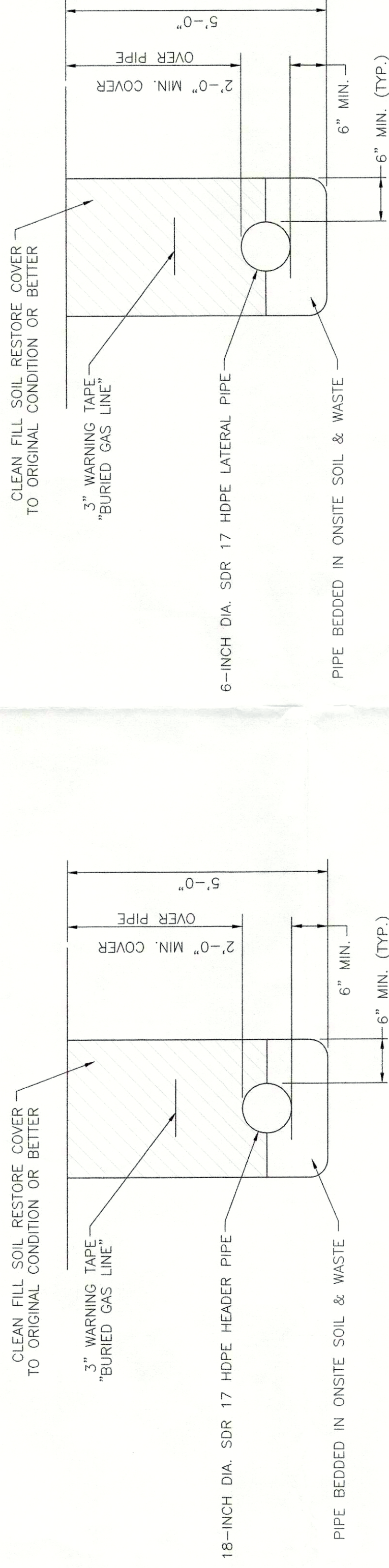
SCALE: NOT TO SCALE



## FLANGE CONNECTION

## DETAIL

SCALE: NOT TO SCALE



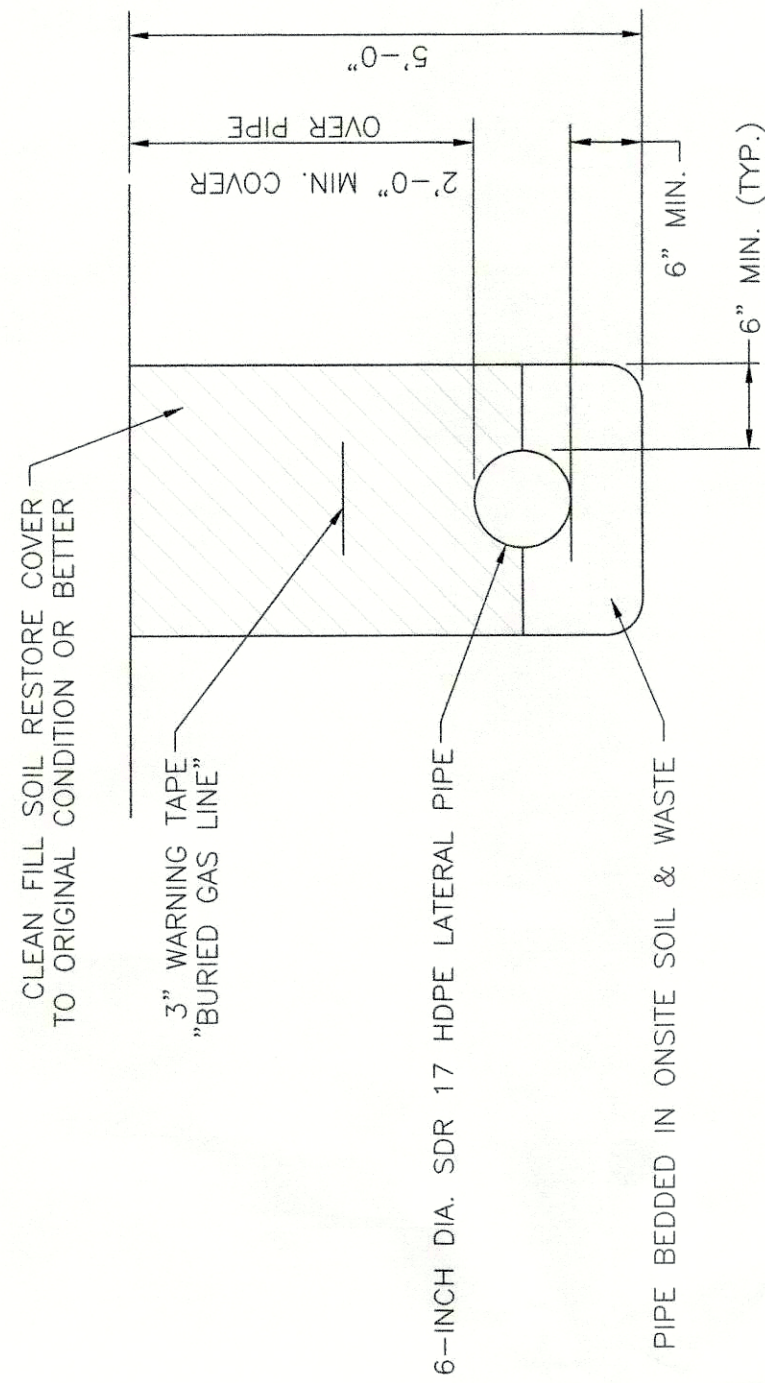
## HEADER TRENCH

## DETAIL

SCALE: NOT TO SCALE

NOTES:

1. COMPACTED WASTE TO PROVIDE SOLID BEDDING FOR PIPING.



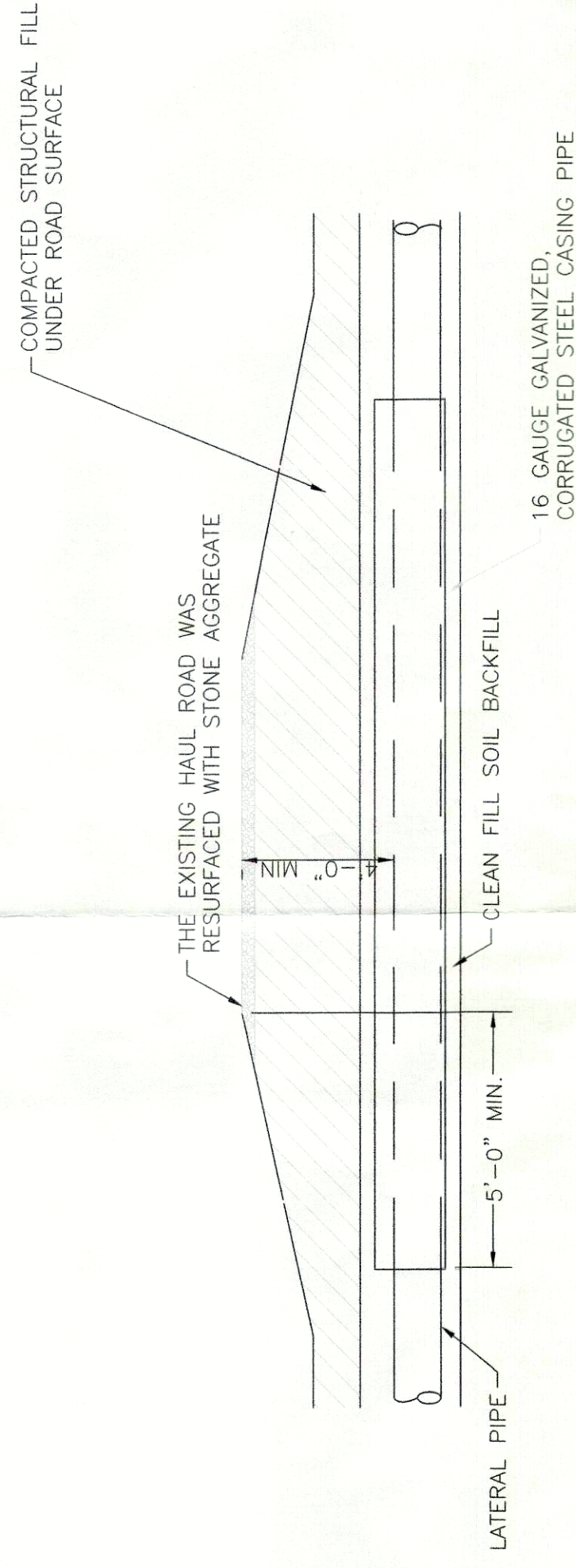
## LATERAL TRENCH

## DETAIL

SCALE: NOT TO SCALE

NOTES:

1. COMPACTED ONSITE SOIL & WASTE TO PROVIDE SOLID BEDDING FOR PIPING.



## ROAD CROSSING

## DETAIL

SCALE: NOT TO SCALE

| PIPE CASING SCHEDULE |                 |
|----------------------|-----------------|
| 6" LATERAL PIPE      | 10" CASING PIPE |

BROWN AND CALDWELLCOLUMBIA OHIO

SUBMITTED: \_\_\_\_\_ DATE: \_\_\_\_\_  
PROJECT MANAGER

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

| LINE IS 2 INCHES<br>AT FULL SIZE<br> | EXTERNAL REFERENCES | IMAGE REFERENCES |
|---------------------------------------------------------------------------------------------------------------------------|---------------------|------------------|
| (IF NOT 2" - SCALE ACCORDINGLY)                                                                                           | COVER.dwg           |                  |

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|--|-----------|----|
|  | CHECKED:  | J0 |
|  | CHECKED:  |    |
|  | APPROVED: | R1 |

| REVISIONS |      | DESCRIPTION |
|-----------|------|-------------|
| ZONE      | REV. |             |

[illegible][illegible]

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|  | BY | DATE | APP. |
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LORAIN COUNTY II LANDFILL  
OBERLIN, OHIO

2009 GCCS CONSTRUCTION DETAILS  
PROJECT RECORD DRAWING

|                       |        |
|-----------------------|--------|
| FILENAME              |        |
| BC PROJECT NUMBER     | 137719 |
| CLIENT PROJECT NUMBER |        |
| DRAWING NUMBER        | RD-3   |
| SHEET NUMBER          | 3 OF 3 |





## APPENDIX F

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### **Landfill Gas Extraction Well Boring Logs**

- 1. Brown and Caldwell**
- 2. American Environmental Group, Ltd.**



**Brown and Caldwell**

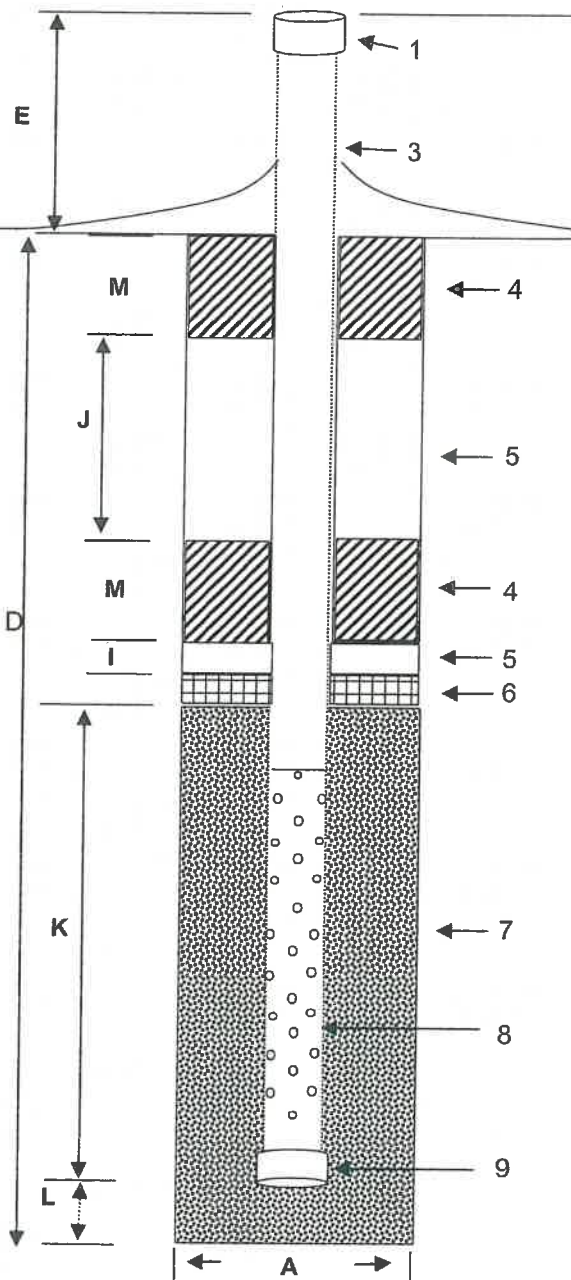
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/24/2009

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-126

**WELL INFORMATION**Well Location: EW-126  
Coordinates:  
Northing: 596574  
Easting: 2059084  
Ground Elevation: 892**DRILLING DATA**Start Time: 7:45  
Completion Time: 13:00  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 117  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 116  |
| G. Perf Pipe Length  | (FT) | 96   |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 7    |
| K. Stone Backfill    | (FT) | 98   |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 98   |
| Total Pipe Length    | (FT) | 120  |
| Average Refuse Temp. |      |      |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/24/2009

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-126

**WELL INFORMATION****DRILLING DATA**Well Location: EW-126  
Coordinates:  
    Northing: 596574.00  
    Easting: 2059084.00  
    Ground Elevation: 879.00Start Time: 7:45  
Completion Time: 13:00  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION  | WET/DRY | TEMP (F) |
|------------|----------------|--------------|---------|----------|
| 0 TO 1     | COVER          | CLAY         | D       |          |
| 1 TO 5     | HHCT           | PL,PA,CL     | D       | 74.3     |
| 5 TO 10    | HHCT           | PL,PA,CL,M   | D       | 78.8     |
| 10 TO 15   | HHCT           | PL,PA,CL,M,W | D       | 80.0     |
| 15 TO 20   | HHCT           | PL,PA,CL,M,W | D       | 81.0     |
| 20 TO 25   | HHCT           | PL,PA,CL,M,W | D       | 82.0     |
| 25 TO 30   | HHCT           | PL,PA,CL,M,W | D       | 83.3     |
| 30 TO 35   | HHCT           | PL,PA,CL,M,W | D       | 84.3     |
| 35 TO 40   | HHCT           | PL,PA,CL,M,W | D       | 92.1     |
| 40 TO 45   | HHCT           | PL,PA,CL,M,W | D       | 98.6     |
| 45 TO 50   | HHCT           | PL,PA,CL,M,W | D       | 100.3    |
| 50 TO 55   | HHCT           | PL,PA,CL,M,W | D       | 103.2    |
| 55 TO 60   | HHCT           | PD,PL,PA,CL  | MOIST   | 104.0    |
| 60 TO 65   | HHCT           | PD TO D      | W       | 105.0    |
| 65 TO 70   | HHCT           | PD TO D      | W       | 107.6    |
| 70 TO 75   | HHCT           | PD TO D      | W       | 107.6    |
| 75 TO 80   | HHCT           | PD TO D      | W       | 110.0    |
| 80 TO 85   | HHCT           | PD TO D      | W       | 110.0    |
| 85 TO 90   | HHCT           | PD TO D      | W       | 112.2    |
| 90 TO 95   | HHCT           | PD TO D      | W       |          |
| 95 TO 100  | HHCT           | PD TO D      | W       |          |
| 100 TO 105 |                | PD TO D      | V. WET  |          |
| 105 TO 110 |                | PD TO D      | V. WET  |          |
| 110 TO 115 |                | PD TO D      | V. WET  |          |
| 115 TO 120 |                | PD TO D      | V. WET  |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

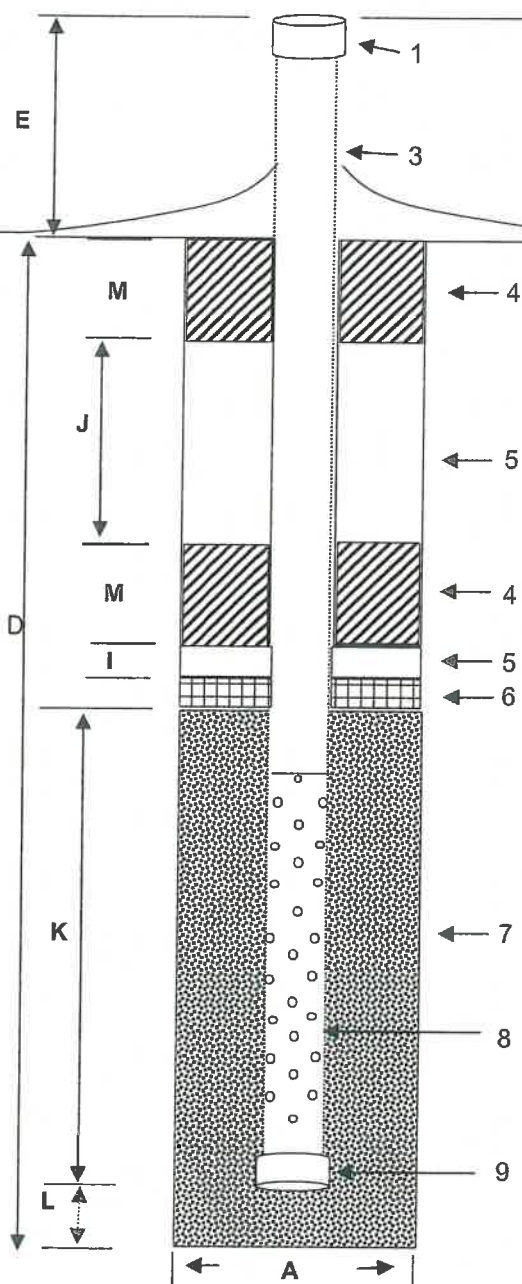
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.1.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-128

**WELL INFORMATION**Well Location: EW-128  
Coordinates:  
Northing: 596662  
Easting: 2057964  
Ground Elevation: 891**DRILLING DATA**Start Time: 8:30  
Completion Time: 16:00  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1\"-3\" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 116  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 115  |
| G. Perf Pipe Length  | (FT) | 95   |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 12   |
| K. Stone Backfill    | (FT) | 97   |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 80   |
| Total Pipe Length    | (FT) | 119  |
| Average Refuse Temp. |      |      |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.1.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-128

**WELL INFORMATION**Well Location: EW-128  
Coordinates:  
Northing: 596662  
Easting: 2057964  
Ground Elevation: 891**DRILLING DATA**Start Time: 8:30  
Completion Time: 16:00  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL,W  | D       | 77.9     |
| 5 TO 10    | HHCT           | PA,PL,CL,W  | D       |          |
| 10 TO 15   | HHCT           | PA,PL,CL,W  | D       |          |
| 15 TO 20   | HHCT           | PA,PL,CL,W  | D       |          |
| 20 TO 25   | HHCT           | PA,PL,CL,W  | D       |          |
| 25 TO 30   | HHCT           | PA,PL,CL,W  | D       |          |
| 30 TO 35   | HHCT           | PA,PL,CL,W  | D       |          |
| 35 TO 40   | HHCT           | PA,PL,CL,W  | D       | 113.9    |
| 40 TO 45   | HHCT           | PA,PL,CL,W  | D       | 117.5    |
| 45 TO 50   | HHCT           | PA,PL,CL,W  | D       | 119.3    |
| 50 TO 55   | HHCT           | PA,PL,CL,W  | D       | 115.4    |
| 55 TO 60   | HHCT           | PA,PL,CL,W  | D       | 115.1    |
| 60 TO 65   | HHCT           | PA,PL,CL,W  | D       | 114.3    |
| 65 TO 70   | HHCT           | PA,PL,CL,W  | SL W    | 116.4    |
| 70 TO 75   | HHCT           | PA,PL,CL,W  | SL W    | 119.2    |
| 75 TO 80   | HHCT           | PA,PL,CL,W  | W       | 118.4    |
| 80 TO 85   | HHCT           | PA,PL,CL,W  | W       |          |
| 85 TO 90   | HHCT           | PA,PL,CL,W  | V W     | 110.5    |
| 90 TO 95   | HHCT           | DEC,W,PL    | V W     | 109.4    |
| 95 TO 100  | HHCT           | DEC,W,PL    | V W     | 112.4    |
| 100 TO 105 | HHCT           | DEC,W,PL    | V W     |          |
| 105 TO 110 |                | DEC,W,PL    | V W     |          |
| 110 TO 115 |                | DEC,W,PL    | V W     |          |
| 115 TO 120 |                |             | V W     |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

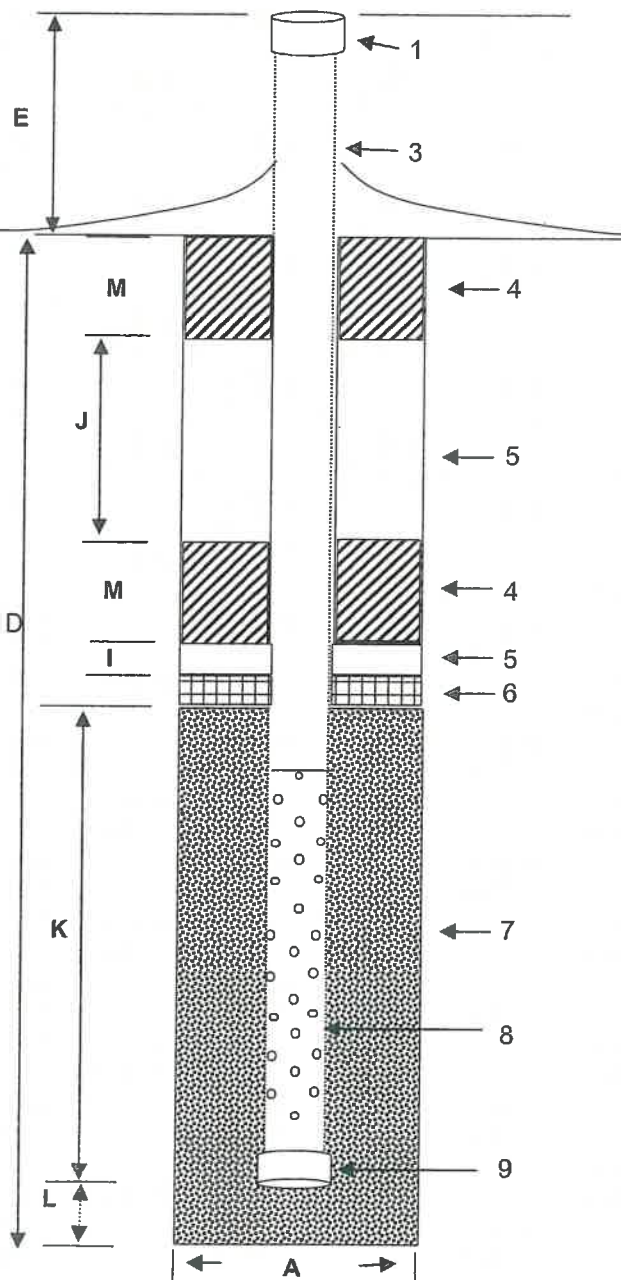
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.30.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-129

**WELL INFORMATION**Well Location: EW-129  
Coordinates:  
Northing: 596971  
Easting: 2058609  
Ground Elevation: 915**DRILLING DATA**Start Time: 7:45  
Completion Time: 15:15  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 130  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 129  |
| G. Perf Pipe Length  | (FT) | 109  |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 12   |
| K. Stone Backfill    | (FT) | 111  |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 60   |
| Total Pipe Length    | (FT) | 133  |
| Average Refuse Temp. |      |      |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.29.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-129

**WELL INFORMATION****DRILLING DATA**

Well Location: EW-129

Coordinates:

Northing: 596792

Easting: 2058489

Ground Elevation: 908

Start Time: 7:45

Completion Time: 14:00

CQA Monitor: JAO

Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL    | D       |          |
| 5 TO 10    | HHCT           | PA,PL,CL    | D       |          |
| 10 TO 15   | HHCT           | PA,PL,CL    | D       | 80.6     |
| 15 TO 20   | HHCT           | PA,PL,CL    | D       | 80.6     |
| 20 TO 25   | HHCT           | PA,PL,CL,W  | D       | 92.2     |
| 25 TO 30   | HHCT           | W,M,PA,PL   | D       | 95.5     |
| 30 TO 35   | HHCT           | W,M,PA,PL   | D       | 94.5     |
| 35 TO 40   | HHCT           | W,M,PA,PL   | D       | 97.5     |
| 40 TO 45   | HHCT           | W,M,PA,PL   | D       | 100.1    |
| 45 TO 50   | HHCT           | W,M,PA,PL   | D       | 102.2    |
| 50 TO 55   | HHCT           | W,M,PA,PL   | D       |          |
| 55 TO 60   | HHCT           | W,M,PA,PL   | W       |          |
| 60 TO 65   | HHCT           | W,M,PA,PL   | W       |          |
| 65 TO 70   | HHCT           | W,M,PA,PL   | VW      | 117.6    |
| 70 TO 75   | HHCT           | PD TO MD    | VW      | 111.5    |
| 75 TO 80   | HHCT           | PD TO MD    | VW      | 111.8    |
| 80 TO 85   | HHCT           | PD TO MD    | VW      | 112.0    |
| 85 TO 90   | HHCT           | PD TO MD    | VW      | 115.0    |
| 90 TO 95   | HHCT           | PD TO MD    | VW      | 119.1    |
| 95 TO 100  | HHCT           | MD TO DEC   | VW      | 119.3    |
| 100 TO 105 | HHCT           | MD TO DEC   | VW      | 118.2    |
| 105 TO 110 | HHCT           | MD TO DEC   | VW      | 119.3    |
| 110 TO 115 | HHCT           | MD TO DEC   | VW      | 119.3    |
| 115 TO 120 | HHCT           | MD TO DEC   | VW      | 120.4    |
| 120 TO 125 | HHCT           | MD TO DEC   | VW      | 120.4    |
| 125 TO 130 | HHCT           | MD TO DEC   | VW      | 121.5    |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |

## Material Description:

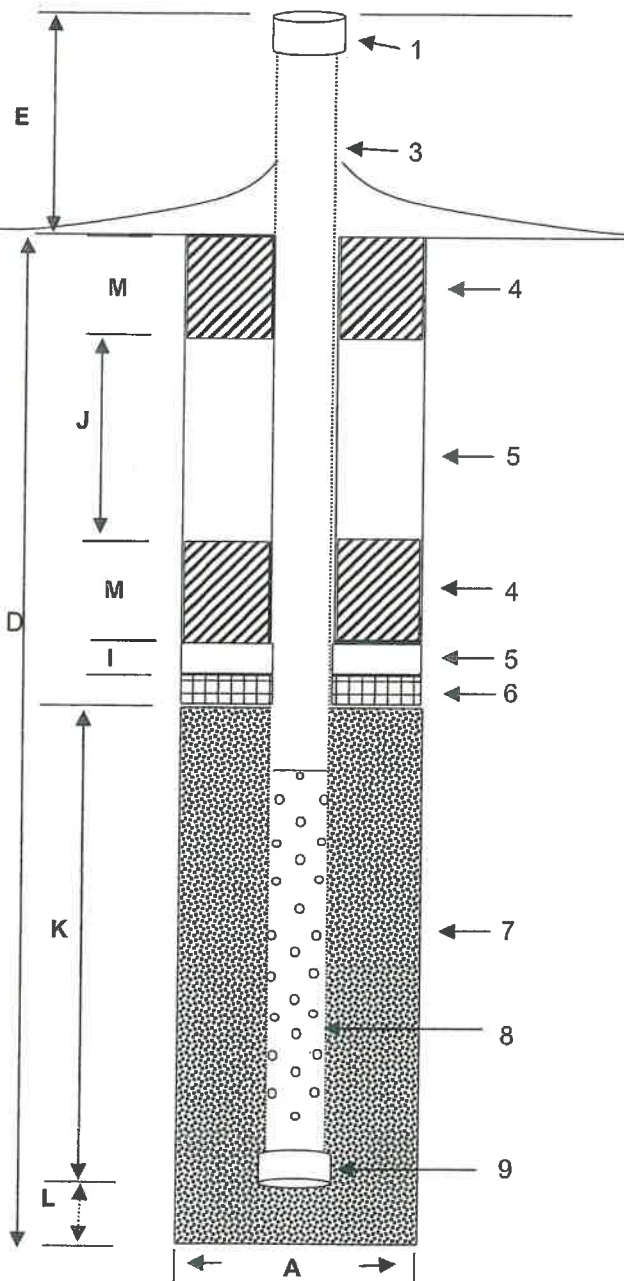
HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.7.09

Project: Lorain II County Landfill  
Location: Oberlin, OHProject No:  
137719

Well ID: EW-130

**WELL INFORMATION**Well Location: EW-130  
Coordinates:  
Northing: 596974  
Easting: 2058339  
Ground Elevation: 913**DRILLING DATA**Start Time: 845  
Completion Time: 1600  
CQA Monitor: PKS  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1'-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 125  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 124  |
| G. Perf Pipe Length  | (FT) | 104  |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 12   |
| K. Stone Backfill    | (FT) | 107  |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 65   |
| Total Pipe Length    | (FT) | 128  |
| Average Refuse Temp. |      | 100  |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.7.09

Project: Lorain II County Landfill  
Location: Oberlin, OHProject No:  
137719

Well ID: EW-130

**WELL INFORMATION**Well Location: EW-130  
Coordinates:  
    Northing: 596974  
    Easting: 2058339  
    Ground Elevation: 913**DRILLING DATA**Start Time: 845  
Completion Time: 1600  
CQA Monitor: PKS  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL    | D       |          |
| 5 TO 10    | HHCT           | PA,PL,CL    | D       | 91       |
| 10 TO 15   | HHCT           | PA,PL,CL    | D       | 91       |
| 15 TO 20   | HHCT           | PA,PL,CL    | D       | 93       |
| 20 TO 25   | HHCT           | PA,PL,CL    | D       | 94       |
| 25 TO 30   | HHCT           | PA,PL,CL    | D       | 92       |
| 30 TO 35   | HHCT           | PA,PL,CL,M  | D       | 93       |
| 35 TO 40   | HHCT           | PA,PL,CL,M  | D       | 92       |
| 40 TO 45   | HHCT           | PA,PL,CL,M  | W       | 92       |
| 45 TO 50   | HHCT           | PA,PL,CL,M  | W       | 92       |
| 50 TO 55   | HHCT           | PA,PL,CL,M  | W       | 95       |
| 55 TO 60   | HHCT           | PD,W,M      | W       | 94       |
| 60 TO 65   | HHCT           | D,PL,M      | W       | 97       |
| 65 TO 70   | HHCT           | D,PL,M      | W       | 98       |
| 70 TO 75   | HHCT           | PA,PL,CL,W  | W       | 100      |
| 75 TO 80   | HHCT           | PA,PL,CL,W  | W       | 104      |
| 80 TO 85   | HHCT           | PA,PL,CL,W  | W       | 105      |
| 85 TO 90   | HHCT           | PA,PL,CL,W  | W       | 103      |
| 90 TO 95   | HHCT           | PA,PL,CL,W  | W       | 104      |
| 95 TO 100  | HHCT           | PA,PL,CL,W  | W       | 107      |
| 100 TO 105 | HHCT           | PA,PL,CL,W  | W       | 107      |
| 105 TO 110 | HHCT           | PA,PL,CL,W  | W       | 109      |
| 110 TO 115 | HHCT           | PA,PL,CL,W  | W       | 116      |
| 115 TO 120 | HHCT           | PA,PL,CL,W  | W       | 115      |
| 120 TO 125 | HHCT           | PA,PL,CL,W  | W       | 116      |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed  
PL Plastic

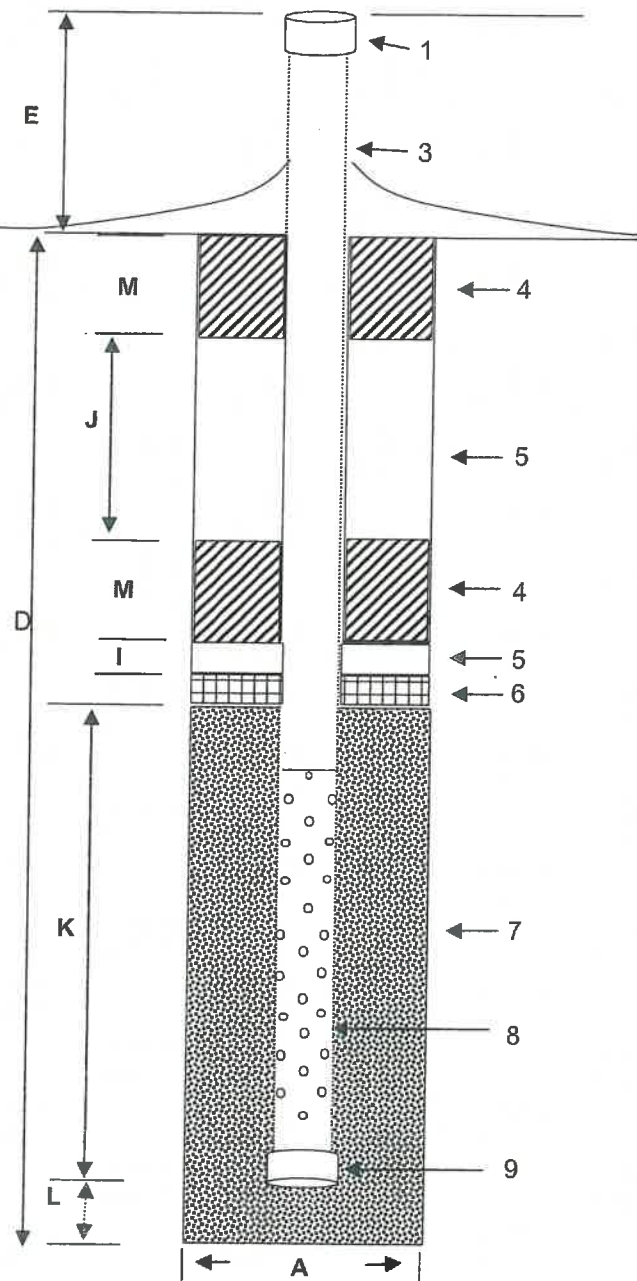
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.25.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-135

**WELL INFORMATION**Well Location: EW-135  
Coordinates:  
Northing: 596697  
Easting: 2058302  
Ground Elevation: 901**DRILLING DATA**Start Time: 11:30 6.25  
Completion Time: 12:00 6.26  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |       |
|----------------------|------|-------|
| A. Bore Diameter     | (IN) | 36    |
| B. Pipe Diameter     | (IN) | 6     |
| C. Pipe Type         |      | HDPE  |
| D. Bore Depth        | (FT) | 128   |
| E. Pipe Aboveground  | (FT) | 4     |
| F. Pipe Belowground  | (FT) | 127   |
| G. Perf Pipe Length  | (FT) | 107   |
| H. Solid Pipe Length | (FT) | 20    |
| I. Soil Plug Length  | (FT) | 1     |
| J. Soil Cover Length | (FT) | 12    |
| K. Stone Backfill    | (FT) | 109   |
| L. Stone Base        | (FT) | 1     |
| M. Bentonite Seal    | (FT) | 2     |
| Refuse Depth         | (FT) | 2     |
| Leachate Depth       | (FT) | 65    |
| Total Pipe Length    | (FT) | 131   |
| Average Refuse Temp. |      | 115.8 |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.25.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-135

**WELL INFORMATION****DRILLING DATA**

Well Location: EW-135

Coordinates:

Northing: 596697

Easting: 2058302

Ground Elevation: 901

Start Time: 11:30 6.25

Completion Time: 12:00 6.26

CQA Monitor: JAO

Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION  | WET/DRY | TEMP (F) |
|------------|----------------|--------------|---------|----------|
| 0 TO 1     | COVER          | CLAY         | D       |          |
| 1 TO 5     | HHCT           | CL,PL,PA,M,W | D       |          |
| 5 TO 10    | HHCT           | CL,PL,PA,M,W | D       | 99.5     |
| 10 TO 15   | HHCT           | CL,PL,PA,M,W | D       |          |
| 15 TO 20   | HHCT           | CL,PL,PA,M,W | D       |          |
| 20 TO 25   | HHCT           | CL,PL,PA,M,W | D       |          |
| 25 TO 30   | HHCT           | CL,PL,PA,M,W | D       |          |
| 30 TO 35   | HHCT           | CL,PL,PA,M,W | D       | 105.8    |
| 35 TO 40   | HHCT           | CL,PL,PA,M,W | D       |          |
| 40 TO 45   | HHCT           | CL,PL,PA,M,W | D       | 117.5    |
| 45 TO 50   | HHCT           | CL,PL,PA,M,W | D       | 120.4    |
| 50 TO 55   | HHCT           | CL,PL,PA,M,W | SL W    | 125.6    |
| 55 TO 60   | HHCT           | CL,PL,PA,M,W | W       | 118.5    |
| 60 TO 65   | HHCT           | CL,PL,PA,M,W | W       |          |
| 65 TO 70   | HHCT           | CL,PL,PA,M,W | W       |          |
| 70 TO 75   | HHCT           | PD,PA,PL     | W       |          |
| 75 TO 80   | HHCT           | PD,PA,PL     | W       | 119.5    |
| 80 TO 85   | HHCT           | PD,PA,PL     | W       | 119.5    |
| 85 TO 90   | HHCT           | PD,PA,PL     | VW      |          |
| 90 TO 95   | HHCT           | PD,PA,PL     | VW      |          |
| 95 TO 100  | HHCT           | PD,PA,PL     | VW      |          |
| 100 TO 105 | HHCT           | PD,PA,PL     | VW      |          |
| 105 TO 110 | HHCT           | PD,PA,PL     | VW      |          |
| 110 TO 115 | HHCT           | PD,PA,PL     | VW      |          |
| 115 TO 120 | HHCT           | MOSTLY DEC   | VW      |          |
| 120 TO 125 | HHCT           | MOSTLY DEC   | VW      | 120      |
| 125 TO 130 | HHCT           | MOSTLY DEC   | VW      | 120      |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

AEGL temp data

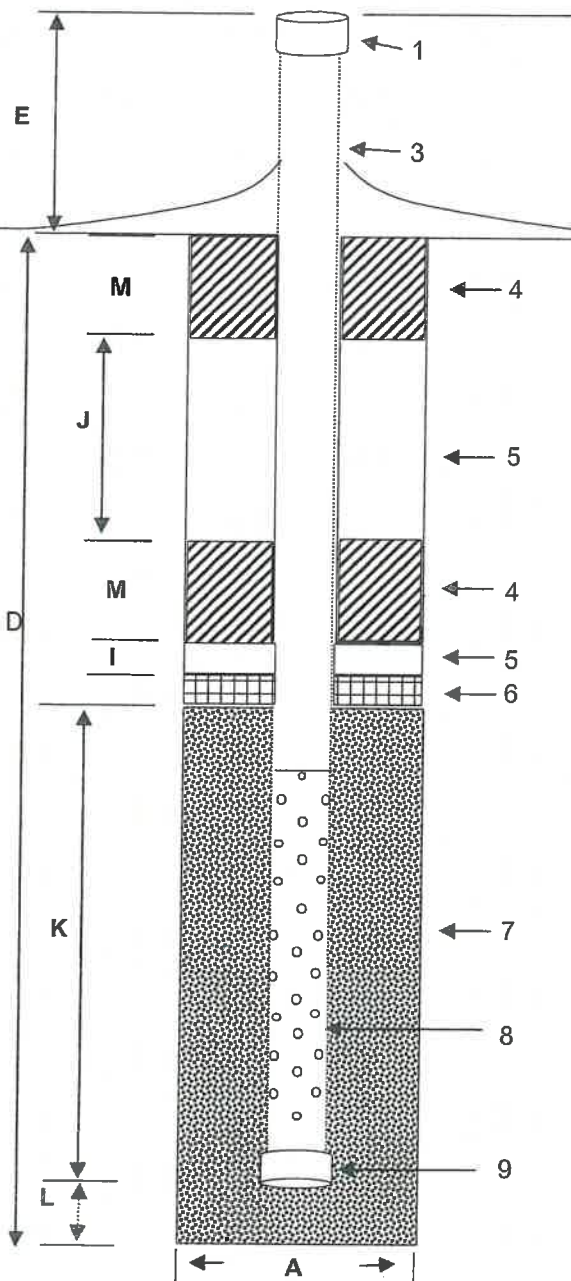
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.2.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-147

**WELL INFORMATION**Well Location: EW-147  
Coordinates:  
Northing: 597298  
Easting: 2057467  
Ground Elevation: 889**DRILLING DATA**Start Time: 8:30  
Completion Time: 14:00  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |       |
|----------------------|------|-------|
| A. Bore Diameter     | (IN) | 36    |
| B. Pipe Diameter     | (IN) | 6     |
| C. Pipe Type         |      | HDPE  |
| D. Bore Depth        | (FT) | 109   |
| E. Pipe Aboveground  | (FT) | 4     |
| F. Pipe Belowground  | (FT) | 108   |
| G. Perf Pipe Length  | (FT) | 88    |
| H. Solid Pipe Length | (FT) | 20    |
| I. Soil Plug Length  | (FT) | 1     |
| J. Soil Cover Length | (FT) | 12    |
| K. Stone Backfill    | (FT) | 90    |
| L. Stone Base        | (FT) | 1     |
| M. Bentonite Seal    | (FT) | 2     |
| Refuse Depth         | (FT) | 2     |
| Leachate Depth       | (FT) | 70    |
| Total Pipe Length    | (FT) | 119   |
| Average Refuse Temp. |      | 113.2 |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.1.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-147

**WELL INFORMATION**Well Location: EW-147  
Coordinates:  
Northing: 597298  
Easting: 2057467  
Ground Elevation: 889**DRILLING DATA**Start Time: 8:30  
Completion Time: 14:00  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION  | WET/DRY | TEMP (F) |
|------------|----------------|--------------|---------|----------|
| 0 TO 1     | COVER          | CLAY         | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL,W,M | D       |          |
| 5 TO 10    | HHCT           | PA,PL,CL,W   | D       | 110.5    |
| 10 TO 15   | HHCT           | PA,PL,CL,W   | D       |          |
| 15 TO 20   | HHCT           | PA,PL,CL,W   | D       | 125.6    |
| 20 TO 25   | HHCT           | PA,PL,CL,W,M | D       |          |
| 25 TO 30   | HHCT           | PA,PL,M,W    | D       | 123.4    |
| 30 TO 35   | HHCT           | PA,PL,M,W    | D       |          |
| 35 TO 40   | HHCT           | PA,PL,M,W    | D       |          |
| 40 TO 45   | HHCT           | PA,PL,M,W    | D       | 118.4    |
| 45 TO 50   | HHCT           | PA,PL,M,W    | D       | 119.0    |
| 50 TO 55   | HHCT           | PA,PL,M,W    | SL W    | 119.3    |
| 55 TO 60   | HHCT           | PA,PL,M,W    | SL W    |          |
| 60 TO 65   | HHCT           | PA,PL,M,W    | SL W    | 100.0    |
| 65 TO 70   | HHCT           | PD,M,W       | SL W    |          |
| 70 TO 75   | HHCT           | MD TO HIGH   | SL W    | 102.0    |
| 75 TO 80   | HHCT           | MD TO HIGH   | W       |          |
| 80 TO 85   | HHCT           | MD TO HIGH   | W       | 107.0    |
| 85 TO 90   | HHCT           | MD TO HIGH   | W       |          |
| 90 TO 95   | HHCT           | MD TO HIGH   | W       | 106.0    |
| 95 TO 100  | HHCT           | MD TO HIGH   | W       |          |
| 100 TO 105 | HHCT           | MD TO HIGH   | W       | 111.0    |
| 105 TO 110 |                | MD TO HIGH   | W       |          |
| 110 TO 115 |                |              |         |          |
| 115 TO 120 |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

AEGL temp data

|                                    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
|------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|------|----|------------------|------|---|--------------|--|------|---------------|------|----|---------------------|------|---|---------------------|------|----|---------------------|------|----|----------------------|------|----|---------------------|------|---|----------------------|------|----|-------------------|------|----|---------------|------|---|-------------------|------|---|--------------|------|---|----------------|------|----|-------------------|------|----|----------------------|--|-------|
| <b>BROWN and CALDWELL</b>          |      | <b>GAS EXTRACTION<br/>WELL CONSTRUCTION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DATE: 7.3.09    |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Project: Lorain II County Landfill |      | Project No:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Well ID: EW-167 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Location: Oberlin, OH              |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| <b>WELL INFORMATION</b>            |      | <b>DRILLING DATA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Well Location: EW-167              |      | Start Time: 8:00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Coordinates:                       |      | Completion Time: 14:00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Northing: 597577                   |      | CQA Monitor: JAO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Easting: 2057448                   |      | Driller: Dokk Stanley                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Ground Elevation: 880              |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| <b>WELL CONSTRUCTION</b>           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
|                                    |      | <b>Materials List</b><br>1. Temporary Cap<br>2. Flange Connection<br>3. SDR 11 HDPE Solid Pipe<br>4. Bentonite Seal<br>5. Clean Onsite Soil<br>6. Geonet Ring<br>7. 1'-3" Natural Stone<br>8. SDR 11 HDPE Perforated Pipe<br>9. End Cap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
|                                    |      | <b>Specifications</b><br><table border="1"> <tr> <td>A. Bore Diameter</td> <td>(IN)</td> <td>36</td> </tr> <tr> <td>B. Pipe Diameter</td> <td>(IN)</td> <td>6</td> </tr> <tr> <td>C. Pipe Type</td> <td></td> <td>HDPE</td> </tr> <tr> <td>D. Bore Depth</td> <td>(FT)</td> <td>95</td> </tr> <tr> <td>E. Pipe Aboveground</td> <td>(FT)</td> <td>4</td> </tr> <tr> <td>F. Pipe Belowground</td> <td>(FT)</td> <td>94</td> </tr> <tr> <td>G. Perf Pipe Length</td> <td>(FT)</td> <td>74</td> </tr> <tr> <td>H. Solid Pipe Length</td> <td>(FT)</td> <td>20</td> </tr> <tr> <td>I. Soil Plug Length</td> <td>(FT)</td> <td>1</td> </tr> <tr> <td>J. Soil Cover Length</td> <td>(FT)</td> <td>12</td> </tr> <tr> <td>K. Stone Backfill</td> <td>(FT)</td> <td>76</td> </tr> <tr> <td>L. Stone Base</td> <td>(FT)</td> <td>1</td> </tr> <tr> <td>M. Bentonite Seal</td> <td>(FT)</td> <td>2</td> </tr> <tr> <td>Refuse Depth</td> <td>(FT)</td> <td>2</td> </tr> <tr> <td>Leachate Depth</td> <td>(FT)</td> <td>65</td> </tr> <tr> <td>Total Pipe Length</td> <td>(FT)</td> <td>98</td> </tr> <tr> <td>Average Refuse Temp.</td> <td></td> <td>101.1</td> </tr> </table> |                 | A. Bore Diameter | (IN) | 36 | B. Pipe Diameter | (IN) | 6 | C. Pipe Type |  | HDPE | D. Bore Depth | (FT) | 95 | E. Pipe Aboveground | (FT) | 4 | F. Pipe Belowground | (FT) | 94 | G. Perf Pipe Length | (FT) | 74 | H. Solid Pipe Length | (FT) | 20 | I. Soil Plug Length | (FT) | 1 | J. Soil Cover Length | (FT) | 12 | K. Stone Backfill | (FT) | 76 | L. Stone Base | (FT) | 1 | M. Bentonite Seal | (FT) | 2 | Refuse Depth | (FT) | 2 | Leachate Depth | (FT) | 65 | Total Pipe Length | (FT) | 98 | Average Refuse Temp. |  | 101.1 |
|                                    |      | A. Bore Diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (IN)            | 36               |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| B. Pipe Diameter                   | (IN) | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| C. Pipe Type                       |      | HDPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| D. Bore Depth                      | (FT) | 95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| E. Pipe Aboveground                | (FT) | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| F. Pipe Belowground                | (FT) | 94                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| G. Perf Pipe Length                | (FT) | 74                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| H. Solid Pipe Length               | (FT) | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| I. Soil Plug Length                | (FT) | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| J. Soil Cover Length               | (FT) | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| K. Stone Backfill                  | (FT) | 76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| L. Stone Base                      | (FT) | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| M. Bentonite Seal                  | (FT) | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Refuse Depth                       | (FT) | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Leachate Depth                     | (FT) | 65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Total Pipe Length                  | (FT) | 98                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| Average Refuse Temp.               |      | 101.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |
| <b>Comments:</b>                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |                  |      |    |                  |      |   |              |  |      |               |      |    |                     |      |   |                     |      |    |                     |      |    |                      |      |    |                     |      |   |                      |      |    |                   |      |    |               |      |   |                   |      |   |              |      |   |                |      |    |                   |      |    |                      |  |       |

DATE: 7.3.09

Project No:

Well ID: EW-167

## WELL INFORMATION

## DRILLING DATA

Well Location: EW-167

|             |      |
|-------------|------|
| Start Time: | 8:00 |
|-------------|------|

Coordinates:

Completion Time: 14:00

Northing: 597577

CQA Monitor: JAO

Easting: 2057448

Driller:

Ground Elevation: 880

Driller:

Dokk Stanley

## WELL CONSTRUCTION

## Materials List

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

## Specifications

|                      |      |       |
|----------------------|------|-------|
| A. Bore Diameter     | (IN) | 36    |
| B. Pipe Diameter     | (IN) | 6     |
| C. Pipe Type         |      | HDPE  |
| D. Bore Depth        | (FT) | 95    |
| E. Pipe Aboveground  | (FT) | 4     |
| F. Pipe Belowground  | (FT) | 94    |
| G. Perf Pipe Length  | (FT) | 74    |
| H. Solid Pipe Length | (FT) | 20    |
| I. Soil Plug Length  | (FT) | 1     |
| J. Soil Cover Length | (FT) | 12    |
| K. Stone Backfill    | (FT) | 76    |
| L. Stone Base        | (FT) | 1     |
| M. Bentonite Seal    | (FT) | 2     |
| Refuse Depth         | (FT) | 2     |
| Leachate Depth       | (FT) | 65    |
| Total Pipe Length    | (FT) | 98    |
| Average Refuse Temp. |      | 101.1 |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.1.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-167

**WELL INFORMATION****DRILLING DATA**Well Location: EW-167  
Coordinates:  
Northing: 597577  
Easting: 2057448  
Ground Elevation: 880Start Time: 8:00  
Completion Time: 14:00  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL    | D       |          |
| 5 TO 10    | HHCT           | PA,PL,CL    | D       |          |
| 10 TO 15   | HHCT           | PA,PL,CL    | D       | 95.4     |
| 15 TO 20   | HHCT           | PA,PL,CL    | D       | 98.5     |
| 20 TO 25   | HHCT           | PA,PL,CL    | D       | 98.3     |
| 25 TO 30   | HHCT           | PA,PL,CL    | D       | 100.4    |
| 30 TO 35   | HHCT           | PA,PL,CL,M  | D       | 101.3    |
| 35 TO 40   | HHCT           | PA,PL,CL,M  | D       | 105.4    |
| 40 TO 45   | HHCT           | PA,PL,CL,M  | D       | 105.4    |
| 45 TO 50   | HHCT           | PA,PL,CL,M  | D       | 108.4    |
| 50 TO 55   | HHCT           | PA,PL,CL,M  | D       | 108.5    |
| 55 TO 60   | HHCT           | PD,W,M      | W       | 106.3    |
| 60 TO 65   | HHCT           | D,PL,M      | W       | 105.4    |
| 65 TO 70   | HHCT           | D,PL,M      | VW      | 101.4    |
| 70 TO 75   | HHCT           | PA,PL,CL,W  | VW      | 98.7     |
| 75 TO 80   | HHCT           | PA,PL,CL,W  | W       | 95.3     |
| 80 TO 85   | HHCT           | PA,PL,CL,W  | D       | 95.9     |
| 85 TO 90   | HHCT           | PA,PL,CL,W  | D       | 98.3     |
| 90 TO 95   | HHCT           | PA,PL,CL,W  | D       | 95.9     |
| 95 TO 100  |                |             |         |          |
| 100 TO 105 |                |             |         |          |
| 105 TO 110 |                |             |         |          |
| 110 TO 115 |                |             |         |          |
| 115 TO 120 |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
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|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

AEGL temp data

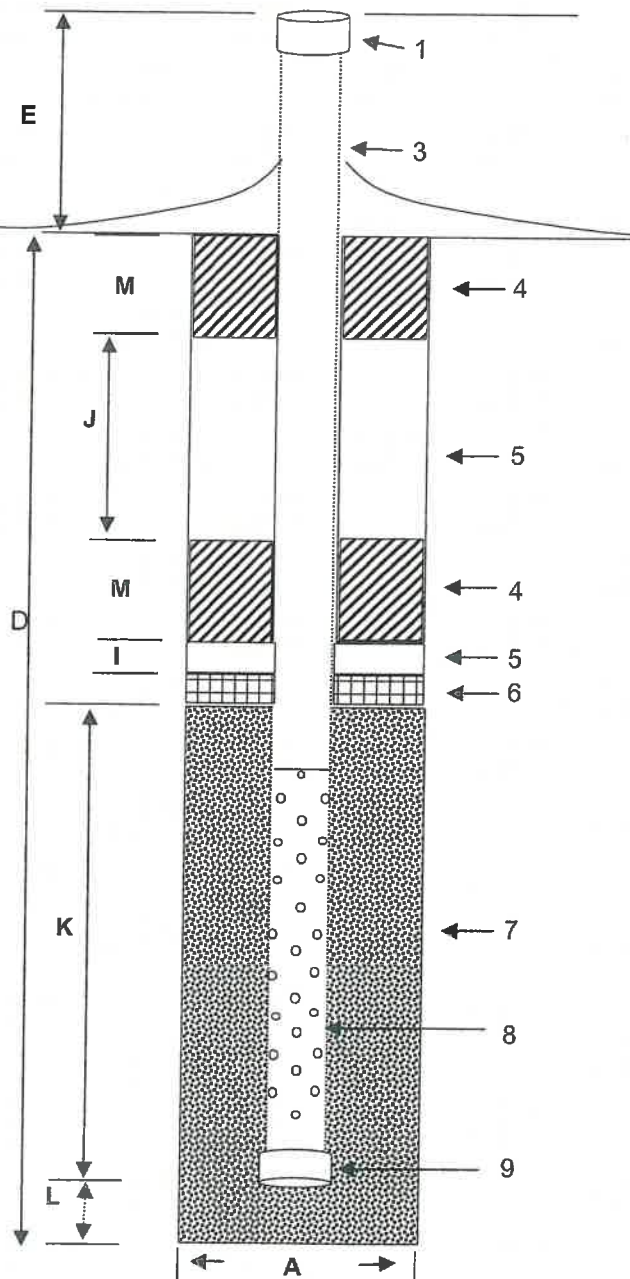
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.25.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-5R

**WELL INFORMATION****DRILLING DATA**Well Location: TEW-5R  
Coordinates:  
Northing: 596757  
Easting: 2058722  
Ground Elevation: 903Start Time: 13:20 6.25  
Completion Time: 12:00 12:00  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1'-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |       |
|----------------------|------|-------|
| A. Bore Diameter     | (IN) | 36    |
| B. Pipe Diameter     | (IN) | 6     |
| C. Pipe Type         |      | HDPE  |
| D. Bore Depth        | (FT) | 101   |
| E. Pipe Aboveground  | (FT) | 4     |
| F. Pipe Belowground  | (FT) | 100   |
| G. Perf Pipe Length  | (FT) | 80    |
| H. Solid Pipe Length | (FT) | 20    |
| I. Soil Plug Length  | (FT) | 1     |
| J. Soil Cover Length | (FT) | 12    |
| K. Stone Backfill    | (FT) | 82    |
| L. Stone Base        | (FT) | 1     |
| M. Bentonite Seal    | (FT) | 2     |
| Refuse Depth         | (FT) | 2     |
| Leachate Depth       | (FT) | 55    |
| Total Pipe Length    | (FT) | 104   |
| Average Refuse Temp. |      | 105.6 |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.25.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-5R

**WELL INFORMATION**Well Location: TEW-5R  
Coordinates:  
    Northing: 596757  
    Easting: 2058722  
    Ground Elevation: 903**DRILLING DATA**Start Time: 13:20 6.24  
Completion Time: 12:00 6.25  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH                                                                                                                                                            | MATERIAL DESC. | COMPOSITION         | WET/DRY | TEMP (F) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|---------|----------|
| 0 TO 1                                                                                                                                                           | COVER          | CLAY                | D       |          |
| 1 TO 5                                                                                                                                                           | HHCT           | SOIL, PA, PL, CL    | D       |          |
| 5 TO 10                                                                                                                                                          | HHCT           | SOIL, PA, PL, CL, W | D       | 82.4     |
| 10 TO 15                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       | 84.2     |
| 15 TO 20                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       | 91.4     |
| 20 TO 25                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       | 94.5     |
| 25 TO 30                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       |          |
| 30 TO 35                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       |          |
| 35 TO 40                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       | 100.1    |
| 40 TO 45                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       | 104.0    |
| 45 TO 50                                                                                                                                                         | HHCT           | PA, PL, CL, W       | D       |          |
| 50 TO 55                                                                                                                                                         | HHCT           | PA, PL, CL, W       | SL W    |          |
| 55 TO 60                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | W       | 114.8    |
| 60 TO 65                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | W       | 115.2    |
| Drilling suspended for the day on 6-24-09 at 16:30, bucket placed in borehole and surrounded with clay and caution tape;<br>drilling resumed on 6-25-09 at 7:30. |                |                     |         |          |
| 65 TO 70                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | VW      |          |
| 70 TO 75                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | VW      | 113.5    |
| 75 TO 80                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | VW      | 113.5    |
| 80 TO 85                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | VW      |          |
| 85 TO 90                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | VW      |          |
| 90 TO 95                                                                                                                                                         | HHCT           | PD, PA, PL, M, W    | W       | 124.7    |
| 95 TO 100                                                                                                                                                        | HHCT           | PD, PA, PL, M, W    | W       | 129.2    |
| 100 TO 105                                                                                                                                                       | HHCT           | PD, PA, PL, M, W    | W       | 131.0    |
| 105 TO 110                                                                                                                                                       |                |                     |         |          |
| 110 TO 115                                                                                                                                                       |                |                     |         |          |
| 115 TO 120                                                                                                                                                       |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |
|                                                                                                                                                                  |                |                     |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

AEGL temp data

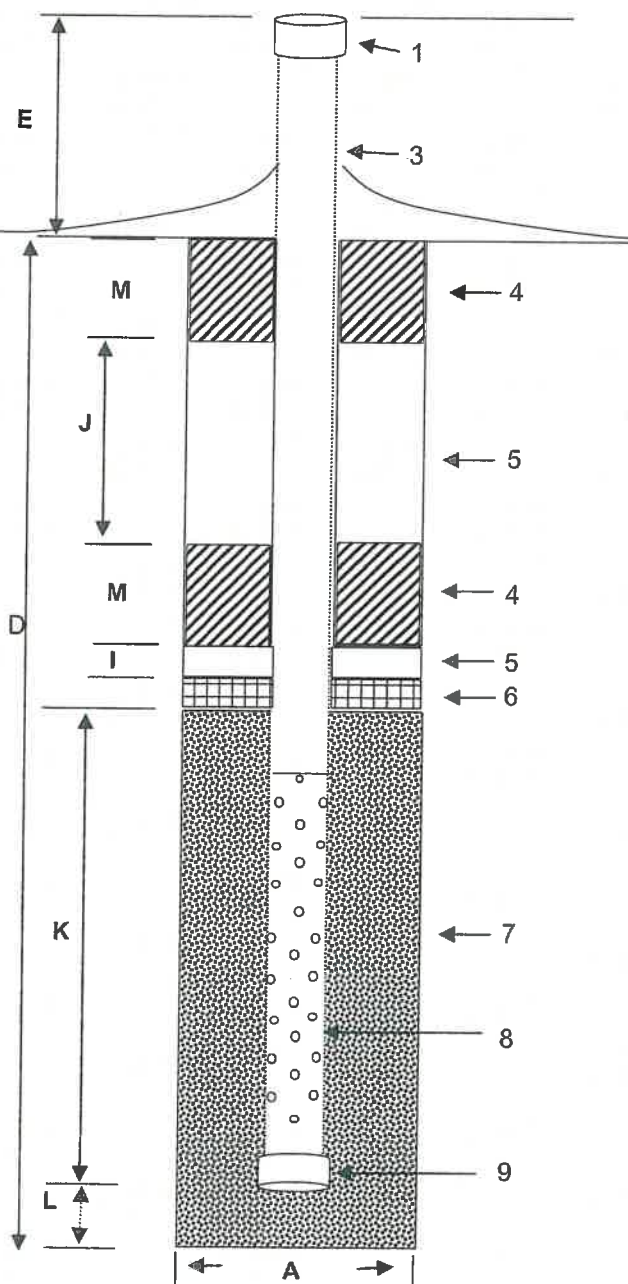
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/23/2009

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-6R

**WELL INFORMATION**Well Location: TEW-6R  
Coordinates:  
Northing: 596766  
Easting: 2059025  
Ground Elevation: 904**DRILLING DATA**Start Time: 10:40  
Completion Time: 15:45  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1'-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 102  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 101  |
| G. Perf Pipe Length  | (FT) | 81   |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 7    |
| K. Stone Backfill    | (FT) | 83   |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | Dry  |
| Total Pipe Length    | (FT) | 105  |
| Average Refuse Temp. |      |      |

**Comments:**

Gas production at this well should be good. Methane LEL readings above 20% from 80 feet on. Slightly wet and partially decomposed at ~95 feet. Gas bubbling up through water in top bentonite seal.



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/23/2009

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-6R

**WELL INFORMATION****DRILLING DATA**Well Location: TEW-6R  
Coordinates:  
Northing: 596766  
Easting: 2059025  
Ground Elevation: 904Start Time: 10:40  
Completion Time: 15:45  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION  | WET/DRY    | TEMP (F) |
|------------|----------------|--------------|------------|----------|
| 0 TO 1     | COVER          | CLAY         | D          |          |
| 1 TO 5     | HHCT           | PA,PL,CL,M,W | D          | 75.0     |
| 5 TO 10    | HHCT           | PA,PL,CL,M,W | D          | 78.8     |
| 10 TO 15   | HHCT           | PA,PL,CL,M,W | D          | 84.0     |
| 15 TO 20   | HHCT           | PA,PL,CL,M,W | D          | 89.0     |
| 20 TO 25   | HHCT           | PA,PL,CL,M,W | D          | 89.0     |
| 25 TO 30   | HHCT           | PA,PL,CL,M,W | D          | 91.2     |
| 30 TO 35   | HHCT           | PA,PL,CL,M,W | D          | 91.5     |
| 35 TO 40   | HHCT           | PA,PL,CL,M,W | D          | 92.5     |
| 40 TO 45   | HHCT           | PA,PL,CL,M,W | D          | 95.0     |
| 45 TO 50   | HHCT           | PA,PL,CL,M,W | D          | 98.0     |
| 50 TO 55   | HHCT           | PA,PL,CL,M,W | D          | 98.0     |
| 55 TO 60   | HHCT           | PA,PL,CL,M,W | D          | 105.0    |
| 60 TO 65   | HHCT           | PD,PL,PA,W   | D          | 110.1    |
| 65 TO 70   | HHCT           | PD,PL,PA,W   | D          | 112.3    |
| 70 TO 75   | HHCT           | PD,PL,PA,W   | D          | 116.7    |
| 75 TO 80   | HHCT           | PD,PL,PA,W   | D          | 118.5    |
| 80 TO 85   | HHCT           | PD,PL,PA,W   | D          | 118.9    |
| 85 TO 90   | HHCT           | PD,PL,PA,W   | D          | 131.5    |
| 90 TO 95   | HHCT           | D            | SLIGHTLY W | 118.9    |
| 95 TO 100  | HHCT           | D            | D          | 120.0    |
| 100 TO 105 | HHCT           | D            | SLIGHTLY W | 120.0    |
| 105 TO 110 |                |              |            |          |
| 110 TO 115 |                |              |            |          |
| 115 TO 120 |                |              |            |          |
|            |                |              |            |          |
|            |                |              |            |          |
|            |                |              |            |          |
|            |                |              |            |          |
|            |                |              |            |          |
|            |                |              |            |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

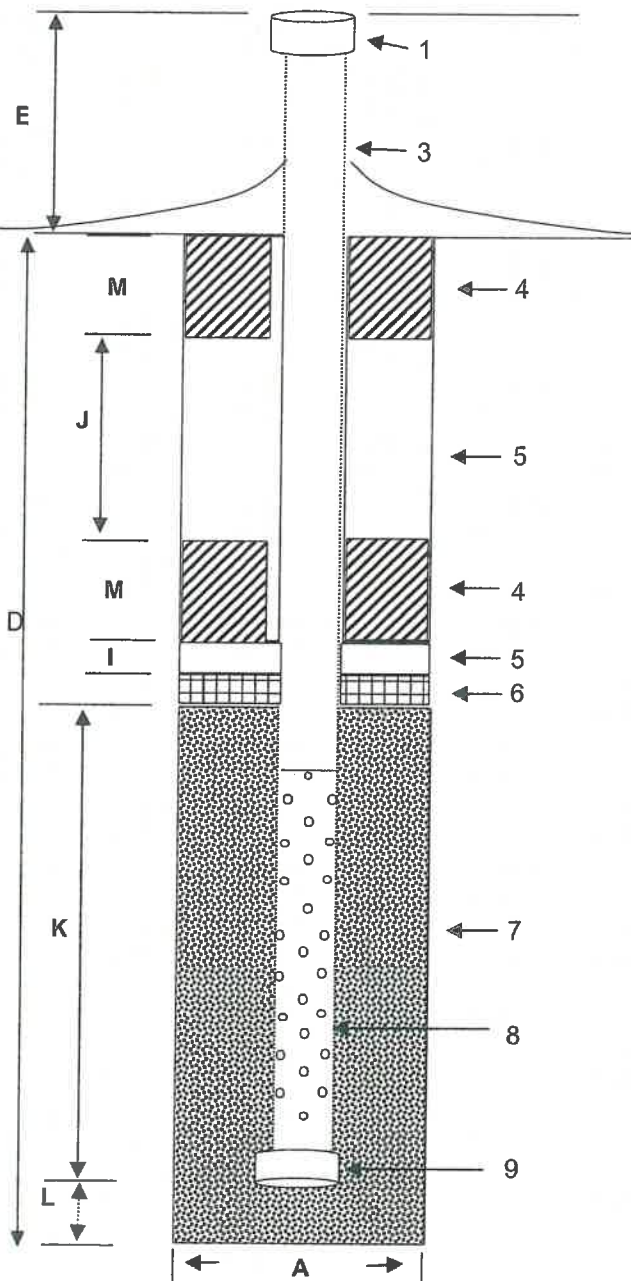
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/22 &amp; 6/23

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-7R

**WELL INFORMATION**Well Location: TEW-7R  
Coordinates:  
Northing: 596737.00  
Easting: 2059267.00  
Ground Elevation: 896.00**DRILLING DATA**Start Time: 13:30 22-Jun  
Completion Time: 10:00 23-Jun  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1'-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 106  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 105  |
| G. Perf Pipe Length  | (FT) | 85   |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 7    |
| K. Stone Backfill    | (FT) | 88   |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 80   |
| Total Pipe Length    | (FT) | 109  |
| Average Refuse Temp. |      | 93.8 |

**Comments:**

At ~80 feet well spoils became extremely saturated.



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6/22 &amp; 6/23

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: TEW-7R

**WELL INFORMATION**Well Location: TEW-7R  
Coordinates:  
    Northing: 596737  
    Easting: 2059267  
    Ground Elevation: 896**DRILLING DATA**Start Time: 13:30 22-Jun  
Completion Time: 10:00 23-Jun  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION  | WET/DRY | TEMP (F) |
|------------|----------------|--------------|---------|----------|
| 0 TO 1     | COVER          | CLAY         | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL     | D       | 80.6     |
| 5 TO 10    | HHCT           | PA,PL,CL,W   | D       | 80.5     |
| 10 TO 15   | HHCT           | PA,PL,CL,W,M | D       | 78.5     |
| 15 TO 20   | HHCT           | CLAY PLUG    | D       | 75.2     |
| 20 TO 25   | HHCT           | PA,PL,W,CL   | D       | 75.2     |
| 25 TO 30   | HHCT           | PA,PL,W,CL   | D       | 79.1     |
| 30 TO 35   | HHCT           | PA,PL,W,M    | D       | 79.2     |
| 35 TO 40   | HHCT           | PA,PL,W,M    | D       | 84       |
| 40 TO 45   | HHCT           | PA,PL,W,M    | D       | 86       |
| 45 TO 50   | HHCT           | PA,PL,W,M    | D       | 95       |
| 50 TO 55   | HHCT           | PA,PL,W,M    | D       | 95.3     |
| 55 TO 60   | HHCT           | PA,PL,W,M    | D       | 98       |
| 60 TO 65   | HHCT           | PA,PL,W,M    | D       | 100      |
| 65 TO 70   | HHCT           | PA,PL,W,M    | D       | 110      |
| 70 TO 75   | HHCT           | PA,PL,W,M    | D       | 110      |
| 75 TO 80   | HHCT           | PD,PL,PA     | W       | 113.9    |
| 80 TO 85   | HHCT           | PD           | W       | 117      |
| 85 TO 90   | HHCT           | D            | VERY W  | 119.3    |
| 90 TO 95   | HHCT           | D            | VERY W  | 105      |
| 95 TO 100  | HHCT           | D            | VERY W  | 109      |
| 100 TO 105 | HHCT           | D            | VERY W  | 112.1    |
| 105 TO 110 |                |              |         |          |
| 110 TO 115 |                |              |         |          |
| 115 TO 120 |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |
|            |                |              |         |          |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

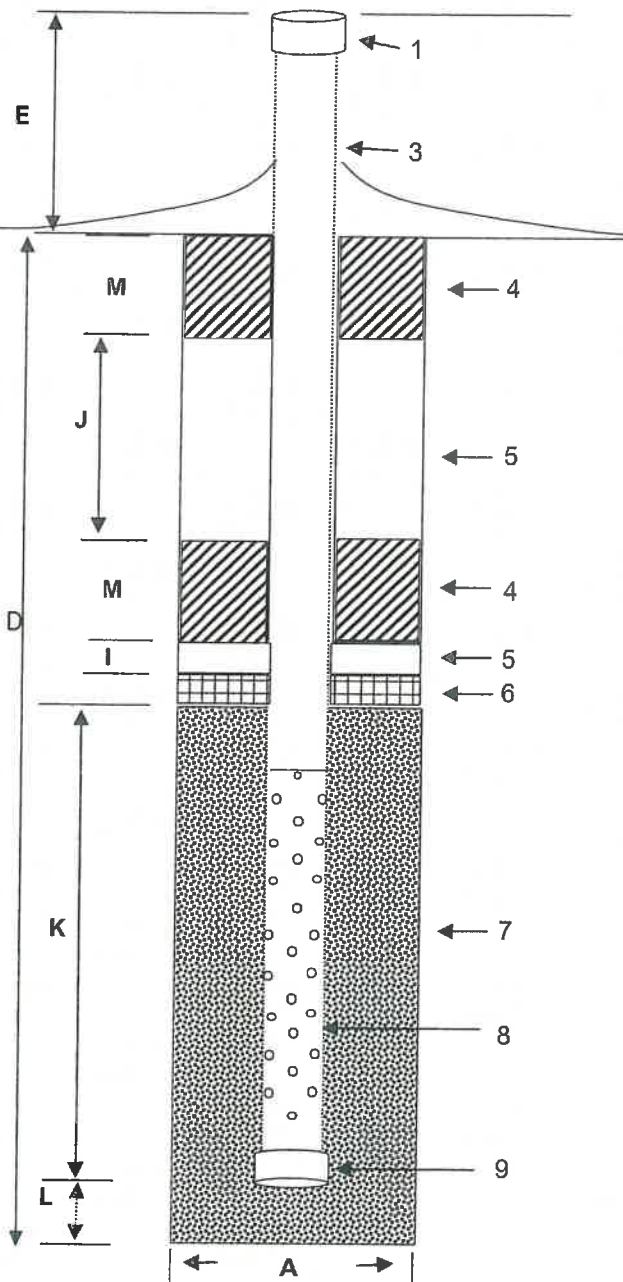
**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.29.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-53R

**WELL INFORMATION**Well Location: EW-53R  
Coordinates:  
Northing: 596792  
Easting: 2058489  
Ground Elevation: 908**DRILLING DATA**Start Time: 7:45  
Completion Time: 14:00  
CQA Monitor: JAO  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1"-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 108  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 107  |
| G. Perf Pipe Length  | (FT) | 87   |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 12   |
| K. Stone Backfill    | (FT) | 89   |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | Dry  |
| Total Pipe Length    | (FT) | 111  |
| Average Refuse Temp. |      |      |

**Comments:**

Temporary jumper line drilled through when drilling at this well. Site & EDI notified and AEG repaired on 6.30.09. Well located directly atop the jumper line.



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 6.29.09

Project: Lorain II County Landfill  
Location: Oberlin, OH

Project No:

Well ID: EW-53R

**WELL INFORMATION****DRILLING DATA**Well Location: EW-53R  
Coordinates:  
Northing: 596792  
Easting: 2058489  
Ground Elevation: 908Start Time: 7:45  
Completion Time: 14:00  
CQA Monitor: JAO  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL,W  | D       | 80.6     |
| 5 TO 10    | HHCT           | PA,PL,CL,W  | D       | 81.5     |
| 10 TO 15   | HHCT           | PA,PL,CL,W  | D       |          |
| 15 TO 20   | HHCT           | PA,PL,CL,W  | D       |          |
| 20 TO 25   | HHCT           | PA,PL,CL,W  | D       |          |
| 25 TO 30   | HHCT           | PA,PL,CL,W  | D       |          |
| 30 TO 35   | HHCT           | PA,PL,CL,W  | D       |          |
| 35 TO 40   | HHCT           | PA,PL,CL,W  | D       |          |
| 40 TO 45   | HHCT           | PA,PL,CL,W  | D       |          |
| 45 TO 50   | HHCT           | PA,PL,CL,W  | D       |          |
| 50 TO 55   | HHCT           | PA,PL,CL,W  | D       |          |
| 55 TO 60   | HHCT           | PA,PL,CL,W  | D       |          |
| 60 TO 65   | HHCT           | PA,PL,CL,W  | D       |          |
| 65 TO 70   | HHCT           | PA,PL,CL,W  | D       |          |
| 70 TO 75   | HHCT           | PA,PL,CL,W  | D       | 116.5    |
| 75 TO 80   | HHCT           | PA,PL,W,M   | D       | 118.4    |
| 80 TO 85   | HHCT           | PD,PA,PL    | D       | 115.6    |
| 85 TO 90   | HHCT           | PD,M,PA,PL  | D       | 118.4    |
| 90 TO 95   | HHCT           | W,PA,PL     | D       | 122.5    |
| 95 TO 100  | HHCT           | W,PA,PL     | D       | 131.1    |
| 100 TO 105 | HHCT           | W,PA,PL     | D       | 131.1    |
| 105 TO 110 |                |             |         |          |
| 110 TO 115 |                |             |         |          |
| 115 TO 120 |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |
|            |                |             |         |          |

## Material Description:

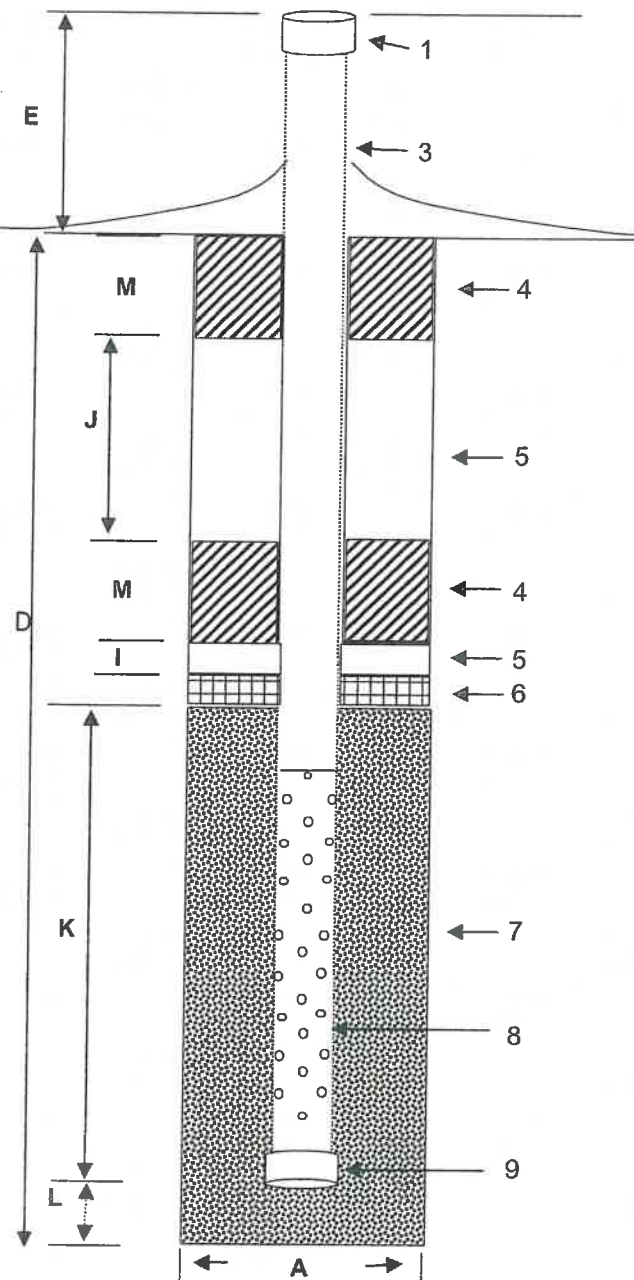
HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed

**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.6.09

Project: Lorain II County Landfill  
Location: Oberlin, OHProject No:  
137719

Well ID: EW-58R

**WELL INFORMATION**Well Location: EW-58R  
Coordinates:  
Northing: 596883  
Easting: 2058166  
Ground Elevation: 908**DRILLING DATA**Start Time: 845  
Completion Time: 1430  
CQA Monitor: PKS  
Driller: Dokk Stanley**WELL CONSTRUCTION****Materials List**

1. Temporary Cap
2. Flange Connection
3. SDR 11 HDPE Solid Pipe
4. Bentonite Seal
5. Clean Onsite Soil
6. Geonet Ring
7. 1'-3" Natural Stone
8. SDR 11 HDPE Perforated Pipe
9. End Cap

**Specifications**

|                      |      |      |
|----------------------|------|------|
| A. Bore Diameter     | (IN) | 36   |
| B. Pipe Diameter     | (IN) | 6    |
| C. Pipe Type         |      | HDPE |
| D. Bore Depth        | (FT) | 122  |
| E. Pipe Aboveground  | (FT) | 4    |
| F. Pipe Belowground  | (FT) | 121  |
| G. Perf Pipe Length  | (FT) | 101  |
| H. Solid Pipe Length | (FT) | 20   |
| I. Soil Plug Length  | (FT) | 1    |
| J. Soil Cover Length | (FT) | 12   |
| K. Stone Backfill    | (FT) | 104  |
| L. Stone Base        | (FT) | 1    |
| M. Bentonite Seal    | (FT) | 2    |
| Refuse Depth         | (FT) | 2    |
| Leachate Depth       | (FT) | 65   |
| Total Pipe Length    | (FT) | 125  |
| Average Refuse Temp. |      | 103  |

**Comments:**



**BROWN and CALDWELL****GAS EXTRACTION  
WELL CONSTRUCTION**

DATE: 7.6.09

Project: Lorain II County Landfill  
Location: Oberlin, OHProject No:  
137719

Well ID: EW-58R

**WELL INFORMATION****DRILLING DATA**Well Location: EW-58R  
Coordinates:  
Northing: 596883  
Easting: 2058166  
Ground Elevation: 908Start Time: 845  
Completion Time: 1430  
CQA Monitor: PKS  
Driller: Dokk Stanley

| DEPTH      | MATERIAL DESC. | COMPOSITION | WET/DRY | TEMP (F) |
|------------|----------------|-------------|---------|----------|
| 0 TO 1     | COVER          | CLAY        | D       |          |
| 1 TO 5     | HHCT           | PA,PL,CL    | D       |          |
| 5 TO 10    | HHCT           | PA,PL,CL    | D       | 88       |
| 10 TO 15   | HHCT           | PA,PL,CL    | D       | 92       |
| 15 TO 20   | HHCT           | PA,PL,CL    | D       | 97       |
| 20 TO 25   | HHCT           | PA,PL,CL    | D       | 97       |
| 25 TO 30   | HHCT           | PA,PL,CL    | D       | 96       |
| 30 TO 35   | HHCT           | PA,PL,CL,M  | D       | 97       |
| 35 TO 40   | HHCT           | PA,PL,CL,M  | D       | 99       |
| 40 TO 45   | HHCT           | PA,PL,CL,M  | D       | 95       |
| 45 TO 50   | HHCT           | PA,PL,CL,M  | D       | 94       |
| 50 TO 55   | HHCT           | PA,PL,CL,M  | D       | 96       |
| 55 TO 60   | HHCT           | PD,W,M      | W       | 99       |
| 60 TO 65   | HHCT           | D,PL,M      | W       | 99       |
| 65 TO 70   | HHCT           | D,PL,M      | VW      | 100      |
| 70 TO 75   | HHCT           | PA,PL,CL,W  | VW      | 104      |
| 75 TO 80   | HHCT           | PA,PL,CL,W  | W       | 106      |
| 80 TO 85   | HHCT           | PA,PL,CL,W  | D       | 106      |
| 85 TO 90   | HHCT           | PA,PL,CL,W  | D       | 108      |
| 90 TO 95   | HHCT           | PA,PL,CL,W  | D       | 109      |
| 95 TO 100  | HHCT           | PA,PL,CL,W  | W       | 111      |
| 100 TO 105 | HHCT           | PA,PL,CL,W  | W       | 113      |
| 105 TO 110 | HHCT           | PA,PL,CL,W  | W       | 114      |
| 110 TO 115 | HHCT           | PA,PL,CL,W  | W       | 116      |
| 115 TO 120 | HHCT           | PA,PL,CL,W  | W       | 116      |
| 120 TO 125 | HHCT           | PA,PL,CL,W  | W       | 119      |

## Material Description:

HHCT Household Common Trash  
PA Paper/Cardboard Products  
CL Textiles(clothes, fabrics)  
W Wood  
M MetalR Rubber  
GL Glass  
PD Partially Decomposed  
D Decomposed  
PL Plastic

**American Environmental Group, Ltd**





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Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain

DATE: 6/25/2009

PROJECT# 101-09-117

| Drilling                               |                            | Well Asbuild |  |
|----------------------------------------|----------------------------|--------------|--|
| TEW 5R WELL NUMBER OR NAME             |                            |              |  |
| 101                                    | LINEAR FEET OF DRILLING    |              |  |
| 101                                    | LINEAR FEET OF COMPLETION  |              |  |
|                                        | LINEAR FEET OF ABANDONMENT |              |  |
| Time in:                               | Time out:                  |              |  |
| Weather conditions:                    |                            |              |  |
| Site conditions:                       |                            |              |  |
| Rig hrs:                               |                            |              |  |
| Service: <u>Radiator</u> <u>Grease</u> |                            |              |  |
| NOTES:                                 |                            |              |  |
| Total Batching Time:                   |                            |              |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate          | dry                | 94   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate          | dry                | 91   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 93   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 95   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 93   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | high              | damp               | 100  |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | high              | damp               | 102  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 101  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 104  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | damp               | 103  |
| 5:00           |        |     |          | 100-110         | TD 101'           |                   |                    |      |
| 6:00           |        |     |          | 110-120         |                   |                   |                    |      |
| Notes          |        |     |          | 120-130         |                   |                   |                    |      |
| northing       |        |     |          | 130-140         |                   |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, Coa monitor, BC  
NAME & TITLE

Dokk 6/25/2009  
AEGLE SITE SUPERVISOR DATE



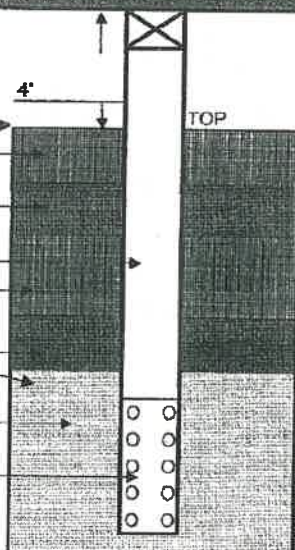
American  
Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain

DATE: 6/23/2009

PROJECT# 101-09-117

| Drilling                               |  | Well Asbuild                                                                        |  |
|----------------------------------------|--|-------------------------------------------------------------------------------------|--|
| TEW6R WELL NUMBER OR NAME              |  |  |  |
| 102 LINEAR FEET OF DRILLING            |  |                                                                                     |  |
| 102 LINEAR FEET OF COMPLETION          |  |                                                                                     |  |
| LINEAR FEET OF ABANDONMENT             |  |                                                                                     |  |
| Time in: _____ Time out: _____         |  |                                                                                     |  |
| Weather conditions: _____              |  |                                                                                     |  |
| Site conditions: _____                 |  |                                                                                     |  |
| Rig hrs: _____                         |  |                                                                                     |  |
| Service: <u>Radiator</u> <u>Grease</u> |  |                                                                                     |  |
| NOTES:                                 |  |                                                                                     |  |
| Total Benching Time:                   |  |                                                                                     |  |
| Backfill Material <u>1</u>             |  | <u>1</u>                                                                            |  |
| 2' Bentonite Seal <u>2</u>             |  | <u>3</u>                                                                            |  |
| Length of Solid <u>20</u>              |  | <u>15</u>                                                                           |  |
| Backfill Material <u>12</u>            |  | <u>18</u>                                                                           |  |
| 1' dirt &                              |  |                                                                                     |  |
| 2' Min Bent. Seal <u>3</u>             |  |                                                                                     |  |
| Gravel Extend 2 Ft Above Perf.         |  |                                                                                     |  |
| Lgth of Gravel Pk <u>84</u>            |  |                                                                                     |  |
| Lgth of Perf. Pipe <u>81</u>           |  |                                                                                     |  |
| Bore diameter <u>36-Inch</u>           |  | <u>101</u>                                                                          |  |
| Bottom of bore <u>102</u>              |  | <u>102</u>                                                                          |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                      |                       |      |
|----------------|--------|-----|----------|-----------------|-------------------|----------------------|-----------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of<br>Decomp. | Degree of<br>Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate             | dry                   | 88   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate             | dry                   | 93   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate             | dry                   | 97   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate             | damp                  | 99   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate             | damp                  | 102  |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate             | damp                  | 101  |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate             | damp                  | 104  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high                 | wet                   | 105  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high                 | wet                   | 105  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high                 | wet                   | 107  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | high                 | wet                   | 109  |
| 6:00           |        |     |          | 110-120         | TD 102'           |                      |                       |      |
| Notes          |        |     |          | 120-130         |                   |                      |                       |      |
| northing       |        |     |          | 130-140         |                   |                      |                       |      |
| easting        |        |     |          | 140-150         |                   |                      |                       |      |

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, COA monitor, BC  
NAME & TITLE

Dokk 6/23/2009  
AEGL SITE SUPERVISOR DATE



## Well Log

PROJECT NAME Larain  
PROJECT# 101-09-117

DATE: 6/23/2009

| Drilling                                |                            | Well Asbuild                                                                                                                                                                                                                                                                                                                                                   |  |
|-----------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| TEW 7R WELL NUMBER OR NAME              |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| 106                                     | LINEAR FEET OF DRILLING    |                                                                                                                                                                                                                                                                                                                                                                |  |
| 106                                     | LINEAR FEET OF COMPLETION  |                                                                                                                                                                                                                                                                                                                                                                |  |
|                                         | LINEAR FEET OF ABANDONMENT |                                                                                                                                                                                                                                                                                                                                                                |  |
| Time in:                                | Time out:                  |                                                                                                                                                                                                                                                                                                                                                                |  |
| Weather conditions:                     |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| Site conditions:                        |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| Rig hrs:                                |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| Service: <u>Raidiator</u> <u>Grease</u> |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| NOTES:                                  |                            |                                                                                                                                                                                                                                                                                                                                                                |  |
| Total Benching Time:                    |                            | Top of ground elv. <u>896</u><br>Backfill Material <u>1</u><br>2' Bentonite Seal <u>2</u><br>Length of Solid <u>20</u><br>Backfill Material <u>12</u><br>1' dirt &<br>2' Min Bent. Seal <u>3</u><br>Gravel Extend 2 Ft Above Perf.<br>Lgth of Gravel Pk <u>88</u><br>Lgth of Perf. Pipe <u>85</u><br>Bore diameter <u>36-Inch</u><br>Bottom of bore <u>106</u> |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate          | dry                | 90   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate          | dry                | 91   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 95   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 99   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 104  |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate          | damp               | 105  |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate          | damp               | 104  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 108  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 103  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 100  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | high              | wet                | 106  |
| 6:00           |        |     |          | 110-120         | TD 106'           |                   |                    |      |
| Notes          |        |     |          | 120-130         |                   |                   |                    |      |
| northing       |        |     |          | 130-140         |                   |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CoA monitor, BC  
NAME & TITLE

Dokk 6/23/2009  
AEGLE SITE SUPERVISOR DATE





American  
Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain

DATE: 6/29/2009

PROJECT# 101-09-117

| Drilling                   |                            | Well Asbuild                                                                                                                                                                                                                                                                                                                                                       |  |
|----------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| EW 53R WELL NUMBER OR NAME |                            |                                                                                                                                                                                                                                                                                                                                                                    |  |
| 108                        | LINEAR FEET OF DRILLING    |                                                                                                                                                                                                                                                                                                                                                                    |  |
| 108                        | LINEAR FEET OF COMPLETION  |                                                                                                                                                                                                                                                                                                                                                                    |  |
|                            | LINEAR FEET OF ABANDONMENT |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Time in:                   | Time out:                  |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Weather conditions:        |                            |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Site conditions:           |                            |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Rig hrs:                   |                            |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Service:                   | Raidiator Grease           |                                                                                                                                                                                                                                                                                                                                                                    |  |
| NOTES:                     |                            |                                                                                                                                                                                                                                                                                                                                                                    |  |
| Total Banching Time:       |                            | Top of ground elv. <u>798-908</u><br>Backfill Material <u>1</u><br>2' Bentonite Seal <u>2</u><br>Length of Solid <u>20</u><br>Backfill Material <u>12</u><br>1' dirt &<br>2' Min Bent. Seal <u>3</u><br>Gravel Extend 2 Ft Above Perf.<br>Lgth of Gravel Pk <u>90</u><br>Lgth of Perf. Pipe <u>87</u><br>Bore diameter <u>36-Inch</u><br>Bottom of bore <u>108</u> |  |

| Monitoring Log                                            |        |     |          | Well Boring Log |                   |                   |                    |      |
|-----------------------------------------------------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time                                                      | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00                                                      |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate          | dry                | 90   |
| 8:00                                                      |        |     |          | 10-20           | Res Waste/dirt    | Moderate          | dry                | 90   |
| 9:00                                                      |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 91   |
| 10:00                                                     |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 94   |
| 11:00                                                     |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | wet                | 95   |
| 12:00                                                     |        |     |          | 50-60           | Res Waste/dirt    | high              | wet                | 93   |
| 1:00                                                      |        |     |          | 60-70           | Res Waste/dirt    | high              | wet                | 96   |
| 2:00                                                      |        |     |          | 70-80           | Res Waste/dirt    | high              | damp               | 99   |
| 3:00                                                      |        |     |          | 80-90           | Res Waste/dirt    | high              | damp               | 100  |
| 4:00                                                      |        |     |          | 90-100          | Res Waste/dirt    | high              | damp               | 103  |
| 5:00                                                      |        |     |          | 100-110         | Res Waste/dirt    | high              | damp               | 102  |
| 6:00                                                      |        |     |          | 110-120         | TD 108'           |                   |                    |      |
| Notes<br>northing <u>596792</u><br>easting <u>2058489</u> |        |     |          | 120-130         |                   |                   |                    |      |
|                                                           |        |     |          | 130-140         |                   |                   |                    |      |
|                                                           |        |     |          | 140-150         |                   |                   |                    |      |
|                                                           |        |     |          |                 |                   |                   |                    |      |

Jessica Owen 7-6-09  
 CLIENT REPRESENTATIVE DATE  
Jessica Owen, Co-Monitor, BC  
 NAME & TITLE

Dokk 6/29/2009  
 AEGL SITE SUPERVISOR DATE



## Well Log

PROJECT# 101-09-117

**DATE:** 6/24/2009

| Drilling                                   |  | Well Asbuilt |  |
|--------------------------------------------|--|--------------|--|
| <b>EW 126</b> WELL NUMBER OR NAME          |  |              |  |
| <b>117</b> LINEAR FEET OF DRILLING         |  |              |  |
| <b>117</b> LINEAR FEET OF COMPLETION       |  |              |  |
| LINEAR FEET OF ABANDONMENT                 |  |              |  |
| Time in: _____ Time out: _____             |  |              |  |
| Weather conditions: _____                  |  |              |  |
| Site conditions: _____                     |  |              |  |
| Rig hrs: _____                             |  |              |  |
| Service: _____ Radiator _____ Grease _____ |  |              |  |
| NOTES: _____                               |  |              |  |
| _____                                      |  |              |  |
| _____                                      |  |              |  |
| _____                                      |  |              |  |
| Total Batching Time: _____                 |  |              |  |
|                                            |  |              |  |

| Monitoring Log  |        |     |          | Well Boring Log |                   |                      |                       |       |
|-----------------|--------|-----|----------|-----------------|-------------------|----------------------|-----------------------|-------|
| Time            | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of<br>Decomp. | Degree of<br>Moisture | Temp. |
| 7:00            |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate             | dry                   | 87    |
| 8:00            |        |     |          | 10-20           | Res Waste/dirt    | Moderate             | dry                   | 90    |
| 9:00            |        |     |          | 20-30           | Res Waste/dirt    | Moderate             | dry                   | 96    |
| 10:00           |        |     |          | 30-40           | Res Waste/dirt    | Moderate             | damp                  | 96    |
| 11:00           |        |     |          | 40-50           | Res Waste/dirt    | Moderate             | damp                  | 97    |
| 12:00           |        |     |          | 50-60           | Res Waste/dirt    | high                 | wet                   | 102   |
| 1:00            |        |     |          | 60-70           | Res Waste/dirt    | high                 | wet                   | 105   |
| 2:00            |        |     |          | 70-80           | Res Waste/dirt    | high                 | wet                   | 103   |
| 3:00            |        |     |          | 80-90           | Res Waste/dirt    | high                 | wet                   | 106   |
| 4:00            |        |     |          | 90-100          | Res Waste/dirt    | high                 | wet                   | 104   |
| 5:00            |        |     |          | 100-110         | Res Waste/dirt    | high                 | wet                   | 111   |
| 6:00            |        |     |          | 110-120         | Res Waste/dirt    | high                 | damp                  | 110   |
| Notes           |        |     |          | 120-130         | TD 117'           |                      |                       |       |
| northing 696574 |        |     |          | 130-140         |                   |                      |                       |       |
| easting 2059084 |        |     |          | 140-150         |                   |                      |                       |       |

Jessica Owen  
 CLIENT REPRESENTATIVE  
 6-29-09  
 DATE  
 Jessica Owen, Co-Monitor, BC  
 NAME & TITLE

|                      |           |
|----------------------|-----------|
| Dokk                 | 6/24/2009 |
| AEGL SITE SUPERVISOR | DATE      |



American  
Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain  
PROJECT# 101-09-117

DATE: 6/26/2009

| Drilling                       |                            | Well Asbuild |  |
|--------------------------------|----------------------------|--------------|--|
| EW 135                         | WELL NUMBER OR NAME        |              |  |
| 128                            | LINEAR FEET OF DRILLING    |              |  |
| 128                            | LINEAR FEET OF COMPLETION  |              |  |
|                                | LINEAR FEET OF ABANDONMENT |              |  |
| Time in: _____                 | Time out: _____            |              |  |
| Weather conditions: _____      |                            |              |  |
| Site conditions: _____         |                            |              |  |
| Rig hrs: _____                 |                            |              |  |
| Service: _____ Raidiaor Grease |                            |              |  |
| NOTES: _____                   |                            |              |  |
| Total Benching Time: _____     |                            |              |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 2' | Moderate          | dry                | 88   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate          | dry                | 90   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 97   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 99   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 100  |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | high              | damp               | 102  |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | high              | damp               | 106  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 105  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 109  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 108  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | high              | wet                | 110  |
| 6:00           |        |     |          | 110-120         | Res Waste/dirt    | high              | wet                | 114  |
| Notes          |        |     |          | 120-130         | Res Waste/dirt    | high              | wet                | 113  |
| northing       |        |     |          | 130-140         | TD 128'           |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 6-29-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CCA monitor, BC  
NAME & TITLE

Dokk 6/26/2009  
AEGL SITE SUPERVISOR DATE





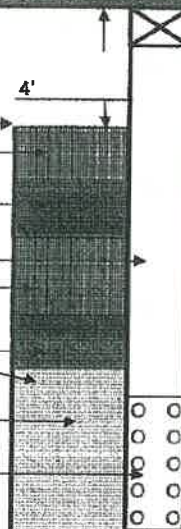
American  
Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain

DATE: 6/30/2009

PROJECT# 101-09-117

| Drilling                                   |  | Well Asbuilt                                                                        |  |
|--------------------------------------------|--|-------------------------------------------------------------------------------------|--|
| EW 129 WELL NUMBER OR NAME                 |  |  |  |
| 130 LINEAR FEET OF DRILLING                |  |                                                                                     |  |
| 130 LINEAR FEET OF COMPLETION              |  |                                                                                     |  |
| LINEAR FEET OF ABANDONMENT                 |  |                                                                                     |  |
| Time In: _____ Time out: _____             |  |                                                                                     |  |
| Weather conditions: _____                  |  |                                                                                     |  |
| Site conditions: _____                     |  |                                                                                     |  |
| Rig hrs: _____                             |  |                                                                                     |  |
| Service: _____ Radiator _____ Grease _____ |  |                                                                                     |  |
| NOTES: _____                               |  |                                                                                     |  |
| Total Benching Time: _____                 |  |                                                                                     |  |
|                                            |  | Top of ground elev. 915                                                             |  |
|                                            |  | Backfill Material 1                                                                 |  |
|                                            |  | 2' Bentonite Seal 2                                                                 |  |
|                                            |  | Length of Solid 20                                                                  |  |
|                                            |  | Backfill Material 12                                                                |  |
|                                            |  | 1' dirt &                                                                           |  |
|                                            |  | 2' Min Bent. Seal 3                                                                 |  |
|                                            |  | Gravel Extend 2 Ft Above Perf.                                                      |  |
|                                            |  | Lgth of Gravel Pk 112                                                               |  |
|                                            |  | Lgth of Perf. Pipe 109                                                              |  |
|                                            |  | Bore diameter 36-Inch                                                               |  |
|                                            |  | Bottom of bore 130                                                                  |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate          | dry                | 89   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate          | dry                | 94   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 99   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 97   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 98   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate          | damp               | 99   |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate          | damp               | 102  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | Moderate          | damp               | 104  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 107  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 118  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | high              | wet                | 117  |
| 6:00           |        |     |          | 110-120         | Res Waste/dirt    | high              | wet                | 119  |
| Notes          |        |     |          | 120-130         | Res Waste/dirt    | high              | wet                | 116  |
| nothing        |        |     |          | 130-140         | TD 130'           |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 7-6-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CA monitor, BC  
NAME & TITLE

Dokk 6/30/2009  
AEGL SITE SUPERVISOR DATE



## Well Log

PROJECT# 101-09-117

**DATE:** 7/1/2009

| Drilling             |                             | Well Asbuilt |  |
|----------------------|-----------------------------|--------------|--|
| <b>EW 128</b>        | WELL NUMBER OR NAME         |              |  |
| <b>116</b>           | LINEAR FEET OF DRILLING     |              |  |
| <b>116</b>           | LINEAR FEET OF COMPLETION   |              |  |
|                      | LINEAR FEET OF ABANDONMENT  |              |  |
| Time In: _____       | Time out: _____             |              |  |
| Weather conditions:  |                             |              |  |
| Site conditions:     |                             |              |  |
| Rig hrs: _____       |                             |              |  |
| Service: _____       | Radiator _____ Grease _____ |              |  |
| NOTES:               |                             |              |  |
|                      |                             |              |  |
|                      |                             |              |  |
|                      |                             |              |  |
| Total Benching Time: |                             |              |  |

Top of ground elev. 891

Backfill Material 1

2' Bentonite Seal 2

Length of Solid 20

Backfill Material 12

1' dirt &

2' Min Bent. Seal 3

Gravel Extend 2 Ft Above Perf.

Lgth of Gravel Pk 98

Lgth of Perf. Pipe 95

Bore diameter 36-Inch

Bottom of bore 116

4'

TOP

1

3

15

18

115

116

| Monitoring Log  |        |     |          | Well Boring Log |                   |                      |                       |      |
|-----------------|--------|-----|----------|-----------------|-------------------|----------------------|-----------------------|------|
| Time            | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of<br>Decomp. | Degree of<br>Moisture | Temp |
| 7:00            |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate             | dry                   | 90   |
| 8:00            |        |     |          | 10-20           | Res Waste/dirt    | Moderate             | dry                   | 90   |
| 9:00            |        |     |          | 20-30           | Res Waste/dirt    | Moderate             | dry                   | 90   |
| 10:00           |        |     |          | 30-40           | Res Waste/dirt    | Moderate             | damp                  | 94   |
| 11:00           |        |     |          | 40-50           | Res Waste/dirt    | Moderate             | damp                  | 93   |
| 12:00           |        |     |          | 50-60           | Res Waste/dirt    | Moderate             | damp                  | 97   |
| 1:00            |        |     |          | 60-70           | Res Waste/dirt    | Moderate             | damp                  | 99   |
| 2:00            |        |     |          | 70-80           | Res Waste/dirt    | high                 | wet                   | 100  |
| 3:00            |        |     |          | 80-90           | Res Waste/dirt    | high                 | wet                   | 104  |
| 4:00            |        |     |          | 90-100          | Res Waste/dirt    | high                 | wet                   | 105  |
| 5:00            |        |     |          | 100-110         | Res Waste/dirt    | high                 | wet                   | 105  |
| 6:00            |        |     |          | 110-120         | Res Waste/dirt    | high                 | wet                   | 109  |
| Notes           |        |     |          | 120-130         | TD 116'           |                      |                       |      |
| northing 596662 |        |     |          | 130-140         |                   |                      |                       |      |
| easting 2057964 |        |     |          | 140-150         |                   |                      |                       |      |

Jessica Owen 7-6-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, C&A monitor, BC  
NAME & TITLE

|                      |                 |
|----------------------|-----------------|
| <u>Dakk</u>          | <u>7/1/2009</u> |
| AEGL SITE SUPERVISOR | DATE            |



## Well Log

PROJECT# 101-09-117

DATE: 7/2/2009

| Drilling                 |                            | Well Asbuilt                   |     |
|--------------------------|----------------------------|--------------------------------|-----|
| EW 147                   | WELL NUMBER OR NAME        |                                |     |
| 109                      | LINEAR FEET OF DRILLING    | Top of ground elev. 889        | 4'  |
| 109                      | LINEAR FEET OF COMPLETION  | Backfill Material 1            | 1   |
|                          | LINEAR FEET OF ABANDONMENT | 2' Bentonite Seal 2            | 3   |
| Time in: _____           | Time out: _____            | Length of Solid 20             |     |
| Weather conditions:      |                            | Backfill Material 12           |     |
| Site conditions:         |                            | 1' dirt &                      | 15  |
| Rig hrs:                 |                            | 2' Min Bent. Seal 3            |     |
| Service: Radiator Grease |                            | Gravel Extend 2 Ft Above Perf. | 18  |
| NOTES:                   |                            | Lgth of Gravel Pk 91           |     |
|                          |                            | Lgth of Perf. Pipe 88          |     |
| Total Benching Time:     |                            | Bore diameter 36-inch          | 108 |
|                          |                            | Bottom of bore 109             | 109 |

| Monitoring Log |        |     |          | Well Boring Log |                   |                      |                       |      |
|----------------|--------|-----|----------|-----------------|-------------------|----------------------|-----------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of<br>Decomp. | Degree of<br>Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate             | dry                   | 89   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | Moderate             | dry                   | 92   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate             | dry                   | 92   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate             | damp                  | 93   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate             | damp                  | 92   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate             | damp                  | 95   |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate             | damp                  | 100  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high                 | wet                   | 102  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high                 | wet                   | 107  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high                 | wet                   | 106  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | high                 | wet                   | 111  |
| 6:00           |        |     |          | 110-120         | TD 109'           |                      |                       |      |
| Notes          |        |     |          | 120-130         |                   |                      |                       |      |
| northing       |        |     |          | 130-140         |                   |                      |                       |      |
| easting        |        |     |          | 140-150         |                   |                      |                       |      |

Jessica Owen  
CLIENT REPRESENTATIVE  
7-6-09  
DATE  
Jessica Owen, CAA monitor, BC  
NAME & TITLE

|                      |          |
|----------------------|----------|
| Dokk                 | 7/2/2009 |
| AEGL SITE SUPERVISOR | DATE     |





## Well Log

DATE: 7/3/2009

| Drilling                       |  | Well Asbuilt |  |
|--------------------------------|--|--------------|--|
| EW 167 WELL NUMBER OR NAME     |  |              |  |
| 95 LINEAR FEET OF DRILLING     |  |              |  |
| 95 LINEAR FEET OF COMPLETION   |  |              |  |
| LINEAR FEET OF ABANDONMENT     |  |              |  |
| Time in: _____ Time out: _____ |  |              |  |
| Weather conditions:            |  |              |  |
| Site conditions:               |  |              |  |
| Rig hrs:                       |  |              |  |
| Service: Radiator Grease       |  |              |  |
| NOTES:                         |  |              |  |
|                                |  |              |  |
|                                |  |              |  |
|                                |  |              |  |
| Total Batching Time:           |  |              |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate          | dry                | 92   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | high              | wet                | 91   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 97   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 94   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 96   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate          | damp               | 96   |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | high              | wet                | 102  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 109  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 110  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 111  |
| 5:00           |        |     |          | 100-110         | TD 95'            |                   |                    |      |
| 6:00           |        |     |          | 110-120         |                   |                   |                    |      |
| Notes          |        |     |          | 120-130         |                   |                   |                    |      |
| northing       |        |     |          | 130-140         |                   |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

NAME & TITLE Jessica Owen, COF monitor, BC



American  
Environmental  
Group Ltd.

## Well Log

PROJECT NAME Larain  
PROJECT# 101-09-117

DATE: 7/6/2009

| Drilling                                    |  | Well Asbuild                   |  |
|---------------------------------------------|--|--------------------------------|--|
| EW 58R WELL NUMBER OR NAME                  |  |                                |  |
| 122 LINEAR FEET OF DRILLING                 |  |                                |  |
| 122 LINEAR FEET OF COMPLETION               |  |                                |  |
| LINEAR FEET OF ABANDONMENT                  |  |                                |  |
| Time in: _____ Time out: _____              |  |                                |  |
| Weather conditions: _____                   |  |                                |  |
| Site conditions: _____                      |  |                                |  |
| Rig hrs: _____                              |  |                                |  |
| Service: _____ Raddiator _____ Grease _____ |  |                                |  |
| NOTES: _____                                |  |                                |  |
| Total Benching Time: 1hr                    |  |                                |  |
|                                             |  | Top of ground elev. 908        |  |
|                                             |  | Backfill Material 1            |  |
|                                             |  | 2' Bentonite Seal 2            |  |
|                                             |  | Length of Solid 20             |  |
|                                             |  | Backfill Material 12           |  |
|                                             |  | 1' dirt &                      |  |
|                                             |  | 2' Min Bent. Seal 3            |  |
|                                             |  | Gravel Extend 2 Ft Above Perf. |  |
|                                             |  | Lgth of Gravel Pk 104          |  |
|                                             |  | Lgth of Perf. Pipe 101         |  |
|                                             |  | Bore diameter 36-Inch          |  |
|                                             |  | Bottom of bore 122             |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate          | dry                | 88   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | high              | wet                | 97   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 96   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 99   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 94   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate          | damp               | 99   |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate          | damp               | 100  |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 106  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 108  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 111  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | Moderate          | damp               | 114  |
| 6:00           |        |     |          | 110-120         | Res Waste/dirt    | Moderate          | damp               | 116  |
| Notes          |        |     |          | 120-130         | Res Waste/dirt    | Moderate          | damp               | 119  |
| northing       |        |     |          | 130-140         | TD 122'           |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 7-8-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CoA monitor, BC  
NAME & TITLE

Dokk 7/6/2009  
AEGL SITE SUPERVISOR DATE



## Well Log

PROJECT NAME Larain  
PROJECT# 101-09-117

DATE: 7/7/2009

| Drilling                       |  | Well Asbuild |  |
|--------------------------------|--|--------------|--|
| EW 130 WELL NUMBER OR NAME     |  |              |  |
| 125 LINEAR FEET OF DRILLING    |  |              |  |
| 125 LINEAR FEET OF COMPLETION  |  |              |  |
| LINEAR FEET OF ABANDONMENT     |  |              |  |
| Time in: _____ Time out: _____ |  |              |  |
| Weather conditions:            |  |              |  |
| Site conditions:               |  |              |  |
| Rig hrs:                       |  |              |  |
| Service: Radiator Grease       |  |              |  |
| NOTES:                         |  |              |  |
| Total Batching Time: 1hr       |  |              |  |

| Monitoring Log |        |     |          | Well Boring Log |                   |                   |                    |      |
|----------------|--------|-----|----------|-----------------|-------------------|-------------------|--------------------|------|
| Time           | OXYGEN | H2S | LEL / CO | Depth           | Composition       | Degree of Decomp. | Degree of Moisture | Temp |
| 7:00           |        |     |          | 0-10            | Res Waste/Clay 1' | Moderate          | dry                | 91   |
| 8:00           |        |     |          | 10-20           | Res Waste/dirt    | high              | wet                | 93   |
| 9:00           |        |     |          | 20-30           | Res Waste/dirt    | Moderate          | dry                | 92   |
| 10:00          |        |     |          | 30-40           | Res Waste/dirt    | Moderate          | damp               | 92   |
| 11:00          |        |     |          | 40-50           | Res Waste/dirt    | Moderate          | damp               | 92   |
| 12:00          |        |     |          | 50-60           | Res Waste/dirt    | Moderate          | damp               | 94   |
| 1:00           |        |     |          | 60-70           | Res Waste/dirt    | Moderate          | damp               | 98   |
| 2:00           |        |     |          | 70-80           | Res Waste/dirt    | high              | wet                | 104  |
| 3:00           |        |     |          | 80-90           | Res Waste/dirt    | high              | wet                | 103  |
| 4:00           |        |     |          | 90-100          | Res Waste/dirt    | high              | wet                | 107  |
| 5:00           |        |     |          | 100-110         | Res Waste/dirt    | Moderate          | damp               | 109  |
| 6:00           |        |     |          | 110-120         | Res Waste/dirt    | Moderate          | damp               | 115  |
| Notes          |        |     |          | 120-130         | Res Waste/dirt    | Moderate          | damp               | 116  |
| northing       |        |     |          | 130-140         | TD 125'           |                   |                    |      |
| easting        |        |     |          | 140-150         |                   |                   |                    |      |

Jessica Owen 7-8-09  
CLIENT REPRESENTATIVE DATE  
Jessica Owen, CBA MONITOR, BC  
NAME & TITLE

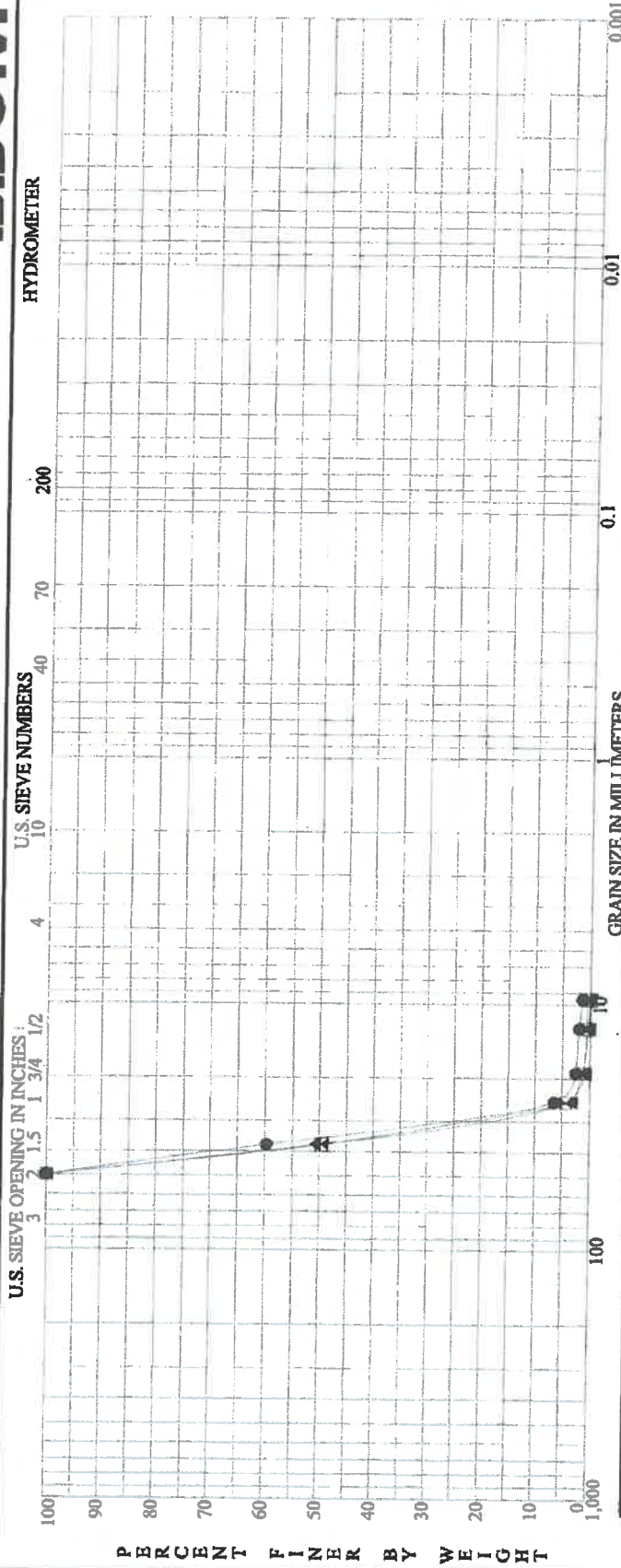
Dakk 7/7/2009  
AEGLE SITE SUPERVISOR DATE



## APPENDIX G

---

### **No. 4 Stone Laboratory Results**



| BOULDERS                           |             | COBBLES     | GRAVEL  |         |         | SAND    |         |         | SILT OR CLAY |       |       |    |    |    |    |
|------------------------------------|-------------|-------------|---------|---------|---------|---------|---------|---------|--------------|-------|-------|----|----|----|----|
|                                    |             |             | coarse  | fine    |         | coarse  | medium  | fine    |              | MC%   | LL    | PL | PI | Cc | Cu |
| Specimen Identification - Depth    |             |             |         |         |         |         |         |         |              |       |       |    |    |    |    |
| ●                                  | No. 4 Stone | as received |         |         |         |         |         |         |              |       |       |    |    |    |    |
| ☒                                  | No. 4 Stone | before pH 4 |         |         |         |         |         |         |              |       |       |    |    |    |    |
| ▲                                  | No. 4 Stone | after pH 4  |         |         |         |         |         |         |              |       |       |    |    |    |    |
| % CARBONATE RESIDUE CONTENT = 0.30 |             |             |         |         |         |         |         |         |              |       |       |    |    |    |    |
| Specimen Identification - Depth    |             |             |         |         |         |         |         |         |              |       |       |    |    |    |    |
| ●                                  | No. 4 Stone | as received | D100    | D95     | D60     | D50     | D10     | %Gravel | %Sand        | %Silt | %Clay |    |    |    |    |
| ☒                                  | No. 4 Stone | before pH 4 | 50.0000 | 48.2457 | 37.5730 | 34.8201 | 25.6697 |         |              |       |       |    |    |    |    |
| ▲                                  | No. 4 Stone | after pH 4  | 50.0000 | 48.5951 | 39.8064 | 37.6009 | 26.3041 |         |              |       |       |    |    |    |    |
|                                    |             |             | 50.0000 | 48.5580 | 39.5637 | 37.2307 | 26.4900 |         |              |       |       |    |    |    |    |

ASTM D422

## GRADATION CURVE

PROJECT  
LOCATION

# LORAIN COUNTY II LANDFILL - 2009 GCCS

# OBERLIN, OHIO

011.11442.008 - B&C Project No. 137719.001

DATE 6/19/09

## Chain of Custody Record

BROWN AND  
CALDWELL

**✉ Columbus Office**  
**4700 Lakehurst Ct.,**  
**Dublin, Ohio 43016**  
**(614) 410-6144**  
**(614) 410-3088 fax**

**☐ Cincinnati Office**  
**135 Merchant St., S**  
**Cincinnati, Ohio 4**  
**(513) 719-6100**  
**(513) 719-6105 fax**

|               |
|---------------|
| COC No: 941   |
| Page 1 of 1   |
| Lab Quote No: |

[illegible]

Special Instructions/QC Requirements &amp; Comments:

|                             |                         |                                        |            |
|-----------------------------|-------------------------|----------------------------------------|------------|
| Relinquished by: <i>RUC</i> | Date/Time: 6/15/09 9:25 | Received by: <i>J. Davis, D. Platt</i> | Date/Time: |
| Relinquished by:            | Date/Time:              | Received by:                           | Date/Time: |
| Relinquished by:            | Date/Time:              | Received by:                           | Date/Time: |

Cooler TEMPERATURE upon arrival at laboratory \_\_\_\_\_ °C (To be filled in by LABORATORY upon receipt)  
Distribution: WHITE - Accompanies shipment YELLOW - Returns with report PINK - Sampler's copy



## APPENDIX H

---

### **Air Monitoring Results**

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 221 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 05/28/2009 07:10  
Start At: 06/22/2009 13:21 End At: 06/22/2009 17:01

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  6.0      0.0      -----   20.9    5.6
Min Data Value:   0.0      0.0      -----   20.9    0.0
TWA Data Value:   0.1      0.0      -----   -----
AVG Data Value:   0.3      0.0      -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 190 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/23/2009 07:19  
Start At: 06/23/2009 07:21 End At: 06/23/2009 10:30

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0    10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0    10.0      -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  13.3     0.3      -----   21.4    22.3
Min Data Value:   0.0     0.0      -----   20.9     0.0
TWA Data Value:   0.1     0.0      -----   -----
AVG Data Value:   0.3     0.0      -----   -----
=====
```



Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 50 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/23/2009 07:19  
Start At: 06/23/2009 12:49 End At: 06/23/2009 13:38

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0    10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0    10.0      -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  16.7     0.7      -----   21.4    100.0
Min Data Value:   0.0     0.0      -----   21.1     0.0
TWA Data Value:   0.1     0.0      -----   -----
AVG Data Value:   0.6     0.1      -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 155 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/23/2009 07:19  
Start At: 06/23/2009 13:42 End At: 06/23/2009 16:16

```
=====
Sensor:          CO (ppm)  H2S (ppm)  NONE (ppm)  OXY (%)  LEL (%)
High Alarm Levels: 200.0    20.0      -----    23.5     20.0
Low Alarm Levels:  35.0    10.0      -----    19.5     10.0
STEL Alarm Levels: 100.0    15.0      -----    -----
TWA Alarm Levels:  35.0    10.0      -----    -----
=====
```

```
=====
Sensor:          CO (ppm)  H2S (ppm)  NONE (ppm)  OXY (%)  LEL (%)
Peak Data Value:  29.2     0.6        -----    21.5     29.5
Min Data Value:   0.0     0.0        -----    20.9     0.0
TWA Data Value:   0.6     0.0        -----    -----
AVG Data Value:   1.9     0.0        -----    -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 234 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/24/2009 07:47  
Start At: 06/24/2009 09:25 End At: 06/24/2009 13:18

```
=====
Sensor:          CO (ppm)  H2S (ppm)  NONE (ppm)  OXY (%)  LEL (%)
High Alarm Levels: 200.0    20.0      -----    23.5     20.0
Low Alarm Levels:  35.0    10.0      -----    19.5     10.0
STEL Alarm Levels: 100.0    15.0      -----    -----
TWA Alarm Levels:  35.0    10.0      -----    -----
=====
```

```
=====
Sensor:          CO (ppm)  H2S (ppm)  NONE (ppm)  OXY (%)  LEL (%)
Peak Data Value:  3.7      0.4      -----    21.6     5.5
Min Data Value:   0.0      0.0      -----    20.9     0.0
TWA Data Value:   0.2      0.1      -----    -----
AVG Data Value:   0.3      0.1      -----    -----
=====
```



Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 142 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/24/2009 07:47  
Start At: 06/24/2009 13:41 End At: 06/24/2009 16:02

| Sensor:            | CO (ppm) | H2S (ppm) | NONE (ppm) | OXY (%) | LEL (%) |
|--------------------|----------|-----------|------------|---------|---------|
| High Alarm Levels: | 200.0    | 20.0      | -----      | 23.5    | 20.0    |
| Low Alarm Levels:  | 35.0     | 10.0      | -----      | 19.5    | 10.0    |
| STEL Alarm Levels: | 100.0    | 15.0      | -----      | -----   | -----   |
| TWA Alarm Levels:  | 35.0     | 10.0      | -----      | -----   | -----   |

| Sensor:          | CO (ppm) | H2S (ppm) | NONE (ppm) | OXY (%) | LEL (%) |
|------------------|----------|-----------|------------|---------|---------|
| Peak Data Value: | 23.7     | 0.4       | -----      | 21.7    | 8.2     |
| Min Data Value:  | 0.0      | 0.0       | -----      | 21.2    | 0.0     |
| TWA Data Value:  | 0.3      | 0.1       | -----      | -----   | -----   |
| AVG Data Value:  | 0.9      | 0.2       | -----      | -----   | -----   |

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 183 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/25/2009 08:05  
Start At: 06/25/2009 08:07 End At: 06/25/2009 11:09

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels:  200.0    20.0    -----   23.5    20.0
Low Alarm Levels:   35.0    10.0    -----   19.5    10.0
STEL Alarm Levels:  100.0    15.0    -----   -----
TWA Alarm Levels:   35.0    10.0    -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:   3.6     0.2    -----   21.6    17.3
Min Data Value:    0.0     0.0    -----   20.9     0.0
TWA Data Value:    0.1     0.0    -----   -----
AVG Data Value:    0.4     0.0    -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 14 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/25/2009 08:05  
Start At: 06/25/2009 11:48 End At: 06/25/2009 12:01

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0    -----  23.5    20.0
Low Alarm Levels:  35.0    10.0    -----  19.5    10.0
STEL Alarm Levels: 100.0    15.0    -----  -----  -----
TWA Alarm Levels:  35.0    10.0    -----  -----  -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  67.6    1.0    -----  21.5    100.0
Min Data Value:   0.8    0.0    -----  21.0    0.0
TWA Data Value:   0.2    0.0    -----  -----  -----
AVG Data Value:   8.2    0.1    -----  -----  -----
=====
```



Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 119 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/25/2009 08:05  
Start At: 06/25/2009 14:05 End At: 06/25/2009 16:03

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  10.0     0.5     -----   21.9     0.0
Min Data Value:   0.0     0.0     -----   21.1     0.0
TWA Data Value:   0.6     0.1     -----   -----
AVG Data Value:   2.3     0.2     -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 000000001 Site ID: 00000001  
Data Points: 49 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/26/2009 07:35  
Start At: 06/26/2009 11:56 End At: 06/26/2009 12:44

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  1.5      0.1     -----   21.6    1.1
Min Data Value:   0.0      0.0     -----   21.3    0.0
TWA Data Value:   0.0      0.0     -----   -----
AVG Data Value:   0.5      0.0     -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 504 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/29/2009 08:07  
Start At: 06/29/2009 08:08 End At: 06/29/2009 16:31

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels:  200.0    20.0    -----    23.5    20.0
Low Alarm Levels:   35.0    10.0    -----    19.5    10.0
STEL Alarm Levels:  100.0    15.0    -----    -----    -----
TWA Alarm Levels:   35.0    10.0    -----    -----    -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:   151.0    0.2    -----    21.8    0.0
Min Data Value:     0.0    0.0    -----    20.9    0.0
TWA Data Value:     2.0    0.0    -----    -----    -----
AVG Data Value:     1.9    0.0    -----    -----    -----
=====
```



Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 38 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/30/2009 08:32  
Start At: 06/30/2009 08:37 End At: 06/30/2009 09:14

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  2.8      0.0     -----   20.9    0.0
Min Data Value:   0.0      0.0     -----   20.9    0.0
TWA Data Value:   0.0      0.0     -----   -----
AVG Data Value:   0.3      0.0     -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 49 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/30/2009 08:32  
Start At: 06/30/2009 11:19 End At: 06/30/2009 12:07

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5     20.0
Low Alarm Levels:  35.0     10.0      -----   19.5     10.0
STEL Alarm Levels: 100.0     15.0      -----   -----   -----
TWA Alarm Levels:  35.0     10.0      -----   -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  1.0      0.0      -----   21.2     0.0
Min Data Value:   0.0      0.0      -----   21.1     0.0
TWA Data Value:   0.0      0.0      -----   -----   -----
AVG Data Value:   0.3      0.0      -----   -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 183 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/25/2009 08:05  
Start At: 06/25/2009 08:07 End At: 06/25/2009 11:09

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  3.6      0.2     -----   21.6    17.3
Min Data Value:   0.0      0.0     -----   20.9     0.0
TWA Data Value:   0.1      0.0     -----   -----
AVG Data Value:   0.4      0.0     -----   -----
=====
```



Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 14 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 06/25/2009 08:05  
Start At: 06/25/2009 11:48 End At: 06/25/2009 12:01

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels:  200.0    20.0    -----    23.5    20.0
Low Alarm Levels:   35.0    10.0    -----    19.5    10.0
STEL Alarm Levels:  100.0    15.0    -----    -----
TWA Alarm Levels:   35.0    10.0    -----    -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:   67.6     1.0    -----    21.5    100.0
Min Data Value:     0.8     0.0    -----    21.0     0.0
TWA Data Value:     0.2     0.0    -----    -----
AVG Data Value:     8.2     0.1    -----    -----
=====
```

Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 119

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/25/2009 08:05

Start At: 06/25/2009 14:05 End At: 06/25/2009 16:03

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0     10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0     10.0      -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  10.0     0.5       -----   21.9     0.0
Min Data Value:   0.0     0.0       -----   21.1     0.0
TWA Data Value:   0.6     0.1       -----   -----
AVG Data Value:   2.3     0.2       -----   -----
=====
```

Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 49

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/26/2009 07:35

Start At: 06/26/2009 11:56 End At: 06/26/2009 12:44

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels:  200.0    20.0     -----   23.5    20.0
Low Alarm Levels:   35.0    10.0     -----   19.5    10.0
STEL Alarm Levels:  100.0    15.0     -----   -----
TWA Alarm Levels:   35.0    10.0     -----   -----
=====
```

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:   1.5     0.1     -----   21.6     1.1
Min Data Value:    0.0     0.0     -----   21.3     0.0
TWA Data Value:    0.0     0.0     -----   -----
AVG Data Value:    0.5     0.0     -----   -----
=====
```



Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 504

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/29/2009 08:07

Start At: 06/29/2009 08:08 End At: 06/29/2009 16:31

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels:  200.0    20.0      -----   23.5    20.0
Low Alarm Levels:   35.0     10.0      -----   19.5    10.0
STEL Alarm Levels:  100.0    15.0      -----   -----   -----
TWA Alarm Levels:   35.0     10.0      -----   -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:   151.0    0.2      -----   21.8     0.0
Min Data Value:     0.0     0.0      -----   20.9     0.0
TWA Data Value:     2.0     0.0      -----   -----   -----
AVG Data Value:     1.9     0.0      -----   -----   -----
=====
```

Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 38

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/30/2009 08:32

Start At: 06/30/2009 08:37 End At: 06/30/2009 09:14

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0    10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0    10.0      -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  2.8      0.0      -----   20.9     0.0
Min Data Value:   0.0      0.0      -----   20.9     0.0
TWA Data Value:   0.0      0.0      -----   -----
AVG Data Value:   0.3      0.0      -----   -----
=====
```

Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 49

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/30/2009 08:32

Start At: 06/30/2009 11:19 End At: 06/30/2009 12:07

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0    10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----   -----
TWA Alarm Levels:  35.0    10.0      -----   -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  1.0     0.0      -----   21.2     0.0
Min Data Value:   0.0     0.0      -----   21.1     0.0
TWA Data Value:   0.0     0.0      -----   -----   -----
AVG Data Value:   0.3     0.0      -----   -----   -----
=====
```



Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 168

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 06/30/2009 08:32

Start At: 07/01/2009 08:34 End At: 07/01/2009 11:21

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0    10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0    10.0      -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  0.4      0.0      -----   21.2    0.0
Min Data Value:   0.0      0.0      -----   20.9    0.0
TWA Data Value:   0.0      0.0      -----   -----
AVG Data Value:   0.1      0.0      -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 159 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 07/02/2009 07:46  
Start At: 07/02/2009 09:22 End At: 07/02/2009 12:00

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0     -----   23.5    20.0
Low Alarm Levels:  35.0    10.0     -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0     -----   -----
TWA Alarm Levels:  35.0    10.0     -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  11.2     0.0     -----   21.3     0.0
Min Data Value:   0.2     0.0     -----   20.9     0.0
TWA Data Value:   0.3     0.0     -----   -----
AVG Data Value:   0.8     0.0     -----   -----
=====
```

Instrument: VRAE (PGM7800) Serial Number: 104509  
User ID: 00000001 Site ID: 00000001  
Data Points: 190 Data Type: Avg Sample Period: 60 sec  
Last Calibration Time: 07/02/2009 07:46  
Start At: 07/03/2009 08:27 End At: 07/03/2009 11:36

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0    -----    23.5    20.0
Low Alarm Levels:  35.0    10.0    -----    19.5    10.0
STEL Alarm Levels: 100.0    15.0    -----    -----
TWA Alarm Levels:  35.0    10.0    -----    -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  1.4      0.0    -----    21.0    9.3
Min Data Value:   0.0      0.0    -----    20.9    0.0
TWA Data Value:   0.1      0.0    -----    -----
AVG Data Value:   0.1      0.0    -----    -----
=====
```



Instrument: VRAE (PGM7800)

Serial Number: 104509

User ID: 00000001

Site ID: 00000001

Data Points: 199

Data Type: Avg

Sample Period: 60 sec

Last Calibration Time: 07/13/2009 12:34

Start At: 07/13/2009 12:35 End At: 07/13/2009 15:53

```
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
High Alarm Levels: 200.0    20.0      -----   23.5    20.0
Low Alarm Levels:  35.0     10.0      -----   19.5    10.0
STEL Alarm Levels: 100.0    15.0      -----   -----
TWA Alarm Levels:  35.0     10.0      -----   -----
=====
Sensor:          CO(ppm)  H2S(ppm)  NONE(ppm)  OXY(%)  LEL(%)
Peak Data Value:  15.0     0.1      -----   21.1     0.0
Min Data Value:   0.0     0.0      -----   20.9     0.0
TWA Data Value:   0.2     0.0      -----   -----
AVG Data Value:   0.4     0.0      -----   -----
=====
```

## APPENDIX I

---

### **Pipeline Pressure Test Forms**

## 2009 LANDFILL GAS SYSTEM EXPANSION AIR TESTING RESULTS

| DATE    | HDPE PIPE DESCRIPTION                                                 | PSI | TIME | RESULT |
|---------|-----------------------------------------------------------------------|-----|------|--------|
| 6.29.09 | EW-125 TO TEW-7R                                                      | 12  | 1HR  | PASS   |
| 7.1.09  | TEW-8 TO REMOTE WELLHEAD                                              | 11  | 1HR  | PASS   |
| 7.1.09  | EW-5R TO EW-127                                                       | 10  | 1HR  | PASS   |
| 7.9.09  | EW-147 TO EW-167                                                      | 10  | 1HR  | PASS   |
| 7.9.09  | EW-43 TO EW-42                                                        | 10  | 1HR  | PASS   |
| 7.24.09 | 24"-16" BETWEEN CS-18 & KNOCKOUT TANK ON BLOWER SKID                  | 10  | 1HR  | PASS   |
| 7.28.09 | 2" PRIMARY DRAINAGE BETWEEN BLOWERS/KO TANK SKID & CS-18              | 10  | 1HR  | PASS   |
| 7.28.09 | 4" SECONDARY DRAINAGE BETWEEN BLOWERS/KO TANK SKID & CS-18            | 12  | 1HR  | PASS   |
| 7.30.09 | 18" HEADER AND 6" LATERALS FOR EW-57R, EW-58R, EW-129, EW-130, EW-135 | 11  | 1HR  | PASS   |
| 7.31.09 | EW-52 TO EW-52 REMOTE WELLHEAD                                        | 12  | 1HR  | PASS   |



## APPENDIX J

---

### **Peel and Shear Test Results – Flexible Membrane Liner Trial Seam**

[illegible]

|                            |                                   |
|----------------------------|-----------------------------------|
| Project Name               | Lorain II Landfill Lateral Repair |
| Project Number             | 137719                            |
| Q.A. Tech                  | Jessica Owen                      |
| Company Brown and Caldwell |                                   |

Material 60 mil HDPE Smooth

|                        |     |
|------------------------|-----|
| <b>Extrusion (ppi)</b> |     |
| Min. Peel              | 78  |
| <b>Extrusion (ppi)</b> |     |
| Min. Shear             | 120 |

Roll Number 419497-09

[illegible]