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RULE 13 AUTHORIZATION
PHASE II LEACHATE MANAGEMENT SYSTEM
CONSTRUCTION CERTIFICATION REPORT
FOR THE
LORAIN COUNTY I LANDFILL (CLOSED)
LORAIN COUNTY, OBERLIN, OHIO

Prepared for



Lorain County, Oberlin, Ohio
March, 2008
Revised April 30, 2008

BROWN AND CALDWELL

4700 Lakehurst Court, Suite 100
Dublin, Ohio 43016

RULE 13 AUTHORIZATION
PHASE II LEACHATE MANAGEMENT SYSTEM
CONSTRUCTION CERTIFICATION REPORT

NOTARIZED STATEMENT

"I, Chris Jaquet, certify that this Rule 13 Authorization, Phase II Leachate Management System Construction Certification Report (Certification Report) for the Allied Waste Industries, Inc. Lorain County I Landfill (Closed) 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

3/24/08
Date

Chris Jaquet
Name

Environmental Manager
Title

On this, the 24 day of March 2008, 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.

Jami McClelland exp 4.25.12
Notary Public

BROWN AND CALDWELL

RULE 13 AUTHORIZATION
PHASE II LEACHATE MANAGEMENT SYSTEM
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 Rule 13 Authorization, Phase II Leachate Management System Construction Certification Report (Certification Report) for the Allied Waste Industries, Inc. Lorain County I Landfill (Closed) 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 Certification Report, the information submitted in the 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."

RIA

Signature

3/24/08

Date

Richard A. Isaac, P.E.

Name



On this, the 24TH day of MARCH, 2008, 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.

Catalina San Nicolas

Notary Public



CATALINA SAN NICOLAS
Notary Public
In and for the State of Ohio
My Commission Expires
August 9, 2009

BROWN AND CALDWELL

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BROWN AND
CALDWELL

March 25, 2008

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

RECEIVED

MAR 26 2008

OHIO EPA NEDO

Subject: **Rule 13 Authorization, Phase II Leachate Management System
Construction Certification Report
Lorain County I Landfill (Closed), Lorain County, Oberlin, Ohio**

Dear Mr. Parker:

Brown and Caldwell (BC), on behalf of Allied Waste Industries, Inc. (AWI), respectfully submits the Rule 13 Authorization, Phase II Leachate Management System Construction Certification Report (Certification Report) for the Lorain County I Landfill (Closed) 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



Richard A. Isaac, P.E.
Principal Engineer

Enclosure

c: Chris Jaquet, AWI, Oberlin, OH., w/enc.
Lorain County Health Department, Elyria, OH., w/enc.
Project File

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BROWN AND
CALDWELL

April 30, 2008

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MAY 02 2008
OHIO EPA NEDO

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
Rule 13 Authorization
Phase II Leachate Management System Construction Certification Report
Lorain County I Landfill (Closed)
Oberlin, Ohio

Dear Mr. Parker:

Brown and Caldwell (BC), on behalf of Allied Waste Industries, Inc., (AWI) respectfully submits responses to comments received from the Ohio Environmental Protection Agency (Ohio EPA) Northeast District Office (NEDO) for the Lorain County I Landfill (Closed) Rule 13 Authorization, Phase II Leachate Management System Construction Certification Report. The deficiency/comment responses are based on the letter to Chris Jaquet of AWI dated April 18, 2008. Each deficiency/comment is presented in bold followed by a response in the following narrative.

I. DEFICIENCY ONE, COMBINATION WELLS, PROPER DESIGNATION: In the introductory paragraph of Section 2, "Leachate Management System", page 3, it is written that 20 existing landfill gas extraction wells were converted to combination wells. In addition, a reference to drawing RD-1 of the project record drawings was cited. Ohio EPA confirmed the proper designation of the 20 wells in the above drawing. Similar information was provided by Cornerstone Environmental in Appendix B, "2007 GCCS Construction Drawings," sheet no. 1. Although Cornerstone's drawing delineated most of the converted wells, the following wells continued to be shown as existing gas extraction wells: EW-13, EW-14, EW-19, EW-21, EW-25, EW-28 and EW-31.

Response: Allied made the decision to convert existing gas extraction wells EW-13, EW-14, EW-19, EW-21, EW-25, EW-28, and EW-31 to combination wells and connect these wells into the leachate management system expansion at the time when the leachate management system expansion work was being performed after the 2007 GCCS Construction Drawings were prepared. Converting these seven additional wells at this time allowed Allied to take advantage of the installation contractor being on site and save money for future remobilization of the installation contractor. The conversion of these seven wells to combination wells with connection to the leachate management system expansion is included in the revision of Section 1.1 – Field Alterations/Deviations. The revised text pages are included with these responses.

II DEFICIENCY TWO, LANDTEC WELLHEADS, MISSING INFORMATION: References to the Landtec combination wellhead were included in the following two locations of the certification report: Section 2.2, “Construction/Installation Methods”, fourth bullet, page 4, and Section 3.2, “Construction/Installation Methods – Replacement Extraction Wells”, tenth bullet, page 7. The first location referred to Appendix B, Drawing 4, Detail 4, and the second location cited Appendix F, project record drawing RD-2. Since neither of these places included any information pertaining to the wellhead, the revised report should include the appropriate details and an appendix which describes the various specifications and operating procedures of the wellhead.

Response: The report text has been revised to indicate the appropriate location on both the 2007 GCCS Construction Drawings in Appendix B and the Project Record Drawings in Appendix F. The revised text pages are included with these responses.

III DEFICIENCY THREE, EXISTING WELL, ABANDONMENT DETAIL: In the second paragraph of Section 3, “Leachate Management System”, page 6, a description of the abandonment procedures for the existing extraction wells was included. Since a detail was not provided of an abandoned well, Ohio EPA requests that the revised report have this information.

Response: A well abandonment detail has been added as Detail 6 on RD-2 of the Project Record Drawings in Appendix F. A reference to Detail 6 has been added to Section 3 – Leachate Management System of the report text. The revised text page and Drawing RD-2 are included with these responses.

IV DEFICIENCY FOUR, AIR MONITORING RESULTS, APPENDIX J: The last sentence of Section 3.5, “Air Monitoring”, page 8, is stated as follows: “Air monitoring recordings are provided in Appendix J.” During review of a single page form in the appendix, Ohio EPA made several observations. First, although it is written on page 2 of the report that the field work was performed between September 11, 2007, and September 25, 2007, the date of the form was August 2, 2007. Second, the monitoring data is provided at the bottom of the form. Although there are four columns of data, it cannot be determined that these columns correspond to methane LEL, oxygen, carbon monoxide and hydrogen sulfide as specified in the text. BFI should clarify these issues.

Response: The four gas extraction wells, EW-12R, EW-61R, EW-64R, and EW-66R, were re-drilled at the Lorain County I Landfill site on August 2, 2008. The AEGL crew that performed the re-drill activities at the Lorain County II site mobilized their equipment to the Lorain County I site following completion of the re-drill activities at the Lorain County II site. This AEGL crew was then replaced with the AEGL crew whose responsibilities were to perform the connection activities. Therefore, the date on the Air Monitoring form is correct and a revised Air Monitoring form is provided which clearly provides the column heading designations. The report text has been revised to indicate that the field work was performed on August 2, 2008 and between September 11, 2007, and September 25, 2007. The revised text pages are included with these responses.

V DEFICIENCY FIVE, BORING LOGS, INCONSISTENT INFORMATION: Section 3.2' "Construction/Installation Methods – Replacement Extraction Wells", second bullet, page 7, refers to the boring logs in Appendix H. On the third page of the appendix, the following information is presented for the redrilled extraction well: total depth, length of perforated pipe and length of solid pipe. In addition to the information on this page being inconsistent, it also does not match the data provided in the lower left hand corner of construction record drawing RD-3 in Appendix B. The revised certification report should resolve these differences.

Response: The length of solid pipe designated in the Drilling Summary table, presented as the third page of Appendix H, indicates 24 feet of solid pipe which is 20 feet of solid pipe below ground and four feet of solid pipe above ground. The information presented in the Lorain County I Gas Extraction Well Schedule table on Drawing RD-3 provides the length of both solid and perforated pipe below ground to coincide with the D_s and D_p designations in Detail 1 on Drawing RD-3. The four-foot extension of solid pipe above ground is also shown in Detail 1 on Drawing RD-3.

I. COMMENT ONE, FUTURE SUMP: During the review of Section 1.1' "Field Alterations/Deviations", page 2, item 6, the following text was observed: "...the future sump associated with the leachate toe drain which will be installed at the southwest corner of the landfill west of the leachate storage facility..." Similar text was provided on page 3 of Section 2, "Leachate Management System". The revised certification report should provide the time frame for the installation of this sump.

Response: The sump for the leachate toe drain will be installed no later than the end of spring 2008 to early summer 2008 when the area of the landfill where the toe drain is to be installed dries up to allow construction to proceed. Allied is continually monitoring the conditions and will mobilize the contractor to install the toe drain when the conditions are most favorable and to minimize the overall amount of disturbance as possible. The Ohio EPA will be notified in accordance with the Rule 13 Authorization when the leachate toe drain installation will occur. The report text has been revised to reflect this potential installation time and the revised text pages are included with these responses.

II. COMMENT TWO, SURVEY MARKERS: In both Section 2.2' "Construction/Installation Methods", page 4, and Section 3.3, "Construction/Installation Methods – Landfill Gas Collection System", page 7, the following sentence is present: "Survey markers were placed at 50-foot intervals along the pipelines and at fitting locations..." In addition to being utilized to determine fitting locations, BFI is asked to explain the other purposes of these markers. In addition, Ohio EPA requests that a marker be included on one of the drawing details, if possible. Finally, both the text references were part of "bulleted" lists. For ease of reference in the future, Ohio EPA requests that these types of lists be replaced by a number or alphabetic list.

Response: The survey markers were used for the survey company to provide a location of the approximate centerline of the leachate force main and air supply line along the length of pipeline installed in the trenches. The markers were the 2.5 inch by 3.5 inch, colored plastic survey flags on thin metal sticks that were pulled by the survey company as each marker was located in the field.

The report text has been revised to use "numbered" lists instead of "bulleted" lists at the request of the Ohio EPA. The revised text pages are included with these responses.

III. COMMENT THREE, LORAIN II LANDFILL, WELL SCHEDULE: On the cover page of Appendix B, "2007 GCCS Construction Drawings", a reference is made to sheet no. 2 which is titled "Lorain County II Site Plan". In addition to this sheet not being included in the appendix,

Mr. Jerry R. Parker
April 30, 2008
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the Lorain II proposed well schedule is presented on sheet no. 3 of the appendix. Since the Lorain II Landfill activities were not included in the Lorain I Landfill Rule 13 approval, the certification report should not include any information with respect to the other landfill.

Response: Cornerstone Environmental Group, LLC (Cornerstone) prepared the 2007 GCCS Construction drawings as a combination drawing set for both the Lorain County I and Lorain County II Landfills. There are components and details that are common to both landfills and separate drawing sets were not prepared. Although Drawing 2 - Lorain County II Site Plan is included in the Index of Drawings, it does not pertain to the Lorain County I Landfill and was not included as part of the 2007 GCCS Construction drawings presented in Appendix A. Similarly, the proposed well schedule for Lorain County II is included on Drawing 3 - Details because it is also part of the combination drawing set prepared by Cornerstone.

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

Very truly yours,

BROWN AND CALDWELL



Richard A. Isaac, P.E.
Principal Engineer

Enclosures

- c: Chris Jaquet, Allied Waste Industries, Inc., Oberlin, OH., w/enc.
John Sabo, Lorain County Health Department, Elyria, OH., w/enc.
Project File

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RULE 13 AUTHORIZATION PHASE II LEACHATE MANAGEMENT SYSTEM CONSTRUCTION CERTIFICATION REPORT

1. INTRODUCTION

The purpose of this Rule 13 Authorization, Phase II Leachate Management System Construction Certification Report (Certification Report) is to detail the materials, construction/installation methods, and inspection activities and tests performed for the Phase II Leachate Management System Installation Project at the closed Lorain I County Landfill, Lorain County, Oberlin, Ohio (Landfill). The Phase II leachate management system installation activities were performed under the Rule 13 Authorization Maintenance Activities approved for the Landfill. The Rule 13 Authorization request was originally submitted to the Ohio Environmental Protection Agency (Ohio EPA) on April 7, 2005 with subsequent revisions submitted on January 24, 2006, March 16, 2006, and May 11, 2006. The Rule 13 Authorization Maintenance Activities was approved on July 6, 2006 (see Appendix A for the Rule 13 Authorization approval letter).

This Certification Report was prepared in general conformance with Ohio Administrative Code (OAC) 3745-27-08 (H), which specifies the requirements for a Certification Report. 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. Leachate Management System
3. Landfill Gas Management System
4. Valve Installation

A new leachate force main and air supply pipeline were installed to connect the existing leachate/gas extraction wells associated with the Phase II Leachate Management System into the existing leachate management system (Phase I) installed and completed from September 2006 to November 2006. Control valves were installed at two locations in the new leachate force main and air supply line to isolate the Phase II Leachate Management System from the Phase I Leachate Management System during performance of maintenance activities. An air relief valve was also installed on the air supply line. A discussion on each new or modified component of the Landfill's leachate management system materials, construction/installation methods, and inspections/tests performed is provided in the appropriate section of the Certification Report. Drawings, photographs, field logs, boring logs, laboratory results, test results, and additional relevant information is provided in appendices. The construction drawings entitled "2007 GCCS Construction" prepared by Cornerstone Environmental Group, LLC (Cornerstone) of Bolingbrook, Illinois depicting the construction/installation activities are provided in Appendix B.

Maintenance was also performed on the existing landfill gas management system. Four gas extraction wells were abandoned and replaced (refer to the construction drawings in Appendix B for locations) in order to satisfy Title V air compliance requirements.

The field work was performed on August 2, 2007 and from September 11, 2007 to September 25, 2007 by Allied Waste Industries, Inc.'s (Allied) 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 construction/installation, modifications, and maintenance of the new leachate management system and landfill gas management system components. Brown and Caldwell (BC) performed resident inspection services with Jessica Owen and Dennis Brock providing day-to-day observations and documentation. Richard A. Isaac, P.E. of BC provided project management and served as the certifying engineer. Daily field logs and construction/installation photographs are included in Appendices C and D, respectively. Qualifications for Mr. Isaac, Mr. Brock, and Ms. Owen are included in Appendix E.

1.1 Field Alterations/Deviations

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

1. Installation of control valves in both the 3-inch diameter leachate force main and the 2-inch diameter air supply line. The purpose of the control valves is to isolate the Phase II Leachate Management System from the Phase I Leachate Management System during performance of maintenance activities.
2. Installation of a relief valve in the 2-inch diameter air supply line. The purpose of the relief valve is to release air in the air supply line when the control valves are closed.
3. Phase II 3-inch diameter leachate force main and 2-inch diameter air supply line were connected into the existing leachate management system just north of EW-5 and the newly installed control valve on the eastern side of the landfill and just north of EW-31 and the newly installed control valve on the western side of the landfill, instead of north of EW-3 (eastern side) and EW 32 (western side) as shown on the construction drawings (see Appendix B). The purpose of rerouting the connection points for these pipelines was to preclude having to connect the new pipelines into the active existing force main and air supply line.
4. Installed 1-inch diameter Spears True Union PVC ball valve as the relief valve in the 2-inch diameter air supply line, instead of 2-inch diameter ASAHI Type 21 ball valve upon receipt of approval from Allied.
5. Installed 24-inch diameter SDR 17 HDPE pipe as encasement around the control valves and relief valve, instead of corrugated steel encasement upon receipt of approval from Allied.
6. Installation of a 3-inch diameter leachate force main and 2-inch diameter air supply line to connect to the location of the future sump associated with the leachate toe drain which will be installed at the southwest corner of the landfill west of the leachate storage facility when site conditions warrant during the late spring to early summer 2008. These pipelines extend from the header pipelines between Landfill Gas Extraction Wells EW-57 and EW-58 and are equipped with temporary blind flanges on the ends of the pipelines that will be removed when the toe drain sump is installed (see Drawing RD-1 of the Project Record Drawings provided in Appendix F for locations).
7. Existing Gas Extraction Wells EW-13, EW-14, EW-19, EW-21, EW-25, EW-28, and EW-31 were converted to combination wells and connected into the leachate management system.

RULE 13 AUTHORIZATION

PHASE II LEACHATE MANAGEMENT SYSTEM CONSTRUCTION CERTIFICATION REPORT

2. LEACHATE MANAGEMENT SYSTEM

Phase II of the Leachate Management System included the installation of 3-inch diameter solid SDR 17 high density polyethylene (HDPE) leachate force main and installation of 2-inch diameter solid SDR 9 and SDR 11 HDPE air supply line in a shared trench to connect the northern portion of the Landfill to the existing leachate management system (southern portion). Laterals from the air supply line and the leachate force main were used to connect and convert 20 existing landfill gas extraction wells to combination wells, which are capable of conveying leachate to the onsite leachate storage facility and landfill gas to the onsite flare station. The 20 existing landfill gas extraction wells converted to combination wells include the following:

EW-4	EW-16	EW-26
EW-9	EW-18	EW-28
EW-10	EW-19	EW-29
EW-11	EW-21	EW-30
EW-13	EW-22	EW-31
EW-14	EW-23	EW-33
EW-15	EW-25	

The location of the 20 new combination wells is provided on Drawing RD-1 of the Project Record Drawings (see Appendix F).

AEGL installed an estimated 5,061 linear feet of HDPE leachate force main and air supply line for operation of the leachate extraction pumps. A 2-inch diameter solid SDR 9 and SDR 11 HDPE air supply line and a 3-inch diameter solid SDR 17 HDPE leachate pipeline were also installed to accommodate the future installation of the leachate toe drain sump to be constructed (when site conditions warrant during the late spring to early summer 2008) along the southwest corner of the Landfill. The pipelines were connected into the existing leachate force main and air supply line between landfill gas extraction wells EW-57 and EW-58 (see Drawing RD-1 of the Project Record Drawings provided in Appendix F for location). Blind flanges were installed at the ends of these pipelines.

Control valves were installed in both the 3-inch diameter leachate force main and the 2-inch diameter air supply line north of landfill gas extraction wells EW-5 and EW-31 to allow the southern portion of the leachate management system to continue to operate if the northern portion is shutdown. A relief valve was installed in the 2-inch diameter air supply line in the vicinity of landfill gas extraction well EW-8 to release the air in the air supply line if the control valves are closed. The installation of the control and relief valves is discussed in Section 4 of the Certification Report.

2.1 Materials

The materials used for the construction/installation of the new leachate force main, air supply line, and combination wells included the following:

1. 3-inch diameter solid SDR 17 HDPE pipe – leachate force main.
2. 2-inch diameter solid SDR 11 HDPE pipe – air supply line.
3. 2-inch diameter solid SDR 9 HDPE pipe – air supply line.
4. 3-inch and 2-inch diameter solid SDR 17, SDR 11, and SDR 9 HDPE tie-in couplers, tees, saddle branches, and other fittings and appurtenances.
5. Landtec combination well head.
6. QED AP-4 Pneumatic pumps.

2.2 Construction/Installation Methods

Equipment used to construct and install the leachate force main and air supply line included a Caterpillar 935C track excavator, JCB 718 articulated dump truck, HDPE butt-fusion pipe welding equipment, electro fusion couplers and welding equipment, and various hand tools. The general construction/installation sequence used to connect extraction wells into the existing leachate management system was as follows:

1. HDPE pipe of various diameters were delivered to the site and stored in a clean area.
2. Trenches were excavated according to the construction drawings (refer to Detail 5 on Drawing 3 in Appendix B for typical trench detail).
 - a. 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 Lorain County II Landfill.
3. Three-inch SDR 17 HDPE pipe and 2-inch SDR 9 and SDR 11 HDPE pipe were butt-fusion welded on-site by AEGL to the required lengths.
 - a. Butt-fusion welding was performed inside and outside of the excavated trench depending on available working area and access to the existing system connections. Welds were inspected by BC and determined to be in conformance with the specifications.
 - b. Leachate force main and air supply line were placed in the same trench on a bed of compacted soil following completion of the excavation.
 - c. Survey markers were placed at 50-foot intervals along the pipelines.
 - i. Installed pipelines, fittings, and components were field surveyed after installation from a third order benchmark using GPS technology.
 - d. Locations of the pipelines, components, and appurtenances are provided on Drawing RD-1 of the Project Record Drawings in Appendix F. Installed pipe details are provided on Drawings RD-2 and RD-3 of the Project Record Drawings in Appendix F.
4. Well heads on the 20 designated existing landfill gas extraction wells were removed and replaced with Landtec combination well heads (refer to Detail 4/5 on Drawing 4 in Appendix B for the dual extraction flange assembly detail).
 - a. Pumps were installed within the well casings to the required depths to extract the leachate.

2.3 Inspections/Tests

The following inspections and tests were performed for the construction/installation of the new leachate force main and air supply line:

1. Pipe, tie-in couplers, tees, saddle branches, and other fittings and appurtenances was visually inspected for conformance with the specifications, as well as to verify there were no signs of damage. The pipe, tie-in couplers, tees, saddle branches, and other fittings and appurtenances were determined to be in conformance with the specifications and there was no observed visual damage to the pipe, tie-in couplers, tees, saddle branches, and other fittings and appurtenances was observed.
2. Butt-fusion welds were inspected prior to back-filling the trench. Specifically, BC's inspector observed hot plate temperature, holding times, and welding techniques. Welds were determined to be in conformance with the specifications.
3. Pipelines were pressure tested prior to being placed in the trench and being connected into the existing leachate management system. The pressure test consisted of applying the required pressure over a four 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 following pressures were applied to each of the pipelines:
 - a. 3-inch leachate force main – 50 pounds per square inch (psi).
 - b. 2-inch air supply line – 75 psi.
4. Results of the pressure testing determined that the pipelines passed the pressure tests (see Appendix G for the pressure test inspection forms).

RULE 13 AUTHORIZATION

PHASE II LEACHATE MANAGEMENT SYSTEM CONSTRUCTION CERTIFICATION REPORT

3. LANDFILL GAS MANAGEMENT SYSTEM

Existing landfill gas extraction wells (extraction wells) EW-12, EW-61, EW-64 and EW-66 were abandoned and replaced by EW-12R, EW-61R, EW-64R, and EW-66R (refer to Drawing RD-1 of the Project Record Drawings in Appendix F for locations). An estimated 197 linear feet of 6-inch diameter solid SDR 17 HDPE pipe was installed to connect the replacement extraction wells on line with the existing landfill gas management system.

The existing extraction wells were abandoned (refer to Detail 6 on Drawing RD-2 in Appendix F) by excavating around the casing approximately 2-feet below the existing 6-inch diameter landfill gas collection system lateral pipeline. The extraction well casings were then cut off approximately one-foot above the excavation bottom, and a slip cap was secured onto the remaining end of the casing. The excavation was then backfilled with soil from an onsite borrow source.

Periodic air monitoring was performed during the installation of the replacement extraction wells to ensure worker safety (refer to Subsection 3.5).

3.1 Materials

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

1. 6-inch diameter solid and perforated SDR 11 HDPE pipe with HDPE bottom caps and temporary Schedule 40 polyvinyl chloride (PVC) end caps.
2. 6-inch diameter solid SDR 17 HDPE pipe.
3. 6-inch diameter solid SDR 17 HDPE tie-in couplers, tees, saddle branches, and other fittings and appurtenances.
4. No. 4 stone (1-inch to 3-inch washed non-carbonate) backfill material.
5. Bentonite.

3.2 Construction/Installation Methods – Replacement Extraction Wells

Equipment used in the extraction well construction/installation activities included an IMT Model AF-100 drill rig, Caterpillar 935C track loader, JCB 718 articulated dump truck, HDPE butt-fusion pipe welding equipment, and various hand tools. The general construction/installation sequence used to construct/install the replacement extraction wells was as follows:

1. The locations of the wells were surveyed by Wellert Corporation of Medina, Ohio. The depth of the top of waste was noted on the stake at each location.
2. Boreholes were drilled into the waste before the gas collection system materials and equipment were installed.

3. Drilling was performed using an IMT Model AF-100 drill rig with 36-inch auger to the depths indicated in the proposed well schedule on the construction drawings (see Appendix B).
4. Depth of the borehole was controlled and verified using a weighted tape measure (see boring logs in Appendix H).
5. Final borehole depth was confirmed prior to well placement.
6. Solid wall and perforated sections of HDPE pipe were butt-fusion welded to the lengths provided in the proposed well schedule for placement into the borehole. A typical detail for the gas extraction well construction is provided as Detail 1 on Drawing RD-3 in Appendix F.
7. Using the IMT Model AF-100 drill rig, 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 with a chain to prevent the casing from sagging.
8. 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 diameter SDR 11 HDPE casing.
9. Geonet with geotextile heat-bonded to one side was placed over the stone. One-foot clean soil plug was placed on top of the geonet.
10. Two-foot minimum thickness bentonite seal was placed on top of the clean soil plug. Onsite clean soil material was placed on top of the bentonite seal. The clean soil material varied in thickness. Two-foot minimum thickness bentonite seal was placed on top of the clean soil material so that the top of the upper bentonite seal extended a minimum of six inches into the cover soil.
11. Schedule 40 PVC temporary caps were installed using set screws and silicone sealant on top of the casings.
12. Temporary Schedule 40 PVC end caps were removed and Landtec combination well heads (refer to Project Record Detail 4 on Drawing RD-3 in Appendix F) were installed at EW-12R, EW-61R, EW-64R and EW-66R.

3.3 Construction/Installation Methods – Landfill Gas Collection System

Equipment used to connect the replacement extraction wells into the existing landfill gas collection system included a Caterpillar 935C track excavator, JCB 718 articulated dump truck, HDPE butt-fusion and electro-fusion pipe welding equipment, and various hand tools. The general construction/installation sequence used to connect the replacement extraction wells into the existing landfill gas collection system was as follows:

1. 6-inch diameter SDR 17 HDPE pipe was delivered to the site and stored in a clean area.
2. 6-inch diameter SDR 17 HDPE pipe was butt-fusion welded on-site by AEGL to the required lengths.
 - 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. Welds were inspected by BC and determined to be in conformance with the specifications.
3. HDPE pipe was placed in the trenches following completion of the excavation and electro-fusion welded to the existing landfill gas collection system pipe.
 - a. HDPE pipe was installed to the design minimum slopes of three percent.
 - b. Survey markers were placed at 50-foot intervals along the pipelines and at fitting locations.
 - i. Installed pipelines, fittings and components, were field surveyed after installation from a third order benchmark using global positioning system (GPS) technology.

- c. Locations of the pipelines, components, and appurtenances are provided on Drawing RD-1 of the Project Record Drawings in Appendix F. Installed pipe details are provided on Drawings RD-2 and RD-3 of the Project Record Drawings in Appendix F.
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 Lorain County II Landfill.

3.4 Inspections/Tests

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

1. Materials used in the construction/installation of the replacement extraction wells were visually inspected for conformance with the specifications, as well as to verify there were no signs of damage. The replacement extraction well casing materials, pipe, tie-in couplers, tees, saddle branches, and other fittings and appurtenances were determined to be in conformance with the specifications 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 replacement extraction well casings were compared to the construction plans and were determined to be accurate.
3. Boreholes were observed during the drilling to document that the boreholes were completed to the correct depth as provided in the proposed well schedule.
4. BC's inspectors observed the butt-fusion welding process used to connect the HDPE pipe casing sections and pipe sections together to verify appropriate welding procedure guidelines were followed. Specifically, BC's inspector observed hot plate temperature, holding times, and welding techniques. Welds were determined to be in conformance with the specifications.
5. No. 4 washed low-carbonate stone was used to backfill the annular space between the well casing and the borehole. The analytical test results for the gradation and carbonate content of the No. 4 stone are provided in Appendix I.
6. BC inspectors obtained and recorded measurements to verify the replacement extraction wells were constructed according to the construction plans.
7. Installed pipelines were pressure tested prior to being connected into the existing landfill gas collection system. The pressure test consisted of applying 25 psi of pressure over a four 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 results of the pressure testing determined that the pipelines passed the pressure tests (see Appendix G for the pressure test inspection forms).

3.5 Air Monitoring

Air monitoring was performed during the drilling of the replacement extraction wells. A multi-gas Orion Series monitoring device, manufactured by MSA, 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 were obtained and recorded by the BC inspector. Air monitoring recordings are provided in Appendix J.

RULE 13 AUTHORIZATION

PHASE II LEACHATE MANAGEMENT SYSTEM CONSTRUCTION CERTIFICATION REPORT

4. VALVE INSTALLATION

Control valves were installed on the 3-inch diameter leachate force main and the 2-inch diameter air supply line. The control valves will be closed when maintenance is required on the Phase II Leachate Management System. Closing the control valves will allow the Phase I Leachate Management System to continue to function while the maintenance is performed on the Phase II Leachate Management System. Four ASAHI Type 57 gear-operated control valves (two, 3-inch valves on the leachate force main and two, 2-inch valves on the air supply line) were installed between Landfill Gas Extraction Wells EW-3 and EW-5 and between EW-29 and EW-31. The location of the control valves is shown on Drawing RD-1 of the Project Record Drawings (see Appendix F).

A relief valve was installed in the 2-inch diameter air supply line next to Landfill Gas Extraction Well EW-8. This location was chosen because the vertical elevation is the highest point on the air supply line. The Spears True Union PVC ball valve will allow the air to release from the air supply line when the control valves on the air supply line are closed. The location of the air supply line relief valve is shown on Drawing RD-1 of the Project Record Drawings (see Appendix F).

4.1 Materials

The control valve and relief valve components include the following materials:

1. Control Valves: ASAHI Type 57 gear operated butterfly valve with appurtenant seats and seals.
2. Relief Valve: Spears True Union, Regular Style, 2329-020, PVC ball valve with appurtenant seats and seals, HDPE to PVC flange, and PVC end cap.
3. 3-inch diameter solid SDR 17 HDPE pipe flange adapters with ductile iron backup ring and galvanized bolts, nuts, and washers.
4. 2-inch diameter solid SDR 9 HDPE pipe flange adapters with ductile iron backup ring and galvanized bolts, nuts, and washers.
5. 2-inch diameter solid SDR 9 HDPE tees and elbows.
6. ASAHI two-piece valve stem extensions and casings.
7. Worm-gear valve actuators.
8. 24-inch diameter solid SDR 17 HDPE encasements with secure lids.

4.2 Construction Methods for Control Valves

Equipment used to install the control valves included a Caterpillar 935C track excavator, JCB 718 articulated dump truck, HDPE butt-fusion pipe welding equipment and various hand tools. The general construction/installation sequence used to install the control valves was as follows:

1. Sections of the existing 2-inch diameter air supply line and the 3-inch diameter force main pipeline were cut and removed

2. Using the HDPE flange adaptor, the control valves were bolted to the 2- and 3-inch pipe.
3. Valve stem extensions, casings, and worm-gear actuators were installed on the control valve.
4. HDPE encasements with secure lids were installed.
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 Lorain County II Landfill.

4.3 Construction Methods for Air Supply Line Relief Valve

Equipment used to install the air supply line relief valve included a Caterpillar 935C track excavator, JCB 718 articulated dump truck, HDPE butt-fusion pipe welding equipment, and various hand tools. The general construction/installation sequence used to install the relief valve was as follows:

1. Section of the existing 2-inch diameter air supply line pipeline were cut and removed.
2. 2x2x2 solid SDR 9 HDPE tee was butt fusion welded onto the air supply line where the section was removed.
3. 5-foot section of 2-inch diameter pipe was fusion welded onto the 2x2x2 solid SDR 9 HDPE tee and a solid SDR 9 HDPE 90° elbow was fusion welded onto the end of the 5-foot section of 2-inch diameter pipe.
4. 2-inch diameter solid SDR 9 HDPE pipe flange adapter with ductile iron backup ring and galvanized bolts, nuts, and washers was fusion welded onto the end of the 90° elbow.
5. 1-inch diameter Spears True Union PVC ball valve with PVC pipe flange adapter was mounted to the HDPE pipe flange adapter.
6. HDPE encasement with secure lid was installed.
7. 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 Lorain County II Landfill.

4.4 Inspections/Tests

The following inspections and tests were performed during the installation of the control valves and relief valve into the 3-inch diameter leachate force main and the 2-inch diameter air supply line:

1. Valves and appurtenances were visually inspected for conformance with the specifications, as well as to verify there was no sign of damage. The valves and appurtenances were determined to be in conformance with the specifications and no visual damage to the pipe or valves was observed.
2. Electro-fusion welds were visually inspected and observed to be completed according to the 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 ensure that there were no negative impacts on the valve assemblies and no waste material was included in the backfill soil.

APPENDIX A

Rule 13 Authorization Approval Letter



State of Ohio Environmental Protection Agency

STREET ADDRESS:

MAILING ADDRESS:

Lazarus Government Center
122 S. Front Street
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-3184
www.epa.state.oh.us

P.O. Box 1049
Columbus, Ohio 43216-1049

Mr. Daniel T. Titus
Environmental Manager
Allied Waste Industries, Inc.
43502 Oberlin-Elyria Road
Oberlin, Ohio 44074

**Re: BFIO Lorain I Landfill, Lorain County
Ohio Administrative Code (OAC) Rule 3745-27-13 Authorization**

Dear Mr. Titus:

On April 7, 2005, Browning-Ferris Industries of Ohio, Inc. (BFIO) submitted to the Ohio Environmental Protection Agency (Ohio EPA), Division of Solid and Infectious Waste Management (DSIWM), Northeast District Office (NEDO) a request, pursuant to OAC Rule 3745-27-13, to engage in filling, grading, excavating, building, drilling, or mining activities at the closed Lorain I Landfill (Facility) located in Lorain County. BFIO submitted revisions to the request on January 24, 2006; March 16, 2006; and May 11, 2006.

OAC Rule 3745-27-13 requires authorization from the director of Ohio EPA (Director) before engaging in filling, grading, excavating, building, drilling, or mining on land where a solid waste facility was operated.

Specifically, the following activities are being proposed in the request: installation of surface water collection areas, improvement of gas and leachate collection wells, tie-in of the leachate system to the Oberlin Wastewater Treatment Plant (WWTP) which is located on an adjacent property, construction of an access roadway across the landfill cap, addition of leachate toe drains as necessary, general cleanup and maintenance activities of ditches and letdowns, and general site grading. The collection areas are designed to collect storm water from ponding due to differential settlement. In order to increase the efficiency of the current gas extraction system, BFIO is proposing to add pumps to the existing wells to remove leachate. Additionally, in order to improve access to the Lorain II Landfill, a non-contiguous landfill, and a power plant on BFIO's property, an alternate access route across the landfill is also being proposed.

Bob Taft, Governor
Jennette Bradley, Lieutenant Governor
Joseph P. Koncinski, Director



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Based upon a review of the request and subsequent revisions, I have determined, pursuant to OAC Rule 3745-27-13, that the proposed activities will not result in violation of applicable laws or regulations, will not create a nuisance, and are unlikely to adversely affect the public safety or health or the environment. Therefore, BFIO is hereby authorized to perform the activities outlined in this letter in accordance with the submitted and approved plans, specifications, and information.

As part of this authorization, BFIO is subject to the following conditions:

CONDITIONS

1. This approval grants BFIO authorization to perform activities at the Lorain I Landfill in accordance with the request titled Rule 13 Authorization Application ("Rule 13") submitted on April 7, 2005, and subsequent revisions submitted on January 24, 2006; March 16, 2006; and May 11, 2006, only. All activities shall be conducted in strict accordance with the plans, specifications, and other information submitted as part of this request. There may be no deviation from the approved plans without prior written authorization from Ohio EPA. Any future activities at the Lorain I Landfill may require additional Ohio EPA approval.
2. All on-site activities shall be accomplished in compliance with all applicable state and federal laws and regulations pertaining to environmental protection, including but not limited to, the control of air pollution, leachate, surface water run-on and runoff, and protection of ground water.
3. All on-site activities shall be performed in a manner that prevents migration of leachate, explosive gas, or toxic gas from the Facility.
4. All activities undertaken shall not create a nuisance and shall not adversely affect the public safety or health or the environment.
5. All solid waste to be removed during activities authorized through this approval shall be containerized and securely stored until these materials are properly characterized and disposed in accordance with Ohio Revised Code (ORC) Chapter 3734 and the regulations promulgated thereunder.
6. All liquids, semi-solids, industrial wastes, and other wastes regulated by ORC Chapter 6111 that are removed during intrusive activities shall be containerized and securely stored until these materials are properly characterized and disposed in accordance with ORC Chapter 6111 and regulations promulgated thereunder.

7. Prior to any removal of waste or contaminated soil from the property, BFIO shall submit copies of sample analysis results, the treatment or disposal method selected, and a copy of a letter of acceptance from the treatment or disposal facility to Ohio EPA, NEDO, pursuant to OAC Rule 3745-27-13(H)(4).
8. For the purposes of erosion control during all phases of this authorization, BFIO shall use best management practices and standards as specified in the Ohio Department of Natural Resources manual titled Rainwater and Land Development.
9. If excavation occurs outside the limits of waste placement at the Facility, BFIO shall not use material consisting of solid or hazardous waste to backfill the excavated areas.
10. Not later than forty-eight (48) hours prior to the commencement of the projects specified on pages 4 and 5 of the Rule 13, BFIO shall submit written notification that specifies both the anticipated start and completion times of each project to Ohio EPA, NEDO and the Lorain County Board of Health.
11. In accordance with OAC Rule 3745-27-13(M), this authorization shall terminate three years after its effective date if BFIO has not begun the activities authorized herein.
12. The director may revoke this authorization if BFIO violates, or is likely to violate, any applicable law or if the continued implementation of the approved plans causes a threat to human health or safety or the environment.
13. Nothing in this letter shall be construed to authorize any waiver from any requirements of applicable state solid waste laws or regulations. This letter shall not be interpreted to release BFIO or others from responsibility under ORC Chapters 3704, 3714, 3734, or 6111; under the Federal Clean Water Act, the Resource Conservation and Recovery Act, or the Comprehensive Environmental Response, Compensation, and Liability Act; or from other applicable requirements for remedying conditions resulting from any release of contaminants to the environment.

**Mr. Daniel T. Titus
Allied Waste Industries, Inc.
Page 4 of 4**

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission (Commission) pursuant to ORC Section 3745.04. The appeal must be made in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Commission within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director within three (3) days after filing with the Commission. An appeal may be filed with the Commission at the following address:

**Environmental Review Appeals Commission
309 South Fourth Street
Room 222
Columbus, Ohio 43215**

If you have any questions regarding this authorization, please contact Mr. Jerry Parker of Ohio EPA's NEDO at (330) 963-1186.

Sincerely,

**Joseph P. Koncelik
Director**

JPK/JP/MM/sw

**cc: Murat Tukul, DSIWM-NEDO
Scott Hester, DSIWM-CO
Jim Boddy, Lorain County Board of Health**

APPENDIX B

2007 GCCS Construction Drawings

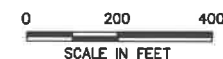
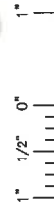


LEGEND

- PROPERTY BOUNDARY
- PERMITTED SOLID WASTE BOUNDARY
- EXISTING SOLID WASTE BOUNDARY
- EXISTING LIMITS OF FINAL COVER PLACEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING LANDFILL GAS HEADER
- HGC-15 EXISTING HORIZONTAL LFG COLLECTOR
- EW-90A EXISTING LFG EXTRACTION WELL WITH LANDTEC WELLHEAD
- ⊕ EW-1 EXISTING LFG EXTRACTION WELL
- △ EW-45 EXISTING COMBINATION WELL
- ⊠ EXISTING HEADER ACCESS RISER
- ⋈ EXISTING CONTROL VALVE
- ⊞ EXISTING BLIND FLANGE
- ⊞ EXISTING FLANGE CONNECTION
- ◇ EXISTING CONDENSATE DRIPLEG
- ◇ EXISTING CONDENSATE PUMP STATION
- ⊕ GMP-18 EXISTING GAS MONITORING PROBE
- ⊕ MW-2 EXISTING GROUNDWATER MONITORING WELL
- EW-68R PROPOSED EXISTING WELL RE-DRILL
- △ EW-4 PROPOSED COMBINATION WELL

NOTES:

1. EXISTING GRADES DEVELOPED FROM A COMPOSITE DEVELOPED BY CEC INC. INCORPORATING AERIAL MAPPING DATED 10/16/98, AND 2/28/01 PREPARED BY INTERMAP INC., 2/27/05 PREPARED BY KEDDAL AERIAL MAPPING, AND USGS MAPPING TAKEN FROM THE OBERLIN, OHIO QUADRANGLE DATED 1969, PHOTO REVISED 1979.
2. LORAIN I PERIMETER HEADER TRENCH CONTAINS A 2" HDPE COMPRESSED AIR MAIN FOR LIQUIDS MANAGEMENT.
3. ALL HEADER AND LATERAL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED AT A MINIMUM 3% SLOPE, UNLESS OTHERWISE NOTED.
4. ALL HEADER AND LATERAL PIPING OUTSIDE THE LIMITS OF WASTE TO BE INSTALLED AT A MINIMUM 0.5% SLOPE, UNLESS OTHERWISE NOTED.
5. THE LOCATION OF LANDFILL GAS MANAGEMENT COMPONENTS IS APPROXIMATE AND MAY VARY TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION. CONTRACTOR MUST FIELD VERIFY ALL HORIZONTAL AND VERTICAL DATUM PRIOR TO CONSTRUCTION.
6. ALL HEADER AND LATERAL PIPELINES TO BE SDR 17 HDPE, AND ALL FITTINGS TO BE SDR 11 HDPE OR ENGINEER APPROVED EQUAL.



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	07/13/07	DATE OF ISSUE	AMK	AMK	TAB	TAB
		DRAWN BY	AMK	CHECKED BY	TAB	
		DESIGNED BY	AMK	APPROVED BY	TAB	

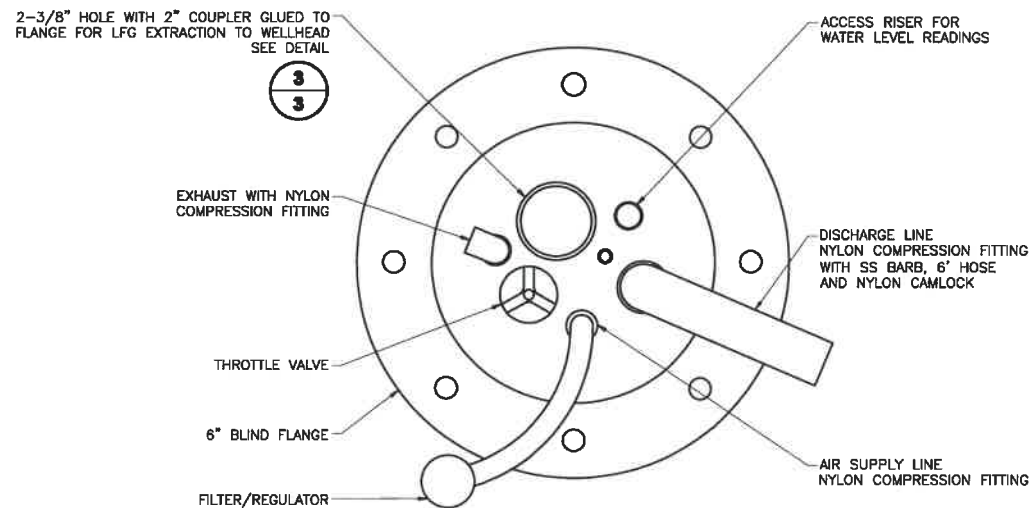


ISSUED FOR CONSTRUCTION

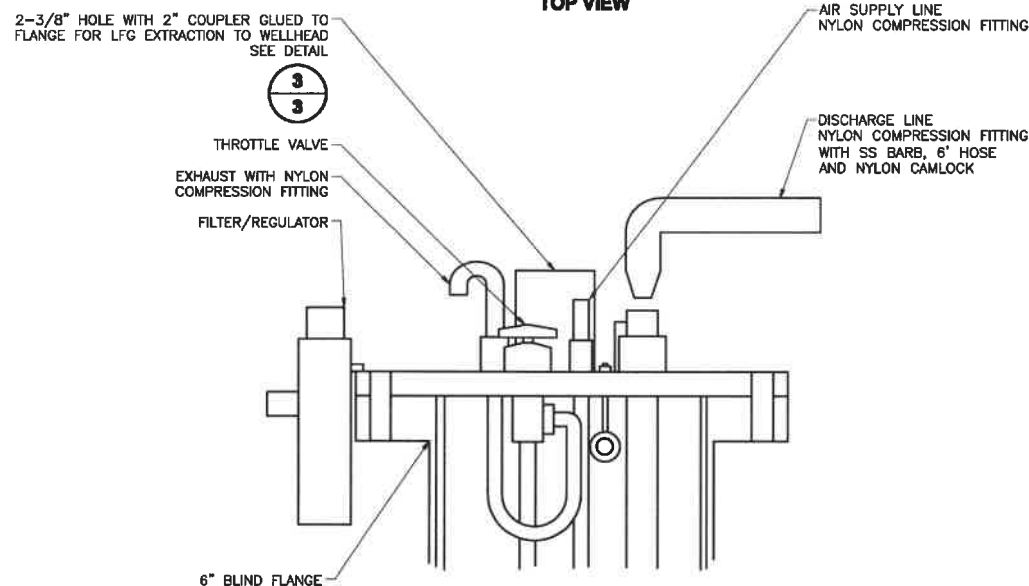
BROWNING-FERRIS INDUSTRIES OF OHIO, INC.
LORAIN COUNTY LANDFILL
LORAIN COUNTY, OHIO

**2007 LANDFILL GAS CONSTRUCTION PLANS
LORAIN COUNTY I SITE PLAN**

SHEET NO.
1
PROJECT NO.
060033



TOP VIEW



PROFILE VIEW

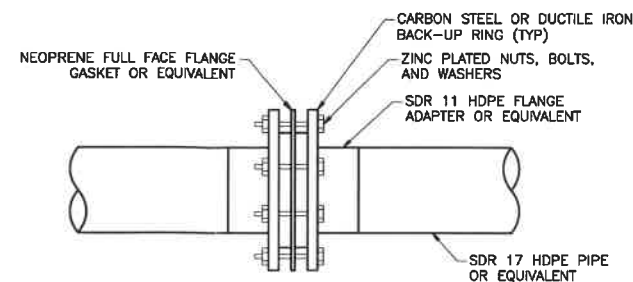
DUAL EXTRACTION FLANGE ASSEMBLY

DETAIL 4/5

SCALE: NOT TO SCALE

NOTES:

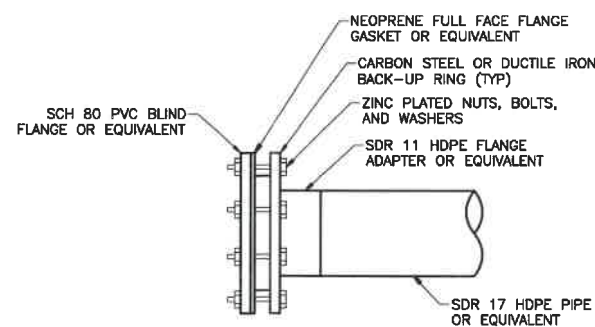
1. THIS FLANGE ASSEMBLY SHALL BE INSTALLED IN ALL WELLS THAT EXHIBIT LIQUID LEVELS THAT MAY IMPACT LFG EXTRACTION.
2. AIR AND FORCEMAIN LINES SHALL BE EXTENDED TO ALL DUAL EXTRACTION WELLS.
3. QED AP-4 PNEUMATIC PUMPS, OR APPROVED EQUAL, SHALL BE INSTALLED IN ALL DUAL EXTRACTION WELLS.
4. REMOTE WELLS SHALL HAVE THE DUAL EXTRACTION FLANGE ASSEMBLY INSTALLED ON THE WELL CASING, AND THE WELLHEAD INSTALLED AT THE HEADER TO PROMOTE CONDENSATE DRAINAGE.



FLANGE CONNECTION

DETAIL 2/4

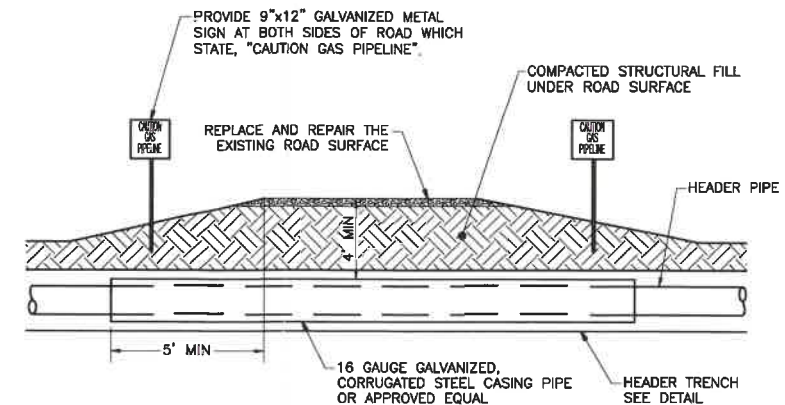
SCALE: NOT TO SCALE



BLIND FLANGE ASSEMBLY

DETAIL 3/4

SCALE: NOT TO SCALE



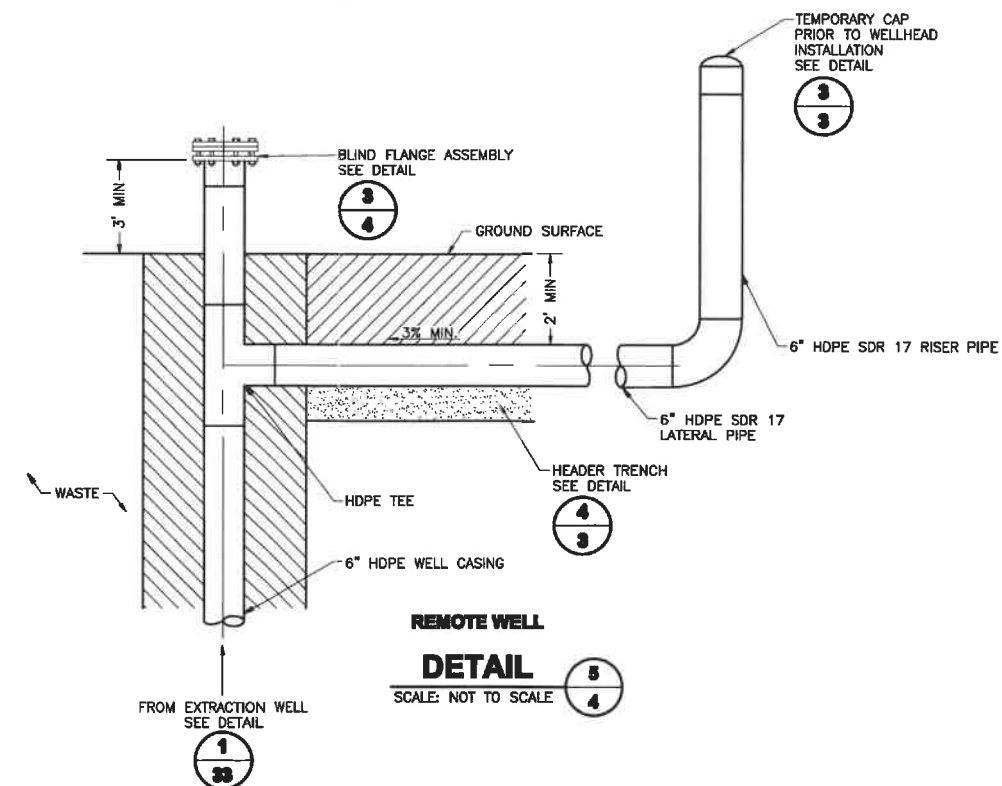
TRENCHED ROAD CROSSING

DETAIL 4/4

SCALE: NOT TO SCALE

PIPE CASING SCHEDULE

4" HEADER PIPE	8" CASING PIPE OR APPROVED EQUAL
6" HEADER PIPE	10" CASING PIPE OR APPROVED EQUAL
18" HEADER PIPE	24" CASING PIPE OR APPROVED EQUAL



REMOTE WELL

DETAIL 5/4

SCALE: NOT TO SCALE

ISSUED FOR CONSTRUCTION

BROWNING-FERRIS INDUSTRIES OF OHIO, INC.
LORAIN COUNTY LANDFILL
LORAIN COUNTY, OHIO

2007 LANDFILL GAS CONSTRUCTION PLANS
DETAILS

SHEET NO.

4

PROJECT NO.
060033

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	07/13/07		AMK	AMK	TAB	TAB



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1" 1/2" 0"

File: J:\LORAIN - LFG ENGINEERING - LFG CONSTRUCTION 2007 - 060033\PROJECT DRAWINGS\060033.dwg Layout: Layout1 User: engdlschaefer Jul 16, 2007 - 3:17pm

BROWN AND CALDWELL**DAILY FIELD REPORT**

Project: Lorain II Landfill - LFG COA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Date: 9-11, 2007

Weather: OVERCAST, RAIN
65 °F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☐ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG

SUMMARY OF WORK: EXCAVATED MOUND AROUND CS-10, BUTT-WELDED/ELECTRO-WELDED 6"/3" TO 4 1/2" REDUCER ON 6"/3" FORCEMAIN RISER. BUTT-WELDED 4 1/2" TIE-IN FROM EW-85, DETECTED POSSIBLE LEAK IN BETWEEN 6" & 3" OF EXISTING FORCE MAIN.

MOVED OVER TO LORAIN I.

EXCAVATED AROUND EW-5 & EW-31 TO CONFIRM SIZE OF PIPE - 3" FORCE MAIN & 2" AIR

BUTT-WELDED STRINGER

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/11/07
Date

BROWN AND CALDWELL**DAILY FIELD REPORT**

Project: Lorain II Landfill - LFG CQA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Date: 9-12, 2007Weather: P. CLOUDY
52°F, EX 65°F**ITEMS WORKED ON:**

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☐ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:AFC**SUMMARY OF WORK:**

LORAIN II - HAULED & PLACED GRAVEL & SOIL FOR COVER BOX
AT CS-10. INSTALLED COVER BOX @ CS-10.
BACKFILLED & DRESSED UP TRENCH @ EW-05

LORAIN I - BUTT-WELD 2" STRINGERS.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/12/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: ~~Consolidated~~ LFG-GRA / LORAIN F

Location: Oberlin, Ohio

Project No.: 132414

BC Personnel:

D. BROCK, T. AEBIE

R. ISAAC

Dates: 9-13, 2007

Weather: SUNNY, LT BREEZE
48°F, EXD - 75°F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☐ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG, JERRY PARKER, OEPH

SUMMARY OF WORK: TRENCHED FROM EW-4 TO PERIMETER N. OF EW-5, FROM EW-8 TO EW-7 & EW-6, FROM EW-10 TO EW-11, AND ALONG PERIMETER FROM EW-5 TO EW-11. ENCOUNTERED SHALLOW WASTE IN SPOTS, STOCKPILED WASTE IN TRENCHES AT ENDS UNTIL ACCESS ROAD TO LORAIN F REPAIRED. COVERED EXPOSED WASTE ON FLOOR OF TRENCHES W/ LIFT OF SOIL. BUTT-WELDED 2" BLIND FLANGES W/ TEES & ELBOWS, 3" STRINGERS & 2" BLIND FLANGES W/ 3" TO 2" REDUCERS, TEES & ELBOWS. LAID PIPE IN TRENCHES FROM EW-8 TO EW-6, EW-4 TO WASTE STOCKPILED AT END, FROM EW-10 TO EW-11. BUTT-WELDED BLIND FLANGES W/ TEES & ELBOWS AT EW-7, EW-8 (INCLUDING BLIND FLANGE FOR AIR RELEASE VALVE), EW-9, EW-10, EW-11. BACKFILLED TRENCHES, PLACED CAUTION TAPE & DRESSED UP AT EW-6-7-8 LINE & EW-10-11.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematic/Maps
- ☐ Other:

D. Brock

Signature of Construction Monitor

9/13/07

Date

BROWN AND CALDWELL**DAILY FIELD REPORT**

Project: Lorain Transfer Station / LORAIN II
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. Brock

Date: 9-14, 2007

Weather: M. SUNNY, BRIEZY
58°F, EXP 70°F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEC

SUMMARY OF WORK: REPAIRED ACCESS ROAD TO LORAIN II W/ 2 18" HDPE CULVERT PIPES.
TRENCHED PERIMETER FROM EW-11 TO PAST EW-14 EXCAVATED
STOCKPILED WASTE AND HAULLED TO OPEN FACE @ LORAIN II.
HAULLED SOIL FOR BACKFILL BACK.
LAID PIPE IN PERIMETER TRENCH FROM E-5 TO PAST EW-12/R
AND IN EW-4 TO PERIMETER TRENCH.
BUTT-WELDED 2" BLIND FLANGES W/ TEES & ELBOWS, AND 3"
STRINGERS.
BUTT-WELDED TIE-INS OF 2" & 3" STRINGERS/LATERALS BETWEEN
EW-7 & EW-6, E-4 TO PERIMETER, EW-10 & EW-11 3" N.
OF EW-12. BUTT-WELDED TEES FOR TIE IN OF LATERALS
FROM EW-12R.
BACKFILLED & DRESSED 4" EW-8-7-6 LINE, AND EW-4 LINE

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/14/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: ~~Lorain II Landfill~~ LFG CGA LORAIN I
 Location: Oberlin, Ohio
 Project No.: 132414
 BC Personnel: D. BROCK

Date: 9-15, 2007

Weather: P. SUNNY, STIFF, COOL BREEZE
 50° F, EXP. 59° F

ITEMS WORKED ON:

- ☒ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG

SUMMARY OF WORK:

TRENCHED FROM PAST EW-14 TO EW-19, AND LATERAL
 TRENCHES FROM EW-30 & 33 TO PERIMETER.
 LAID 2" & 3" PIPE FROM PASTED P/2R TO EW-19. EXCAVATED &
 HAULED WASTE TO OPEN FACE @ LORAIN II, AND BROUGHT
 BACK SOIL FOR BACKFILLING.
 BUTT-WELDED BLIND FLANGES AT EW-15, 16, 19, 30 & 33.
 BUTT-WELDED STRINGER TIE-INS BETWEEN EW-13 & 14,
 18 & 19, & 33 TRENCH
 BACKFILLED & DRESSED UP PERIMETER TRENCH S. OF
 EW-14.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
 Signature of Construction Monitor

9/15/07
 Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: Loran II Landfill - LFG-GGA LORAIN F
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. Brock

Date: 9-17, 2007Weather: SUNNY, COOL
47°F, EXP -72°F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

HEG

SUMMARY OF WORK: CONTINUED TRENCHING PERIMETER TO SOUTH OF EW-28.
HAULED EXCAVATED WASTE TO OPEN FACE @ LORAIN II,
BROUGHT BACK SOIL FOR BACKFILLING.

BUTT-WELDED 2" BLIND FLANGES W/ TEES & ELBOWS.

BUTT-WELDED 2" & 3" STRINGER TIE-INS BETWEEN.

EW-19 & 21, 22 & 23, 2" STRINGER TIE-IN BETWEEN
EW-25 & 26.

BUTT-WELDED BLIND FLANGE RISERS @ EW-22 & 23.

BACKFILLED & DRESSED UP PERIMETER TRENCH ALONG
NORTH & EAST SIDES & EW-30 & 33 TRENCHES.

BUTT-WELDED 6" LATERALS FOR EW-12/12R & EW-61/61R
TIE-INS.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/17/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: LoraIn II Landfill - LFG COA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. Brock

Dates: 9-18, 2007

Weather: SUNNY, LT. BREEZE
54°F, EXP 78°F

ITEMS WORKED ON:

- ☒ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG, DRX

SUMMARY OF WORK:

LORAIN I : DRX HAULING SOIL IN & STOCKPILING W. OF LEACHATE TANKS.
AEG TRENCHED FROM EW-28 TO EW-31, & FROM EW-12R TO EW-12.
LAID PIPE IN REMAINING PERIMETER TRENCH & EW-12R-12
LATERALS.
BUTT-WELDED TIE-INS OF 2" & 3" STRINGER @ EW-26 & 29,
TIE-INS TO PERIMETER FROM EW-30 & 33, & LATERALS
FROM EW-12R.
BUTT-WELDED 6" LATERALS W/ BLIND FLANGES FOR EW-64
& 66. BUTT-WELDED BLIND FLANGES ON WELL RISERS @ EW-66 & 69.
AIR PRESSURE TESTED 6" LATERALS W/ BLIND FLANGES FOR
EW-61/61R & 12/12R, BOTH PASSED, HOLDING @ 25 PSI FOR
4 HOURS. BEGAN AIR PRESSURE TEST ON 3" FORCE MAIN
AT EW-4. BACKFILLED/DRESSED UP PERIMETER FEELP-NS
& BETWEEN EW-25 & 26.
LORAIN II - INSTALLED ISOLATION VALVES @ E & W TIE-INS
OF 18" → 24".

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematic/Maps
- ☐ Other:

D. Brock

Signature of Construction Monitor

9/18/07

Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: Lorain II Landfill - LFG COA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. Brock

Dates: 9-19, 2007

Weather: SUNNY, LT. BREEZE
54°F, EXP-82°F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEC, DRX, R & M LANDSCAPING

SUMMARY OF WORK: LORAIN I COMPLETED AIR PRESSURE TEST ON 3" FORCE MAIN @ EW-4. PASSED, HOLDING @ 50 PSI. AIR PRESSURE TESTED 2" AIRLINE @ EW-4. PASSED, HOLDING @ 75 PSI. AIR PRESSURE TESTED 6" LATERALS W/ BUND FLANGES @ EW-64 & 66. BOTH PASSED, HOLDING @ 25 PSI. AIR PRESSURE TESTED TWO 2" SDR 9 STRINGERS FOR REPLACEMENT WELLS, BOTH PASSED, HOLDING @ 75 PSI. SET UP AIR PRESSURE TEST ON 2" SDR 11 STRINGER @ 50 PSI. BUTT WELDED 2" STRINGERS, BRIND FLANGES ON RISERS @ EW-4, 5, 7, 11 & 12R AND 4" X 2" REDUCERS FOR GAS COLLECTION SYSTEM @ EW-4, 5, 6, 7, 9, 10, 11. MOUNTED WELL HEADS W/ PUMPS @ EW-5, 6, 7, 9, 10, 11. TRENCHED FROM EW-66 TO EW-66R. HAULED SOIL IN & DRESSED UP PERIMETER. DRX HAULED IN SOIL TO STOCKPILE. R & M DROPPED OFF EQUIPMENT.

LORAIN II BACKFILLED & DRESSED UP AROUND E & W 18"-24" TIE-INS

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/19/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: Lorain II Landfill - LFG CQA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Dates: 9-20, 2007

Weather: SUNNY, HAZY
59°F, EXP 84°

ITEMS WORKED ON:

- ☒ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG, DRX, R & M

SUMMARY OF WORK: LORAIN I: AIR PRESSURE TESTED 2" STRIKER/LATERAL FOR REPAIR WELLS, PASSED HOLDING @ 75 PSI. BUTT-WELDED BLIND FLANGES @ EW-22, 23, 26, 29 & 33. BUTT-WELDED TIE-IN TO ACTIVE LINES @ EW-31. INSTALLED ISOLATION VALVES ON AIR LINE & FORCE MAIN LINE @ EW-31. BUTT-WELDED 4" TO 2" REDUCERS FOR GAS COLLECTION SYSTEM @ EW-4, 29, 30. INSTALLED PUMPS & MOUNTED WELL HEADS ON EW-4, 30. TRENCHED EW-61/61R, 64/64R AND 66/66R. HAULED WASTE TO OPER FILL @ LORAIN II. & BROUGHT BACK SOIL FOR BACKFILLING. DRX BROUGHT IN SOIL FOR STOCKPILE, R & M DID NOTHING.

LORAIN II: INSTALLED PUMP @ EW-85 & PLACED ENCLOSURE OVER EW-85. INSTALLED SAMPLING TUBES AT 18" VALVES.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/20/07
Date

BROWN AND CALDWELL**DAILY FIELD REPORT**

Project: Lorain II Landfill - LFG COA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. Brock

Date: 9-21, 2007

Weather: M. SUNNY, LT. FOG
60°F, EXP 85°F

ITEMS WORKED ON:

- ☒ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☐ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG, DRX, R & M

LORAIN I

SUMMARY OF WORK: BUTT-WELDED TIE-IN TO ACTIVE LINE @ EW-5 & INSTALLED ISOLATION VALVES W/O EXTENSIONS. BUTT-WELDED TIE-INS OF AIR & FORTH MAIN LATERALS @ EW 61, 64 & 66. ELECTRO-WELDED TIE-INS OF 6" TO GAS COLLECTION SYSTEM @ EW-12/12R, 61/61R, 64/64R & 66/66R. BUTT-WELDED BLIND FLANGES TO RISERS @ EW-16, 18. MOUNTED WEL HEADS & INSTALLED PUMPS @ EW-16, 18, 22, 23, 26, 29 & 33. BUTT-WELDED REDUCERS ON GAS COLLECTION SYSTEM @ EW-18, 23, & 31. ABANDONED EW-61, 64, 66. BACKFILLED TRENCH @ EW-12R. AIR PRESSURE TESTED 2" STRINGER, PASSED, HOLDING @ 75 PSI. DRX HAULING IN SOIL TO STOCKPILE. R & M SCARIFYING, SEEDING & SPREADING HAY.

LORAIN II - REMOVED ENCASMENT @ EW-85 (PER CHRIST.) AND PULLED SURVEY RISERS.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/21/07
Date

BROWN AND CALDWELL**DAILY FIELD REPORT**

Project: Lorain II Landfill - LFG CGA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Dates: 9-22, 2007

Weather: SUNNY, LT. BREEZE
60°F, EXP 84°

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☐ Valve Repair
- ☒ Excavation/Trenching

- ☐ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG

SUMMARY OF WORK: TRENCHED TIE-IN FOR TOE SUMP, HAULED WASTE FROM TRENCH TO OPEN FACE @ LORAIN II & BROUGHT CLEAN FILL BACK. BUTT-WELDED 2" & 3" STRINGERS W/ BLIND FLANGES FOR TOE SUMP TIE-IN. AIR PRESSURE TESTED 2" & 3" STRINGERS, BOTH PASSED HOLDING @ 75 PSI & 50 PSI, RESPECTIVELY. LAID 2" & 3" STRINGERS IN TOE SUMP TIE-IN TRENCH & BUTT-WELDED TIE-INS TO ACTIVE LINES BACKFILLED TIE-IN TRENCH AND DRESSED-UP. BUTT-WELDED BLIND FLANGE TO WELL RISER @ EW-61. BUTT-WELDED AIR-RELIEF VALVE ON RISER BY EW-8.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/22/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: Lorain Hazardous Waste LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Date: 9-24, 2007

Weather: M. SUNNY, LT BREEZE
58°F, EXP. 84°F

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☒ Valve Repair
- ☐ Excavation/Trenching

- ☒ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☐ Other:

Contractor/Subcontractors/Visitors:

AEG, DRX

SUMMARY OF WORK: BUTT-WELDED GAS COLLECTION SYSTEM REDUCERS @ EW-15, 16 AND CONNECTED FLEX HOSES. BUTT-WELDED BLIND FLANGES ON 6" GAS COLLECTION SYSTEM RISERS @ EW-12R, 61R, 64R & 66R. BUTT-WELDED BLIND FLANGES ON WELL RISERS @ EW-12R, 61R, 64R & 66R. BUTT-WELDED TIE-INS OF 2" AIR & FORCE MAIN LINES @ EW-12R. BUTT-WELDED BLIND FLANGE ON WELL RISER @ EW-15 MOUNTED WELL HEAD & CONNECTED TO GAS COLLECTION SYSTEM @ EW-12R, 15, 61R, 64R & 66R. INSTALLED VALVE EXTENSIONS ON ISOLATION VALVES BY BW-5. PLACED ENCASEMENTS NEAR ISOLATION VALVE LOCATIONS & AIR RELIEF VALVE LOCATION. INSTALLED ENCASEMENTS ON ISOLATION VALVES @ EW-31 AND AIR RELIEF VALVE @ EW-8. REMOVED CULVERT PIPES AT ACCESS ROAD TO LORAIN II & REGRADED. DRESSED UP AREA AROUND EW-5. DRY-HAULED IN SOIL TO STOCKPILE & PLACED PILES OF SOIL BY THE SUMP TRENCH LOCATION.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/24/07
Date

BROWN AND CALDWELL

DAILY FIELD REPORT

Project: Lorain II Landfill - LFG COA / LORAIN I
Location: Oberlin, Ohio
Project No.: 132414
BC Personnel: D. BROCK

Dates: 9-25, 2007Weather: M. SUNNY, LT. BREEZE
65°F, EXP. 88°F
BECOMING RAINY

ITEMS WORKED ON:

- ☐ Gas Piping
- ☒ Leachate Piping
- ☐ Pipe Repair
- ☒ Valve Repair
- ☐ Excavation/Trenching

- ☐ Regrading
- ☐ Building/Sampler
- ☐ Soil Stockpiling
- ☒ Other:

Contractor/Subcontractors/Visitors:

AEG, DRX

SUMMARY OF WORK: LORAIN I: REMOVED & REINSTALLED ISOLATION VALVE @ EW-31.
REMOVED & REINSTALLED ENCLOSURES @ EW-31. INSTALLED
ENCLOSURES ON ISOLATION VALVES @ EW-5. INSTALLED LIDS
ON ENCLOSURES @ EW-5. REPLACED GASKET ON AIR VALVE
@ EW-16. INSTALLED AIR HOSE @ EW-12R. TIGHTENED
FORCE MAIN VALVES @ EW-6 & 9. CLEANED-UP EQUIPMENT
YARD & TOOK SPARE PARTS TO BONEYARD.
DRX HAULED SOIL TO STOCKPILE & NEXT TO JOE SHIP
TRENCH LOCATION.

LORAIN II: REPAIRED FENCE ALONG S. SIDE. CLEANED-UP
EQUIPMENT YARD & TOOK SPARE PARTS TO BONEYARD.

ATTACHMENTS:

- ☐ Field Data
- ☐ Schematics/Maps
- ☐ Other:

D. Brock
Signature of Construction Monitor

9/25/07
Date

American Environmental Group, Ltd.



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-11-07 Tues.

PROJECT NAME Lorain County II
PROJECT# 02-07-130

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
		LATERAL: # EW 85	PIPE DIA. 4" & 2"
		STATION 1+50 to 1+69	LINEAR FT. 19'
		RISER HEIGHT	TRENCH DEPTH 0-4'
		LATERAL: # EW 85	PIPE DIA. 2" sdr 9
		STATION 1+50 to 1+69	LINEAR FT. 18'
		RISER HEIGHT	TRENCH DEPTH 0-4'
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS			
Sunny			
START TIME 7:00 A.M.			
STOP TIME 7:00 P.M.			

COMMENTS: Today we installed the rest of the air and force main to EW 85 and did the tie in to the existing air and force main. The existing air and force main is 6"x3" so we reduced the inner pipe to 2" and the outer pipe to 4" for the tie in and replace the existing valve assembly with a 2" assembly. We went over the lorain 1 and exposed the two spots that we are going to tie the air and force main to make sure that it is 2" air and 3" force main. We fused up some 2" pipe into 200' stringers.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEN. MGR.
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9/12/07 Wed.

PROJECT NAME

Lorain County II

PROJECT#

02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR #	PIPE DIA.
LINEAR FEET OF DRILLING-ABANDONMENT		STATION	LINEAR FT.
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT	TRENCH DEPTH
PERFORATED PIPE-DIA.		FORCE MAIN #	PIPE DIA.
SOLID PIPE -DIA.		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
COMPLETION: (WELL NUMBERS)		AIR #	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.
Sunny		RISER HEIGHT	TRENCH DEPTH
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
START TIME 7:00 A.M.		CMP	VALVES
STOP TIME 5:00 P.M.			

COMMENTS:

Today we backfilled around CS 10 and set a better encasement around the sump. We clean up the area around CS 10 and moved over to Lorain 1. We started fusing pipe for the air and force main.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. B.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-13-05 Thur.

PROJECT NAME Lorain County II
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR # EW 4	PIPE DIA. 2" sdr 9
LINEAR FEET OF DRILLING-ABANDONMENT		STATION 0+00 to 2+00	LINEAR FT. 200'
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
PERFORATED PIPE-DIA.		FORCE MAIN # EW 4	PIPE DIA. 3" sdr 17
SOLID PIPE -DIA.		STATION 0+00 to 2+00	LINEAR FT. 200'
COMPLETION: (WELL NUMBERS)		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # EW 8 & 7	PIPE DIA. 2" sdr 9
		STATION 0+00 to 6+46	LINEAR FT. 646'
		RISER HEIGHT 5' x 3	TRENCH DEPTH 0-4'
		FORCE MAIN # EW 8 & 7	PIPE DIA. 3" sdr 17
		STATION 0+00 to 6+41	LINEAR FT. 641'
		RISER HEIGHT 5' x 2	TRENCH DEPTH 0-4'
		AIR # EW 10	PIPE DIA. 2" sdr 9
		STATION 0+00 to 3+34	LINEAR FT. 334'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN # EW 10	PIPE DIA. 3" sdr 17
		STATION 0+00 to 3+34	LINEAR FT. 334'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # LOOP FROM 11 TO 5	PIPE DIA. 2" sdr 9
		STATION 0+00 to 3+50	LINEAR FT. 350'
		RISER HEIGHT 5' x 2	TRENCH DEPTH 0-4'
		FORCE MAIN # LOOP FROM 11 TO 6	PIPE DIA. 3" sdr 17
		STATION 0+00 to 3+50	LINEAR FT. 350'
		RISER HEIGHT 5' x 2	TRENCH DEPTH 0-4'
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS			
Sunny			
START TIME <u>7:00 A.M.</u>			
STOP TIME <u>9:00 P.M.</u>			

COMMENTS: Today we trenched on the lateral for EW 4 until I got into trash the we trenched the lateral for EW 8,7 and EW 10. We also trenched the loop from the tee to EW 10 toward EW 6 until we hit trash. We installed the pipes and put 1' of dirt over the pipes. We rolled out the caution tape and put wooden stakes marking where the 50' marks and the fittings. We finished backfilling and cleaning up the area's we could. We fabed up the stuff we needed today and some of what we will need tomorrow. We put the air release valve just past EW 8. We put tees at 3+22 for EW 7 in the lateral for EW 8. We put tees at 0+04 for EW 11, 1+63 for EW 9, 3+49 for and EW 8 and 7.

A. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. BC
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-14-07 Fri.

PROJECT NAME Lorain County II
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR # EW 4	PIPE DIA. 2" sdr 9
LINEAR FEET OF DRILLING-ABANDONMENT		STATION 2+00 to 3+56	LINEAR FT. 156'
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT	TRENCH DEPTH 0-4'
PERFORATED PIPE-DIA.		FORCE MAIN # EW 4	PIPE DIA. 3" sdr 17
SOLID PIPE -DIA.		STATION 2+00 to 3+56	LINEAR FT. 156'
COMPLETION: (WELL NUMBERS)		RISER HEIGHT	TRENCH DEPTH 0-4'
		AIR # LOOP FROM 6 TO 5	PIPE DIA. 2" sdr 9
		STATION 3+50 to 5+10	LINEAR FT. 160'
		RISER HEIGHT	TRENCH DEPTH 0-4'
		FORCE MAIN # LOOP FROM 6 TO 5	PIPE DIA. 3" sdr 17
		STATION 3+50 to 5+10	LINEAR FT. 160'
		RISER HEIGHT	TRENCH DEPTH 0-4'
		AIR # EW 6	PIPE DIA. 2" sdr 9
		STATION 0+00 to 0+13	LINEAR FT. 13'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN # EW 6	PIPE DIA. 3" sdr 17
		STATION 0+00 to 0+13	LINEAR FT. 13'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # LOOP FROM 11 TO 14	PIPE DIA. 2" sdr 9
		STATION 0+00 to 4+00	LINEAR FT. 400'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN # LOOP FROM 11 TO 14	PIPE DIA. 3" sdr 17
		STATION 0+00 to 4+00	LINEAR FT. 400'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS			
Sunny			
START TIME 7:00 A.M.			
STOP TIME 9:00 P.M.			

COMMENTS:

Today we trenched and installed the pipe for lateral EW 4 and the loop from 6 to 5. We were in trash for 250'.

We fused in tees at 5+00 for EW 4 in the pipe from EW 6 to EW 5. We fused in tees at 1+49 for EW 12 in the line from EW 11 to 14.

The tee for EW 6 is at 3+56 and we ran a short lateral to the well. We marked out the pipe and started burying it. We put 1' of dirt over the pipe and rolled out the caution tape. We hauled in more dirt to finish filling the trench. We cleaned up some of the work areas.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. F.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-15-07 Sat.

PROJECT NAME Lorain County II
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR # EW 33	PIPE DIA. 2" sdr 9
LINEAR FEET OF DRILLING-ABANDONMENT		STATION 0+00 to 2+50	LINEAR FT. 250'
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
PERFORATED PIPE-DIA.		FORCE MAIN # EW 33	PIPE DIA. 3" sdr 17
SOLID PIPE -DIA.		STATION 0+00 to 2+50	LINEAR FT. 250'
COMPLETION: (WELL NUMBERS)		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # EW 30	PIPE DIA. 2" sdr 9
		STATION 0+00 to 2+50	LINEAR FT. 250'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN # EW 30	PIPE DIA. 3" sdr 17
		STATION 0+00 to 2+50	LINEAR FT. 250'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # LOOP FROM 14 TO 19	PIPE DIA. 2" sdr 9
		STATION 4+00 to 11+50	LINEAR FT. 750'
		RISER HEIGHT 5' x 3	TRENCH DEPTH 0-4'
		FORCE MAIN # LOOP FROM 14 TO 19	PIPE DIA. 3" sdr 17
		STATION 4+00 to 11+50	LINEAR FT. 750'
		RISER HEIGHT 5' x 3	TRENCH DEPTH 0-4'
		AIR #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		FORCE MAIN #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS			
Sunny			
START TIME 7:00 A.M.			
STOP TIME 8:30 P.M.			

COMMENTS: Today we trenched and installed the loop from EW 14 to 19, and the laterals for EW 33 and 30. We put riser tees at 6+57 for EW 15, 8+33 for EW 16, and 10+25 for EW 18. We put 1' of dirt over the pipe and hauled in more dirt for backfill and clean up. We rolled out the caution tape and finished backfilling what we could and cleaned up some of our work area's. We where in trash for 225' that we had to haul out and haul in dirt.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL, B.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-17-07 Mon.

PROJECT NAME Lorain County I
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR # LOOP FROM 19 to 23	PIPE DIA. 2" sdr 9
LINEAR FEET OF DRILLING-ABANDONMENT		STATION 11+50 to 15+75	LINEAR FT. 425'
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
PERFORATED PIPE-DIA.		AIR # LOOP FROM 19 to 23	PIPE DIA. 2" sdr 11
SOLID PIPE -DIA.		STATION 15+75 to 20+50	LINEAR FT. 475'
COMPLETION: (WELL NUMBERS)		RISER HEIGHT	TRENCH DEPTH 0-4'
		FORCE MAIN # LOOP FROM 19 to 23	PIPE DIA. 3" sdr 17
		STATION 11+50 to 20+50	LINEAR FT. 900'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		AIR # EW 23	PIPE DIA. 2" sdr 11
		STATION 0+00 to 0+10	LINEAR FT. 10'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN # EW 23	PIPE DIA. 3" sdr 17
		STATION 0+00 to 0+10	LINEAR FT. 10'
		RISER HEIGHT 5'	TRENCH DEPTH 0-4'
		FORCE MAIN #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		AIR #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		FORCE MAIN #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS: Sunny			
START TIME <u>7:00 A.M.</u>			
STOP TIME <u>8:00 P.M.</u>			

COMMENTS: Today we trenched and installed the air and force main from EW 19 to EW 23. We fused in riser tees at 15+57 for EW 22 and lateral tees at 17+90 for EW 23. We put lateral and riser to EW 23. We prepared the laterals for EW 12r and EW 61r for an air test. We hauled in more dirt for backfill where there was trash. We trenched 100' in trash then we was out of it again. We put 1' of dirt over the pipe and rolled out the caution tape. We finished backfilling and cleaned up what we could.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. BC
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-18-07 Tues.

PROJECT NAME Lorain County I
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		AIR # <u>LOOP FROM 23 to 31</u>	PIPE DIA. <u>2" sdr 11</u>
LINEAR FEET OF DRILLING-ABANDONMENT		STATION <u>20+50 to 26+20</u>	LINEAR FT. <u>570'</u>
LINEAR FEET OF WELL COMPLETION		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
PERFORATED PIPE-DIA.		FORCE MAIN # <u>LOOP FROM 23 to 31</u>	PIPE DIA. <u>3" sdr 17</u>
SOLID PIPE -DIA.		STATION <u>20+50 to 26+20</u>	LINEAR FT. <u>570'</u>
COMPLETION: (WELL NUMBERS)		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
		AIR # <u>EW 26</u>	PIPE DIA. <u>2" sdr 11</u>
		STATION <u>0+00 to 0+10</u>	LINEAR FT. <u>10'</u>
		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
		FORCE MAIN # <u>EW 26</u>	PIPE DIA. <u>3" sdr 17</u>
		STATION <u>0+00 to 0+10</u>	LINEAR FT. <u>10'</u>
		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
		AIR # <u>EW 30</u>	PIPE DIA. <u>2" sdr 11</u>
		STATION <u>2+50 to 2+95</u>	LINEAR FT. <u>45'</u>
		RISER HEIGHT	TRENCH DEPTH <u>0-4'</u>
		FORCE MAIN # <u>EW 30</u>	PIPE DIA. <u>3" sdr 17</u>
		STATION <u>2+50 to 2+95</u>	LINEAR FT. <u>45'</u>
		RISER HEIGHT	TRENCH DEPTH <u>0-4'</u>
		AIR # <u>EW 33</u>	PIPE DIA. <u>2" sdr 11</u>
		STATION <u>2+50 to 2+67</u>	LINEAR FT. <u>17'</u>
		RISER HEIGHT	TRENCH DEPTH <u>0-4'</u>
		FORCE MAIN # <u>EW 33</u>	PIPE DIA. <u>3" sdr 17</u>
		STATION <u>2+50 to 2+67</u>	LINEAR FT. <u>17'</u>
		RISER HEIGHT	TRENCH DEPTH <u>0-4'</u>
		SUMPS	VALVES
GENERAL INFORMATION			
WEATHER CONDITIONS			
Sunny			
START TIME <u>7:00 A.M.</u>			
STOP TIME <u>8:00 P.M.</u>			

COMMENTS: Today we finished trenching the air and force main from 23 to the tie in point at 31. We finished the lines to EW 30 and 33. We trenched a short lateral to EW 26. We put the air test on the force main over night at 50 psi. We put 1' of dirt over the pipe and rolled out the caution tape. We finished backfilling the trench and put survey stakes every 50' and fittings. We trenched the lateral for EW 12r but did not install the lateral just the air and force main so that we could test them.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. ISC
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-20-07 Thurs.

PROJECT NAME

Lorain County I

PROJECT#

02-07-130

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 _____
	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	
Sunny	
START TIME _____ 7:00 A.M.	
STOP TIME _____ 8:00 P.M.	

COMMENTS: Today we put in the sample ports at the 18" valves on Lorain 2 and set the pump in well EW 85. We also set an encasement around EW 85. We set pumps on Lorain 1 in wells EW 4, 33, 30, 28, 26, and 23. EW 4 went 45' to the bottom of the pump. EW 33 went 28' to the bottom of the pump. EW 30 went 42' to the bottom of the pump. EW 28 went 32' to the bottom of the pump. EW 26 went 30' to the bottom of the pump. EW 23 went 33' to the bottom of the pump. Today we trenched the laterals for EW 61R, 64R, and 66R. We tied the air and force main to the existing air and force main on the west side of the hill. We connected the wells to the gas system.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL, BC
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-21-07 Fri

PROJECT NAME

Lorain County I

PROJECT#

02-07-130

DRILLING	CONSTRUCTION	
LINEAR FEET OF DRILLING	LATERAL: # EW 12R	PIPE DIA. 6"
	STATION 0+00 to 0+42	LINEAR FT. 42'
LINEAR FEET OF DRILLING-ABANDONMENT	RISER HEIGHT 4'	TRENCH DEPTH 0-4'
	AIR : # EW 12	PIPE DIA. 2" sdr 11
LINEAR FEET OF WELL COMPLETION	STATION 0+00 to 0+33	LINEAR FT. 33'
	RISER HEIGHT 5'	TRENCH DEPTH 0-4'
PERFORATED PIPE -DIA.	FORCE MAIN: # EW 12	PIPE DIA. 2" sdr 11
	STATION 0+00 to 0+33	LINEAR FT. 33'
SOLID PIPE -DIA.	RISER HEIGHT 5'	TRENCH DEPTH 0-4'
COMPLETION: (WELL NUMBERS)	LATERAL: # EW 66	PIPE DIA. 6"
	STATION 0+00 to 0+50	LINEAR FT. 50'
	RISER HEIGHT 4'	TRENCH DEPTH 0-4'
	AIR : # EW 66	PIPE DIA. 2" sdr 11
	STATION 0+00 to 0+43	LINEAR FT. 43'
	RISER HEIGHT 5'	TRENCH DEPTH 0-4'
	FORCE MAIN: # EW 66	PIPE DIA. 2" sdr 11
	STATION 0+00 to 0+43	LINEAR FT. 43'
	RISER HEIGHT 5'	TRENCH DEPTH 0-4'
GENERAL INFORMATION	LATERAL: # EW 64	PIPE DIA. 6"
WEATHER CONDITIONS	STATION 0+00 to 0+49	LINEAR FT. 49'
Sunny	RISER HEIGHT 4'	TRENCH DEPTH 0-4'
	AIR : # EW 64	PIPE DIA. 2" sdr 11
	STATION 0+00 to 0+39	LINEAR FT. 39'
START TIME 7:00 A.M.	RISER HEIGHT 5'	TRENCH DEPTH 0-4'
STOP TIME 8:00 P.M.	FORCE MAIN: # EW 64	PIPE DIA. 2" sdr 11
	STATION 0+00 to 0+39	LINEAR FT. 39'
	RISER HEIGHT 5'	TRENCH DEPTH 0-4'

COMMENTS: Today we installed the laterals, air and force main for EW 12R, EW 66R, and EW 64R. We shot the laterals every 10' for grade assurance at 3% min. and put 1' of dirt over the pipe. We rolled out the caution tape and finished backfilling what we could. We set the rest of the pumps that we had on site. EW 22 went 33' to the bottom of the pump. EW 18 went 31' to the bottom of the pump. EW 16 went 36' to the bottom of the pump. We tied the air and force main into the existing system on the east side of the hill with a 2" valve in the air line and a 3" valve in the force main. We abandoned EW 12, 66, and 64.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK SR. GEOL. IBC
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DIARY

DATE: 9-22-07 Sat

PROJECT NAME Lorain County II
PROJECT# 02-07-130

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		LATERAL: # <u>EW 61R</u>	PIPE DIA. <u>6"</u>
		STATION <u>0+00 to 0+56</u>	LINEAR FT. <u>56'</u>
LINEAR FEET OF DRILLING-ABANDONMENT		RISER HEIGHT <u>4'</u>	TRENCH DEPTH <u>0-4'</u>
		AIR: # <u>EW 61R</u>	PIPE DIA. <u>2" sdr 11</u>
LINEAR FEET OF WELL COMPLETION		STATION <u>0+00 to 0+48</u>	LINEAR FT. <u>48'</u>
PERFORATED PIPE-DIA.		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
SOLID PIPE -DIA.		FORCE MAIN: # <u>EW 61r</u>	PIPE DIA. <u>2" sdr 11</u>
		STATION <u>0+00 to 0+48</u>	LINEAR FT. <u>48'</u>
		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
COMPLETION: (WELL NUMBERS)		AIR: # <u>TO TOE DRAIN</u>	PIPE DIA. <u>2" sdr 11</u>
		STATION <u>0+00 to 1+45</u>	LINEAR FT. <u>145'</u>
		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
		FORCE MAIN: # <u>TO TOE DRAIN</u>	PIPE DIA. <u>3" sdr 17</u>
		STATION <u>0+00 to 1+45</u>	LINEAR FT. <u>145'</u>
		RISER HEIGHT <u>5'</u>	TRENCH DEPTH <u>0-4'</u>
GENERAL INFORMATION			
WEATHER CONDITIONS		LATERAL: #	PIPE DIA.
Sunny		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
START TIME <u>7:00 A.M.</u>		SUMPS	VALVES
STOP TIME <u>8:00 P.M.</u>			

COMMENTS: Today we installed the stem on the 2' and 3" valves. We fused up the lines for the toe drain air and force main. We put the air test on the lines at 50 psi on the 3" and 75 psi on the 2". After the 4 hour test we tied the air and force main into the existing air and force main near EW 57. We backfilled everything except the valves due to encasements.

D. Brock 9/26/07
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL, P.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DAIRY

DATE: 9/24/2007

PROJECT NAME Lorain LF

PROJECT#

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 # LINEAR FT.
SOLID PIPE -DIA.	STATION LINEAR FT.
	TRENCH DEPTH
	SUBHEADER # PIPE DIA.
	STATION LINEAR FT.
	TRENCH DEPTH
MATERIAL USED THIS DAY	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 AM	SUMPS VALVES
STOP TIME 6:00PM	

COMMENTS:

We installed blind flanges on 6" lateral for risers at EW-12R, 61R, 64R and 66R. We also installed flanges on well casings for EW-12R, 61R, 64R and 66R. We made 2" tie-ins air and force main lines at EW-12R. We installed the well heads for EW-12R, 15, 61R, 64R and 66R. We installed valve stems and encasements on the 2" valves near EW-5. We removed temporary culvert pipes at access road for Lorain II and dressed up area.

D. Brock
CLIENT REPRESENTATIVE 3/17/08
Dennis Brock, Sr. Geol., B.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE
JIMMY SWICKARD



American
Environmental
Group Ltd.

DAILY DAIRY

DATE: 9/25/2007

PROJECT NAME Lorain Landfill
PROJECT#

DRILLING	CONSTRUCTION
LINEAR FEET OF DRILLING	HEADER # <u></u> PIPE DIA. <u></u>
LINEAR FEET OF DRILLING-ABANDONMENT	STATION <u></u> LINEAR FT. <u></u>
LINEAR FEET OF WELL COMPLETION	TRENCH DEPTH <u></u>
PERFORATED PIPE-DIA.	HEADER # <u></u> LINEAR FT. <u></u>
SOLID PIPE -DIA.	STATION <u></u> LINEAR FT. <u></u>
	TRENCH DEPTH <u></u>
	SUBHEADER # <u></u> PIPE DIA. <u></u>
	STATION # <u></u> LINEAR FT. <u></u>
	TRENCH DEPTH <u></u>
	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
	SUMPS <u></u> VALVES <u></u>

COMMENTS:

We installed isolation valve at EW-31 and EW-5 and reinstalled valve encasements. We replaced gasket on air valve for EW-16 and fixed leaking hoses for EW-12R, 6, and 9. Cleaned up work area.

For Lorain II we repaired fence on the South side of landfill and cleaned up working area.

D. Brock 3/17/08
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. B.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE
JIMMY SWICKARD



American
Environmental
Group Ltd.

DAILY DAIRY

DATE: 9/26/2007

PROJECT NAME Lorain Landfill

PROJECT#

DRILLING	CONSTRUCTION
LINEAR FEET OF DRILLING	HEADER # <u></u> PIPE DIA. <u></u>
LINEAR FEET OF DRILLING-ABANDONMENT	STATION <u></u> LINEAR FT. <u></u>
LINEAR FEET OF WELL COMPLETION	TRENCH DEPTH <u></u>
PERFORATED PIPE-DIA.	HEADER # <u></u> LINEAR FT. <u></u>
SOLID PIPE -DIA.	STATION <u></u> LINEAR FT. <u></u>
	TRENCH DEPTH <u></u>
	SUBHEADER # <u></u> PIPE DIA. <u></u>
	STATION # <u></u> LINEAR FT. <u></u>
	TRENCH DEPTH <u></u>
MATERIAL USED THIS DAY	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
GENERAL INFORMATION	LATERAL: # <u></u> PIPE DIA. <u></u>
WEATHER CONDITIONS	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
	LATERAL: # <u></u> PIPE DIA. <u></u>
	STATION <u></u> LINEAR FT. <u></u>
	RISER HEIGHT <u></u> TRENCH DEPTH <u></u>
START TIME <u>7:00 AM</u>	SUMPS <u></u> VALVES <u></u>
STOP TIME <u>2:00PM</u>	

COMMENTS:

We installed sample port tubing at the header tie-in and finished up cleaning equipment and work area.

At Lorain II we repaired isolation valve at condensate sump #10 and finished cleaning up the working area.

D. Brock 3/17/08
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL., B.C.
NAME & TITLE

JIMMY SWICKARD
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

DAILY DAIRY

DATE: 10/8/2007

PROJECT NAME Lorain Landfill

PROJECT#

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 # LINEAR FT.
SOLID PIPE -DIA.	STATION LINEAR FT.
	TRENCH DEPTH
	SUBHEADER # PIPE DIA.
	STATION # LINEAR FT.
	TRENCH DEPTH
MATERIAL USED THIS DAY	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 8:00 AM	SUMPS VALVES
STOP TIME 5:00PM	

COMMENTS:

We installed pump assemblies for EW-15, 61, 64 and 66. We installed well heads for EW-12R, 15, 61, 64 and 66. We cleaned up tools.

D. Brock 3/17/08
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. B.C.
NAME & TITLE

AEGL SITE SUPERVISOR DATE
JIMMY SWICKARD



American
Environmental
Group Ltd.

DAILY DAIRY

DATE: 10/10/2007

PROJECT NAME Lorain Landfill

PROJECT#

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 # LINEAR FT.
SOLID PIPE -DIA.	STATION LINEAR FT.
	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
	FORCE MAIN # PIPE DIA.
	STATION LINEAR FT.
	RISER HEIGHT TRENCH DEPTH
	SUMPS VALVES

MATERIAL USED THIS DAY

GENERAL INFORMATION

WEATHER CONDITIONS

START TIME 7:00 AM

STOP TIME 3:00PM

COMMENTS:

We redone the air and forcemain connection to EW-12R. We replaced pressure gauge w/cracked face on EW-66 w/new gauge.

We repaired valve at EW-64 by installing a new O-ring and replaced the valve at EW-58. Site punch list is complete. Cleaned up tools and demobed.

D. Brock 3/17/08
CLIENT REPRESENTATIVE DATE
DENNIS BROCK, SR. GEOL. BC
NAME & TITLE

AEGL SITE SUPERVISOR DATE
JIMMY SWICKARD



DATE: 3/12/2008

PROJECT NAME Lorain Landfill
PROJECT# _____

DRILLING		CONSTRUCTION	
LINEAR FEET OF DRILLING		HEADER #	PIPE DIA.
LINEAR FEET OF DRILLING-ABANDONMENT		STATION	LINEAR FT.
LINEAR FEET OF WELL COMPLETION		HEADER #	TRENCH DEPTH
PERFORATED PIPE-DIA.		STATION	LINEAR FT.
SOLID PIPE -DIA.		STATION	LINEAR FT.
			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
		FORCE MAIN #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
		SUMPS	VALVES
MATERIAL USED THIS DAY			
GENERAL INFORMATION			
WEATHER CONDITIONS			
START TIME 12:00PM			
STOP TIME 2:00PM			

COMMENTS: Joey and Glenn mobed on site to install 24" encasement lid w/locking bar.

D. Brock 3/17/08
CLIENT REPRESENTATIVE DATE
DENNIS BROCK SR. GEOL., BC
NAME & TITLE

AEGL SITE SUPERVISOR	DATE
JIMMY SWICKARD	

APPENDIX D

Construction Photographs and Description Logs (CD Enclosed)

Date	Photo ID	Direction	Description
9/13/2007	P-27	SW	EW-4 Trench work
9/13/2007	P-30	E	EW-8 Trench Work
9/13/2007	P-31	E	Trench line EW-6-7-8
9/13/2007	P-32	NW	Backfilling activities on EW-4 trench
9/13/2007	P-33	W	EW-10-11 backfilling; survey point left exposed
9/14/2007	P-35	N	Perimeter trench partially backfilled between EW-11 & 9
9/14/2007	P-36	NW	Shallow waste @ EW-14
9/14/2007	P-37	SE	18" Pipe and soil cover for access road repair
9/14/2007	P-38	E	Access road-repair completed
9/14/2007	P-42	S	Caution tape in perimeter trench
9/14/2007	P-43	NW	Trench east of EW-15
9/14/2007	P-44	W	Trench west of EW-15
9/14/2007	P-45	W	Trench east of EW-16
9/15/2007	P-46	W	Concrete slabs excavated between EW-16 & EW-17
9/17/2007	P-48	E	Caution tape in place E of EW-16
9/17/2007	P-49	E	Caution tape in place E of EW-19
9/18/2007	P-51	S	Melt beads good; air test in process EW-61/61R
9/18/2007	P-52	N	Melt beads good; air test in process EW-12/12R
9/18/2007	P-53	N	Caution tape in place N of EW-255
9/19/2007	P-57	E	EW-4 2" line holding @ 75 psi
9/20/2007	P-60	NW	Isolation valves at EW-31
9/21/2007	P-64	SSE	Electroweld at EW-12
9/21/2007	P-65	E	EW-12 Tie-in
9/21/2007	P-66	W	EW-66 butt fusion welds
9/22/2007	P-67	W	EW-66 completed w/2" lines tied-in
9/22/2007	P-68	W	EW-61 Completed
9/22/2007	P-69	W	EW-61 Completed
9/22/2007	P-70	N	Toe Sump Trench
9/22/2007	P-71	N	Toe Sump Line Pressure Test
9/22/2007	P-72	N	Air release valve
9/24/2007	P-74	NE	Isolation Valves at EW-5
9/24/2007	P-83		Inside encasements @ EW-5
9/24/2007	P-84	NE	EW-5
9/24/2007	P-85	NE	EW-5
9/26/2007	P-89	SE	EW-6 Typical Wellhead Assembly
9/26/2007	P-90	SE	Encasement lids at EW-5

APPENDIX E

Resumes for Certifying Engineer and Inspectors

Richard A. Isaac, P.E.
Certifying Engineer

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, Cytec 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 Measures 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.

Dennis Brock
Field Inspector

Experience Summary

Dennis Brock is a Registered Professional Geologist with diversified experience in project management, site characterization and environmental analysis. Mr. Brock has been involved with over 300 environmental projects, including fieldwork at over 200 sites in 22 states, Canada, and Puerto Rico. Mr. Brock's experience includes planning, directing and coordinating activities of employees and contractors in gathering environmental data, as well as developing procedures, equipment and techniques used to solve problems in regard to environmental contamination and pollution. His experience and knowledge involve federal, state and local laws and regulations in the areas of air, water, solid and hazardous waste, underground storage tanks, polychlorinated biphenyls, asbestos, lead, and naturally-occurring radioactive material (NORM).

Assignment

CQA Inspector

Education

M.S. Geology, Kent State University, 1988

B.S. Conservation, Kent State University, 1980

Course Work

OSHA 40 Hour Hazardous Site Training

OSHA Supervisors Training

OSHA Confined Space Training

AHERA Asbestos Inspection and Management Planning, University of Chicago, 1986

"Environmental Risk: Identification and Management", NREP, 1990

"RCRA – Avoiding the Most Common Mistakes in Waste Identification/RCRA Land Disposal Restrictions", McCoy and Associates, 1992

"Natural Resource Damage Assessment and Mitigation, WCCPDI, 1993

"National Environmental Policy Act", Shipley Associates, 1994

Lead Inspection Training, University of Cincinnati, 1996

Lead Exposure Risk Assessment, University of Cincinnati, 1996

Troxler Nuclear Density Gauge Certification, 2001

Red Cross First Aid/CPR/AED, 2006

OSHA 8 Hour Refresher, 2007

Registration

Professional Geologist, PG-002782-G
Pennsylvania, 1995

Experience

23 Years

Joined Firm

2000

Wastewater / Stormwater / Infrastructure Projects

Combined Sewer Overflow (CSO) Long-Term Control Plan, City of Avon Lake, Ohio

Field Geologist. Assisted in field investigations and flow monitoring of the sewer system and sewershed basin delineation.

Southerly District Interceptors Inspection and Evaluation, Northeast Ohio Regional Sewer District

Field Geologist. Conducted survey throughout sewershed basin by opening selected manholes and documenting size and construction type of sewer lines, depth to invert and crown, and flow direction.

Southerly CSO Phase II Facilities Study, Northeast Ohio Regional Sewer District, Cleveland, Ohio

Field Geologist. Performed smoke and dyed water testing on a separate sewer system, and performed sanitary sewer overflow (SSO) investigations.

Sewer System Investigation, Shiloh Industries, Cleveland, Ohio

Field Geologist. Performed smoke and dyed water testing on plant storm and sanitary sewer facilities, coordinated inspection contractor field crew.

Third Street Sewer Rehabilitation, City of Columbus, Ohio

Field Geologist. Provided construction oversight of the project during cured-in-place-pipe (CIPP) relining.

Valero Oil Refinery, Lima, Ohio

Senior Geologist. Conducted investigation of potential causes of benzene loadings found at downstream locations (end of line) as part of facility's Benzene Waste Operations NESHAP compliance program. The scope of the investigation included observing characteristics and collecting samples of flows originating in sewer trunk lines and wastewater treatment facilities and observing behavior in process areas by conducting interviews and visually examining the practice of operators in the process areas to identify possible sources of benzene loading to the open sewer. Conducted quarterly monitoring of end of line locations for benzene loading.

Environmental Site Characterization

Site Characterization and Remedial Activities, Ryder Truck Rental, Various Sites, United States and Canada

Assistant Project Manager/Project Manager. Worked on projects involving over 70 sites located in 19 U.S. states and one site in Montreal, Canada; personally conducting field work at 50 of the sites, and served as project manager for 21 of the projects. The projects included a remedial investigation/feasibility study (RI/FS) at the Memphis Drum/Tulane Road Superfund Site in Memphis, Tennessee. Other work included standard Phase I studies, additional Phase II studies, Stormwater Pollution Prevention Plan preparations and remedial activities. Responsibilities for these projects included facility and agency file reviews; work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Field activities included underground storage tank removal oversight; monitoring well installation and sampling; soil and rock borings; Geoprobe soil, groundwater and soil-gas sampling; HydroPunch groundwater sampling, trench excavation and soil sampling; surface water and sediment sampling; magnetic surveying; and slug testing for aquifer hydraulic characteristics. Remediation technologies included excavation and disposal at a landfill, bioremediation of petroleum-contaminated soils by land farming, soil-gas extraction of volatile contaminants, and groundwater extraction/treatment.

Remedial Investigation, Fieldsbrook Superfund Site, Ashtabula, Ohio

Assistant Project Manager. Responsibilities included facility and agency file reviews; work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included monitoring well installation and sampling; soil and rock borings; Geoprobe soil, groundwater and soil-gas sampling; surface water and sediment sampling; and slug testing and pump testing for aquifer hydraulic characteristics.

Further Site Investigation - Remedial Investigation/Feasibility Study for Landfill Closure, Montville Landfill, Montville Township, Ohio

Assistant Project Manager. Responsibilities included work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included exploratory soil boring and soil sampling; installation and development of piezometers; installation, development, and sampling of leachate monitoring wells; test pit excavation and soil sampling; surface water, culvert and ravine sampling; and a leachate seep inventory.

Site Characterization and Remedial Activities, Bridgestone/Firestone, Various Sites, in Ohio, Kentucky, Massachusetts, Georgia, Alabama, and Texas

Assistant Project Manager. Projects included standard Phase I studies, additional Phase II studies, and remedial activities. Responsibilities for these

projects included facility and agency file reviews; site inspections; field supervision; and report preparation. Field activities included underground storage tank removal oversight; monitoring well installation and sampling; soil and rock borings; magnetic surveying; ground penetrating radar; slug testing for aquifer hydraulic characteristics; and polychlorinated biphenyls (PCB) wipe sampling. Remediation technologies included excavation and disposal at a landfill, soil-gas extraction of volatile contaminants, groundwater extraction/treatment, and cleanup of building materials for PCB contamination.

Site Characterization and Remedial Activities, Key Energy Services, Inc., 19 Sites in Michigan

Senior Geologist. Projects included standard Phase I studies, additional Phase II studies, and remedial activities for divestiture of oil and gas well service facilities and solid waste disposal facilities. Responsibilities for these projects included facility and agency file reviews; site inspections; field supervision; and report preparation. Field activities included surface and Geoprobe sampling of soils and radiation surveys. Remediation technologies included excavation and disposal at a landfill of NORM, petroleum, and chloride-contaminated soils.

Further Site Investigation – Quarterly Monitoring, Key Energy Services, Inc., Five Brine Spill Sites, Newayo and Osceola Counties, Michigan

Senior Geologist. Responsibilities included work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included exploratory soil boring and soil sampling; and installation, development, and quarterly sampling of monitoring wells; and surface water sampling.

Site Characterization and Remedial Activities, Drum Removal Project, Confidential Client, Warren, Ohio

Senior Geologist. Responsibilities included work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included removal and disposal of approximately 200 drums (mostly crushed/empty) and soil from five surficial drum nests along an overgrown/wooded ravine discovered by Ohio EPA during an unrelated site reconnaissance, sampling of soil for attainment and waste characterization, and sampling of surface water seep for attainment.

RCRA/CERCLA Landfill Operations and Maintenance

Old Mill Superfund Site, Rock Creek, Ohio

Field Coordinator. Responsibilities included work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included installation, development, and annual/semi-annual sampling of monitoring wells; slug testing for aquifer hydraulic characteristics; quarterly collection of monitoring well water levels and treatment plant influent and effluent samples; treatment plant and collections system decommissioning; and

conductance of an enhanced monitored natural attenuation pilot study with the application of a hydrogen release compound through the existing collection system and selected monitoring wells.

New Lyme Landfill Superfund Site, New Lyme, Ohio

Field Coordinator. Responsibilities included work plan, sampling plan and quality assurance project plan preparation; field supervision; and report preparation. Performed and coordinated field activities that included quarterly/annual/semi-annual sampling of monitoring wells and residential wells; quarterly collection of monitoring well water levels; treatment plant and collections system decommissioning; and extraction well abandonment. Performed construction quality assurance (CQA) inspection for cap repair of 15 areas of landfill subsidence involving soil compaction and installation of geomembrane, geonet, and geotextile.

Lord-Shope Industrial Landfill, Erie, Pennsylvania

Senior Geologist. Provided oversight for conductance of an enhanced monitored natural attenuation pilot study with the application of a oxygen release compound through Geoprobe injection.

Barranquitas Municipal Landfill, Barranquitas, Puerto Rico

Senior Geologist. Performed and coordinated field activities that included installation and development of monitoring wells, and slug testing for aquifer hydraulic characteristics.

Steuben County Landfill, Steuben County, New York

Senior Geologist. Performed and coordinated field activities that included installation and development of monitoring wells, and packer testing for aquifer hydraulic characteristics.

Lorain County II Landfill, Lorain County, Ohio

Senior Geologist. Provided CQA oversight for the installation of a gas extraction system at an active landfill. This included extraction pipe fusion welding installation, pipe pressure testing and tie-ins.

Lorain County I Landfill, Lorain County, Ohio

Senior Geologist. Provided CQA oversight for the installation of a leachate collection system at an inactive landfill. This included extraction pipe fusion welding installation, pipe pressure testing and tie-ins.

Environmental Liability Assessments

Environmental Liability Assessments, Various Clients, Various Sites throughout United States

Project Manager. Supervised and conducted over 100 environmental liability assessments of commercial, industrial, transportation, and institutional facilities throughout the United States. The scope of assessment included a site reconnaissance, review of pertinent regulations, inspection of buildings and property for both hazardous and potentially hazardous material, and an assessment of overall environmental concern. Numerous sites also involved limited scope sampling and analysis of soils, surface water, sediment, groundwater, and building materials. Many sites

also involved limited Compliance audits, involving Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), state and local laws, and an assessment of overall regulatory compliance.

Phase I and Phase II Environmental Site Assessment, Kramer Nursery, Westlake, Ohio

Project Manager. Coordinated and performed field activities that included a building and property inspection, regulatory review, and assessment of overall environmental concern. Performed an asbestos assessment including a survey and sampling program. Coordinated a soil and groundwater sampling program using Geoprobe technologies.

Phase I and Phase II Environmental Site Assessment, Bosley Nursery, Mentor, Ohio

Project Manager. Coordinated and performed field activities that included a building and property inspection, regulatory review, and assessment of overall environmental concern. Coordinated a soil and groundwater sampling program using Geoprobe technologies.

Phase I Environmental Site Assessment and Limited Compliance Audit, D-Con Manufacturing Facility, Alliance, Ohio

Project Manager. Coordinated and performed field activities that included a building and property inspection, regulatory review, and assessment of overall environmental concern. Conducted limited Compliance audit, involving RCRA, CERCLA, TSCA, FIFRA, state and local laws and an assessment of overall regulatory compliance.

Publications/Presentations

"Relationship between fissility, composition, and engineering characteristics of selected shales from Northeast Ohio," with A. Shakoor, Bulletin of the Association of Engineering Geologists, Vol. 24, No.3.

"Relationship between fissility, composition, and engineering characteristics of selected shales from Northeast Ohio," presented at the annual meeting of the Geological Society of America, Southeastern and North-Central Sections, Lexington, Kentucky, 1984.

Jessica Owen
Field Inspector

Experience Summary

Jessica Owen brings four 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

CQA 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

Lorain County I & II, Lorain County, Ohio

Environmental Scientist. Provided CQA oversight for the installation of a landfill gas extraction system. This included air monitoring, HDPE well installation, extraction pipe fusion welding installation, pipe pressure testing and tie-ins. 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.

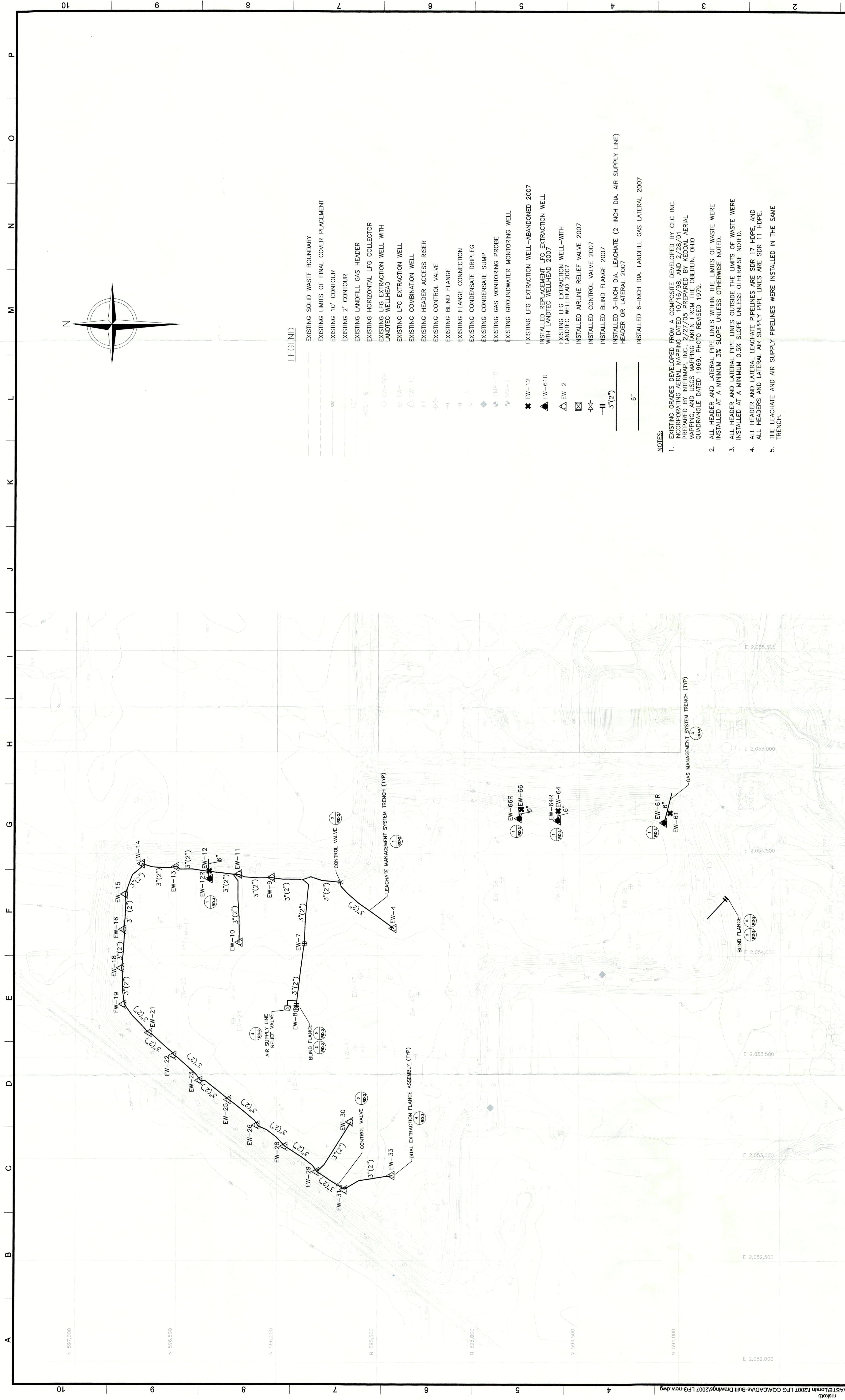
Florida Department of Environmental Protection, Fort Meyers, Florida

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.

APPENDIX F

Project Record Drawings



BROWN AND CALDWELL

COLUMBUS, OHIO

SUBMITTED: _____ DATE: _____
PROJECT MANAGER

APPROVED: _____ DATE: _____

[illegible]

LORIAN COUNTY I LANDFILL (CLOSED)
OREBURN, OH

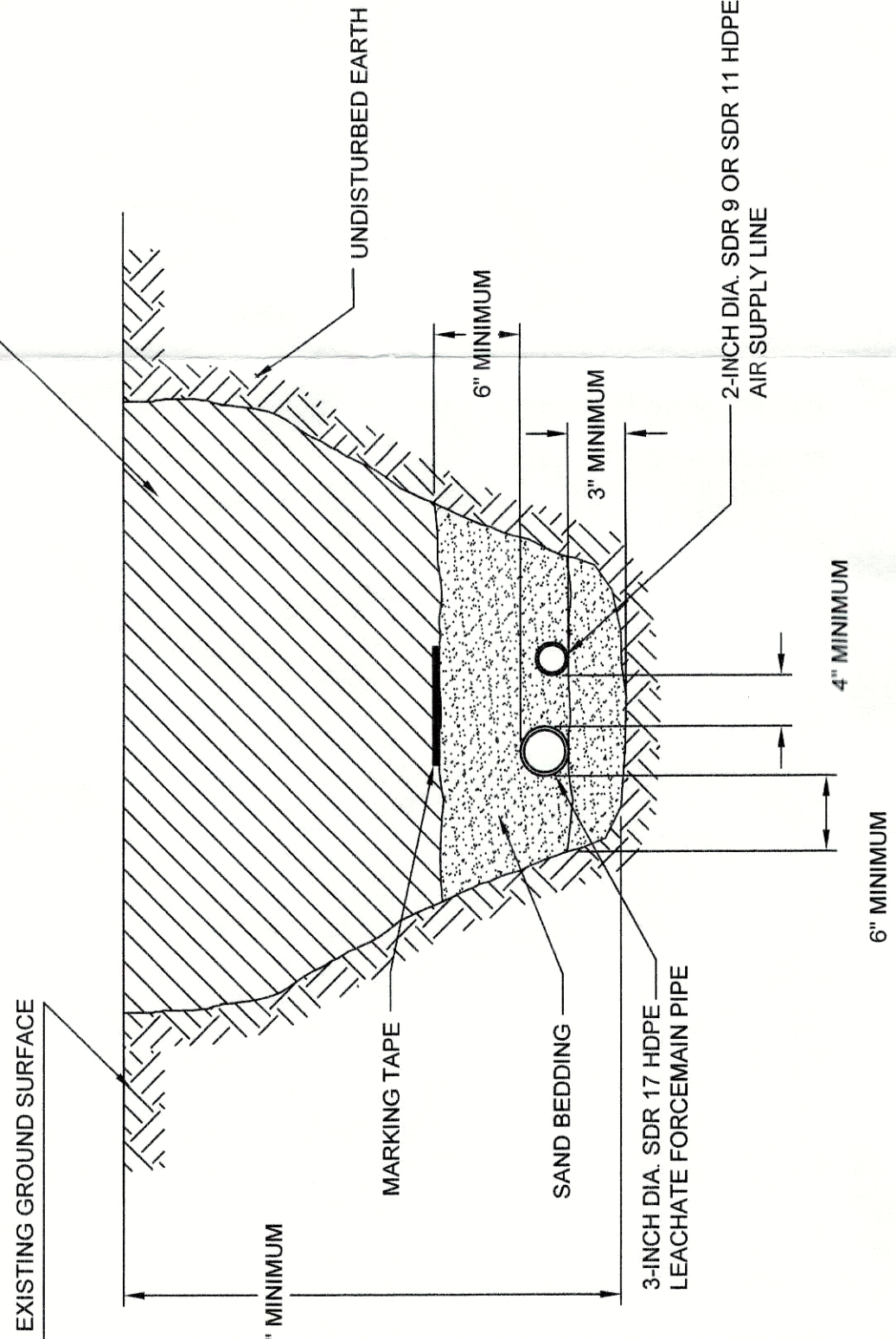
RULE 13 AUTHORIZATION
PHASE II LEACHATE MANAGEMENT SYSTEM
CONSTRUCTION CERTIFICATION REPORT
PROJECT RECORD DRAWING

FILENAME	AS-BUILT DRAWINGS
BC PROJECT NUMBER	132501
CLIENT PROJECT NUMBER	
DRAWING NUMBER	RD-1
SHEET NUMBER	1 OF 3

Mar 21, 2008 - 11:34am
mskrotb
P:\Project Working Files\ALLIED WASTE\lorain\2007 LFG CQA\CAD\AS-Built Drawings\2007 LFG-new.dwg

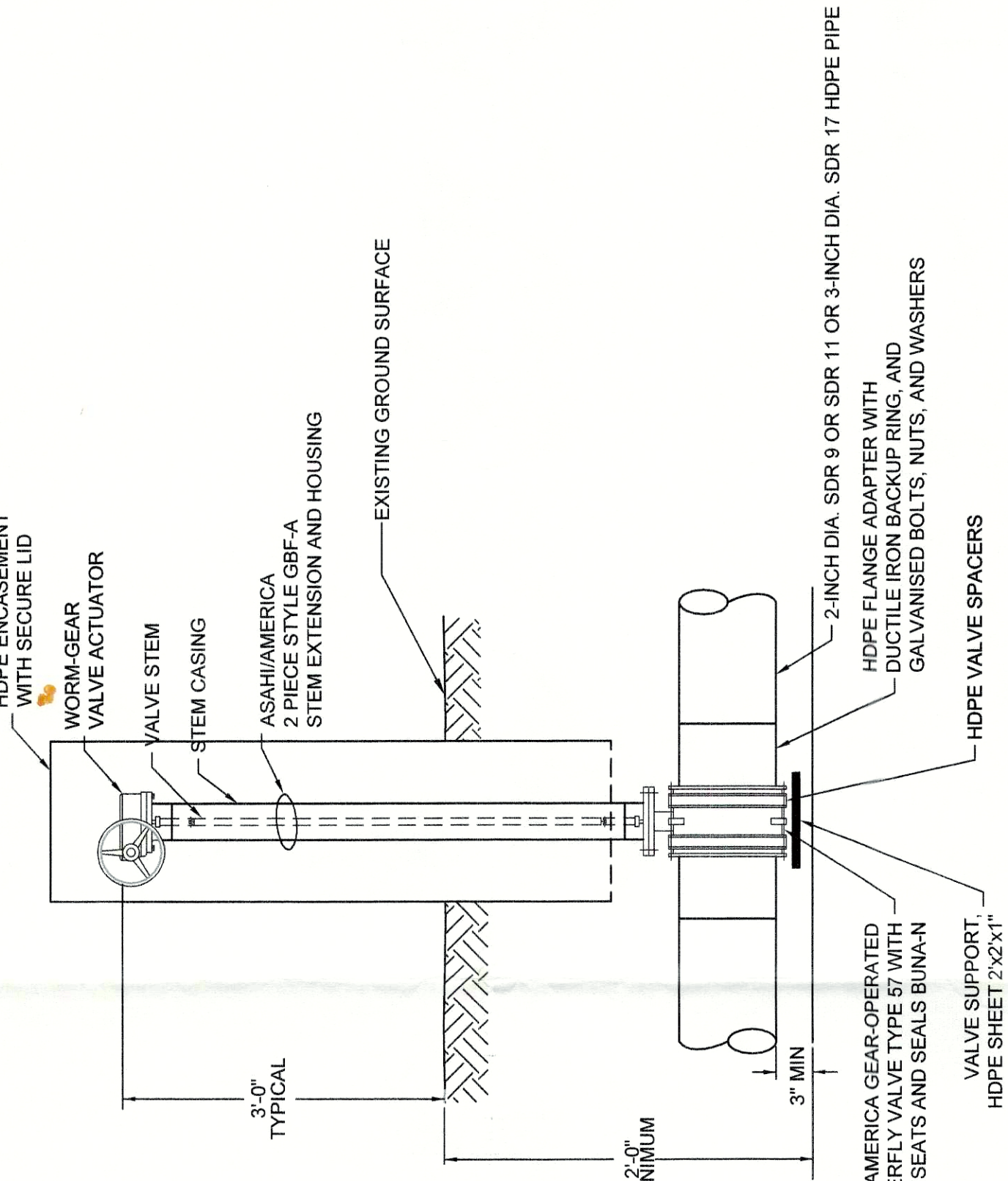
A B C D E F G H I J K L M N O P

Project: WASTE LORIAN 12007 LFG COLLAB-Built Drawings Lorian 1 2007 LFG-CERT RD-2.dwg
Date: 03/26/07
Sheet: 2 OF 3
Drawing Number: RD-2
Client Project Number: 132501
AS-BUILT DRAWINGS
FILE NAME



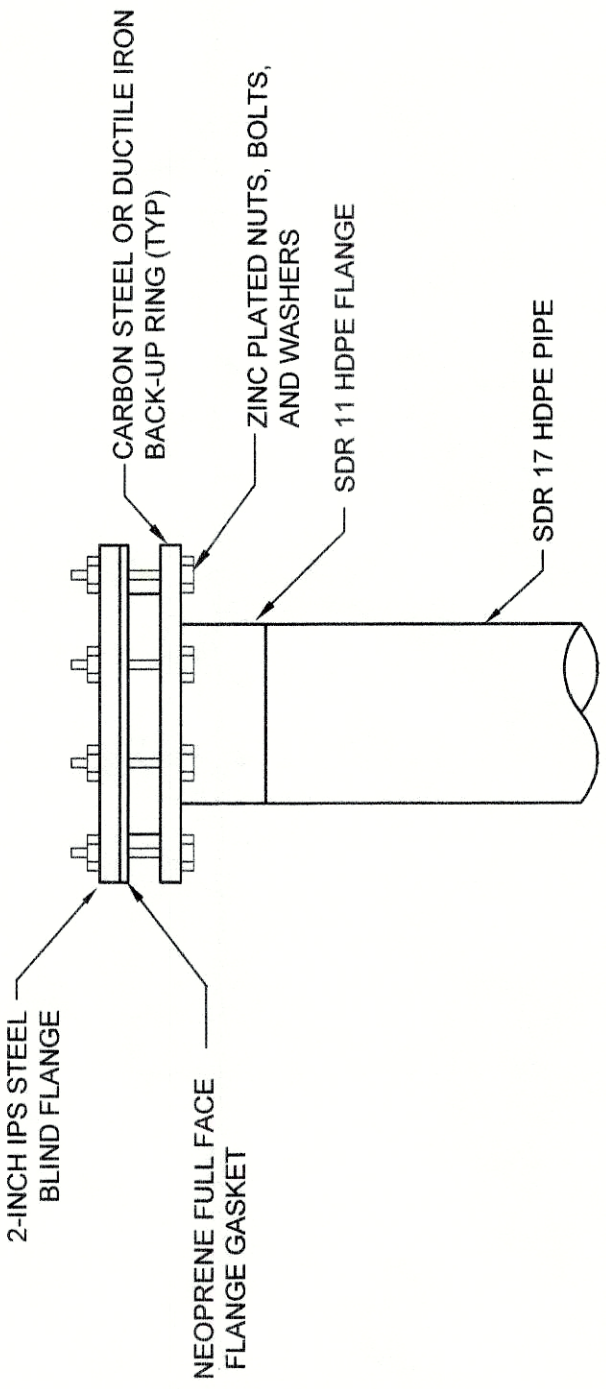
LEACHATE MANAGEMENT SYSTEM
TYPICAL TRENCH DETAIL

1
RD-2
N.T.S.



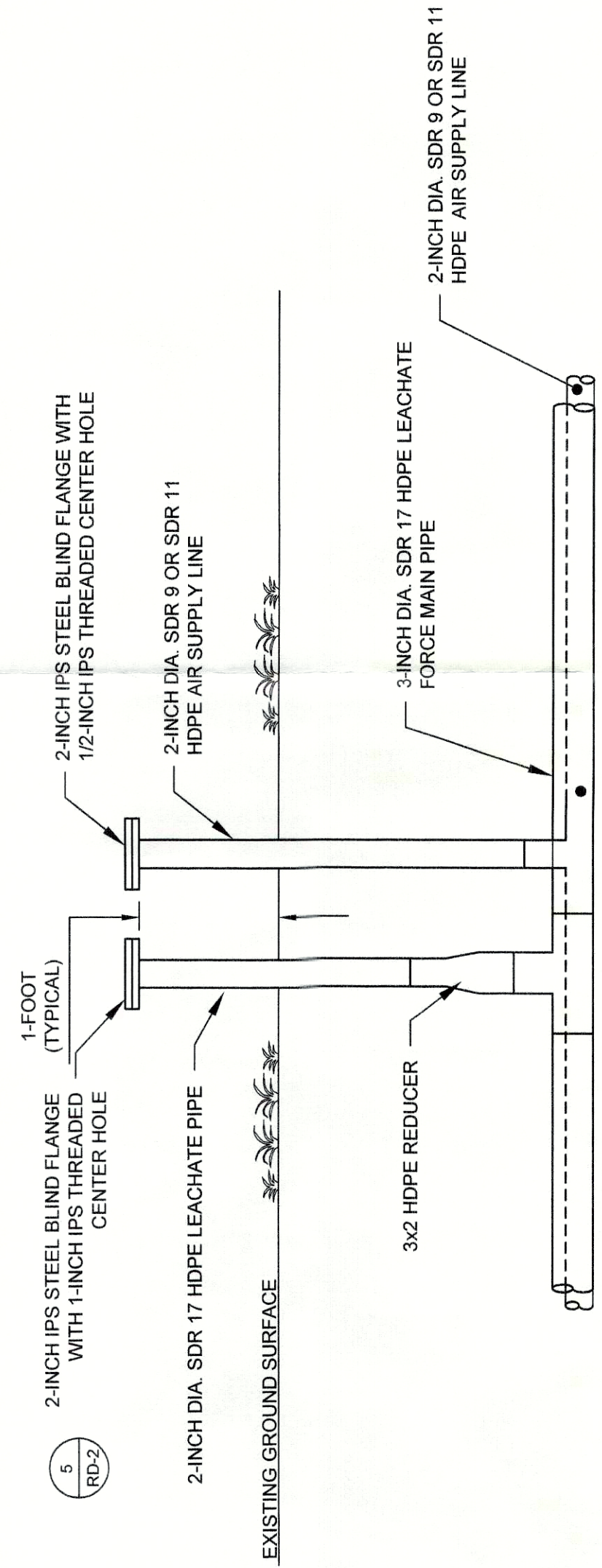
CONTROL VALVE DETAIL

3
RD-2
N.T.S.



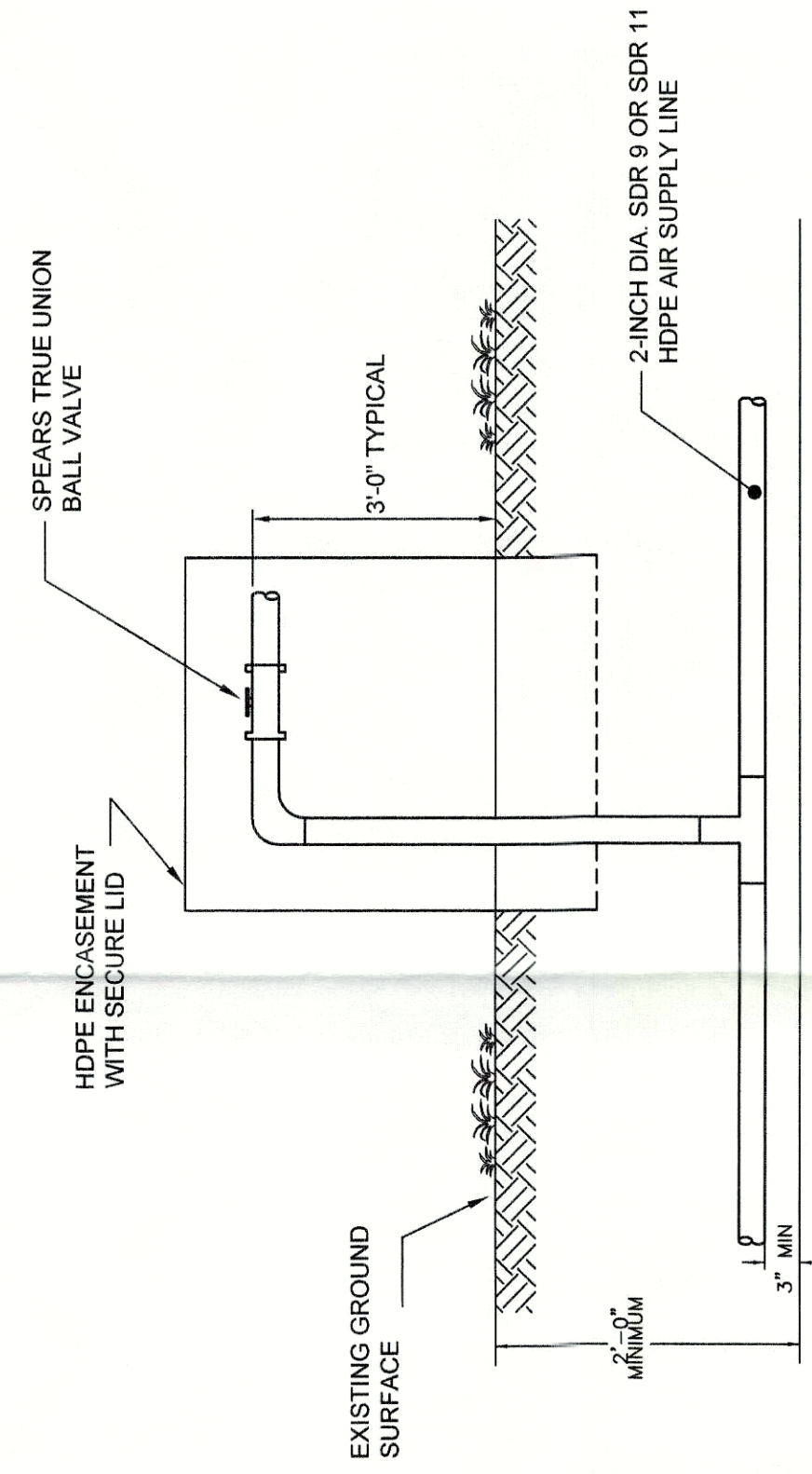
BLIND FLANGE ASSEMBLY DETAIL

5
RD-2
N.T.S.



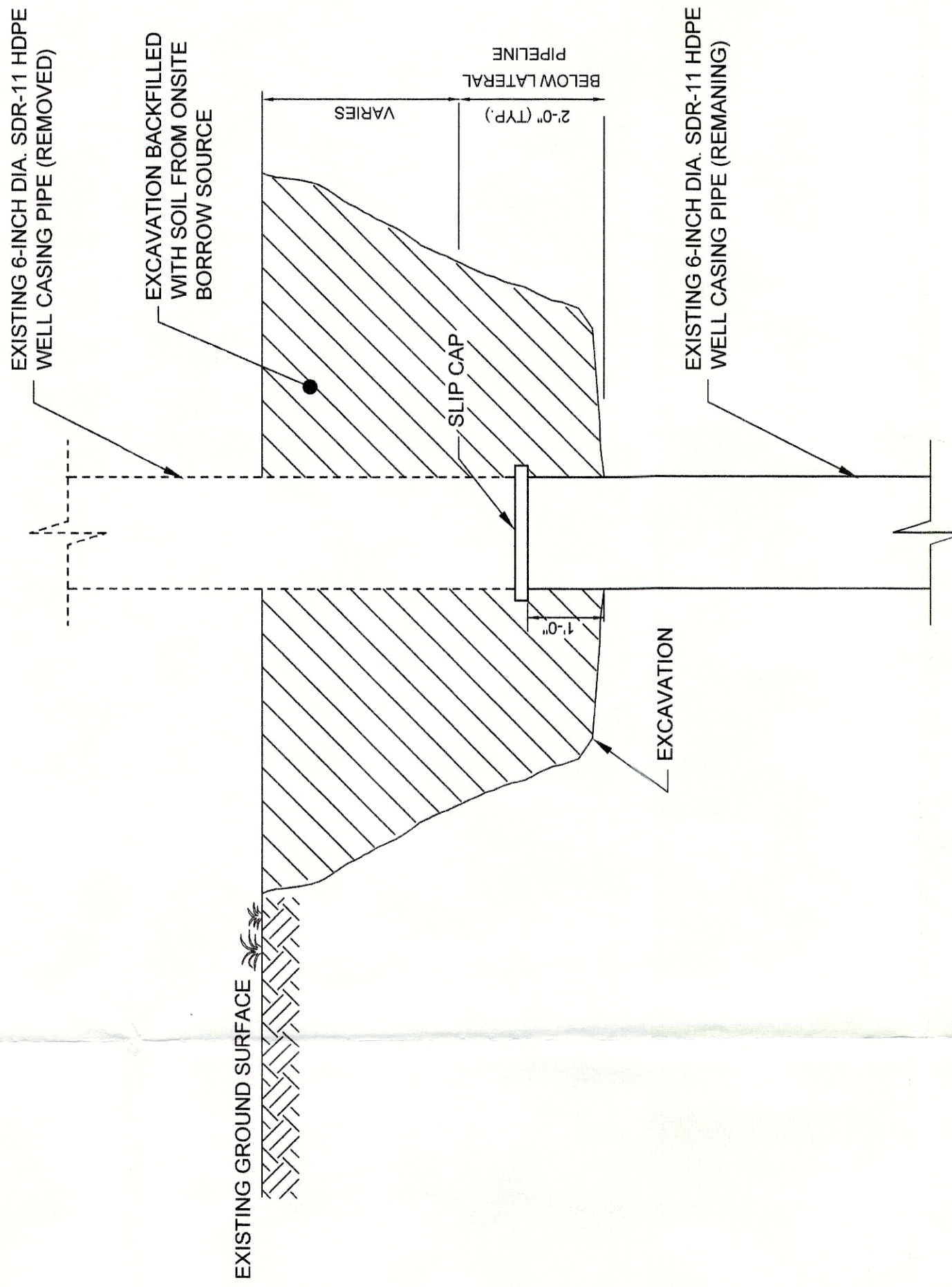
STUB TIE-IN DETAIL

2
RD-2
N.T.S.



AIR SUPPLY LINE RELIEF VALVE DETAIL

4
RD-2
N.T.S.



GAS EXTRACTION WELL ABANDONMENT DETAIL

6
RD-2
N.T.S.

NOTES:
WASTE MATERIAL ENCOUNTERED IN THE EXCAVATION
IS TRANSPORTED TO THE LORAIN COUNTY II LANDFILL
WORKING FACE FOR DISPOSAL.

BROWN AND CALDWELL
COLUMBUS, OHIO

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



ZONE	REV.	DESCRIPTION	BY	DATE	APP.
1	ADDED DETAIL 6	MSK	4/08	RAI	

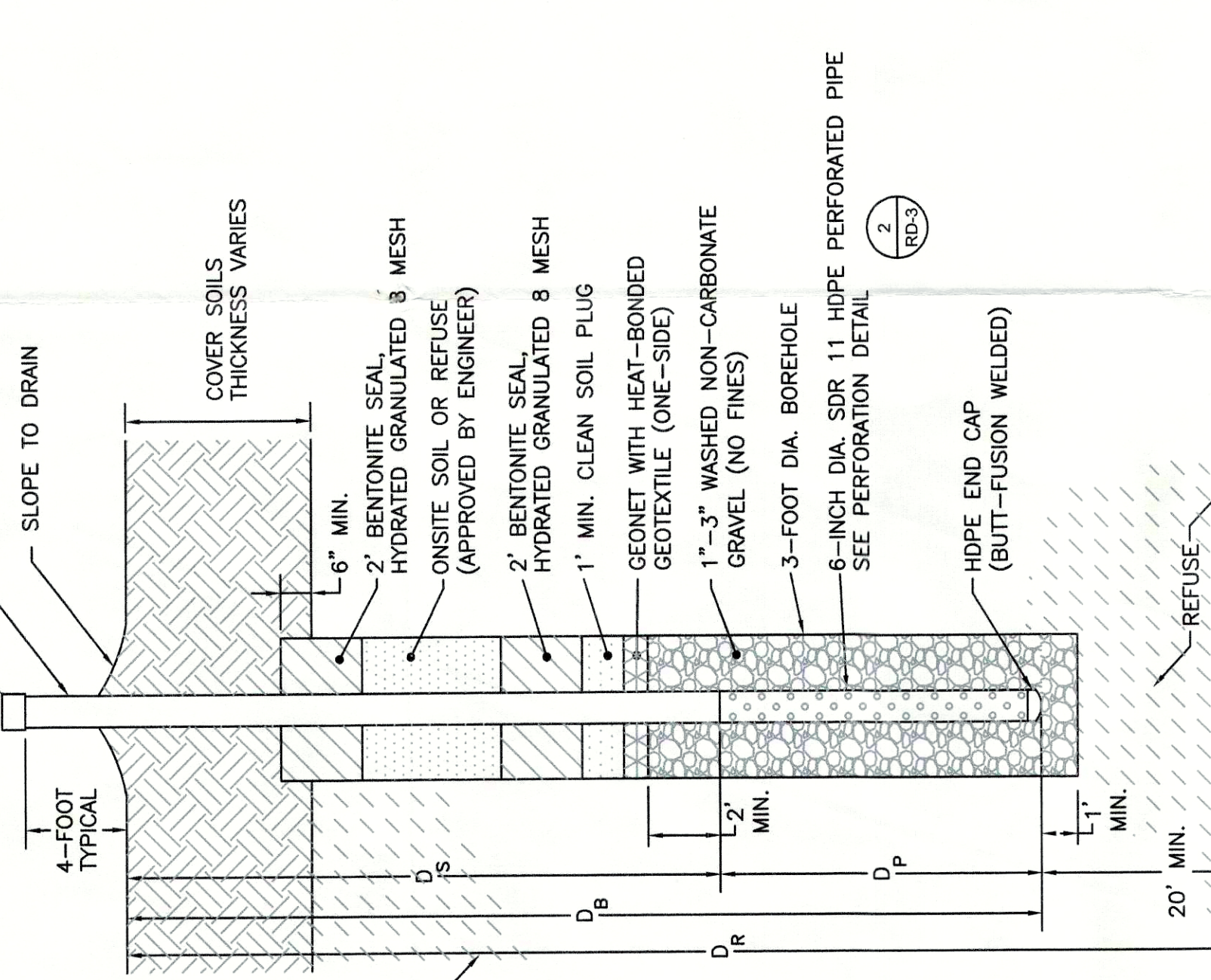
LORIAN COUNTY II LANDFILL (CLOSED)
OBERLIN, OH
RULE 13 AUTHORIZATION
PHASE II LEACHATE MANAGEMENT SYSTEM
CONSTRUCTION CERTIFICATION REPORT
PROJECT RECORD DRAWING

DRAWING NUMBER
RD-2
SHEET NUMBER
2 OF 3

[illegible]

AS-BUILT DRAWINGS	
BC PROJECT NUMBER	132501
CLIENT PROJECT NUMBER	
DRAWING NUMBER	RD-3
SHEET NUMBER	3 OF 3

PHASE II LEACHATE MANAGEMENT SYSTEM
CONSTRUCTION CERTIFICATION REPORT
PROJECT RECORD DRAWING



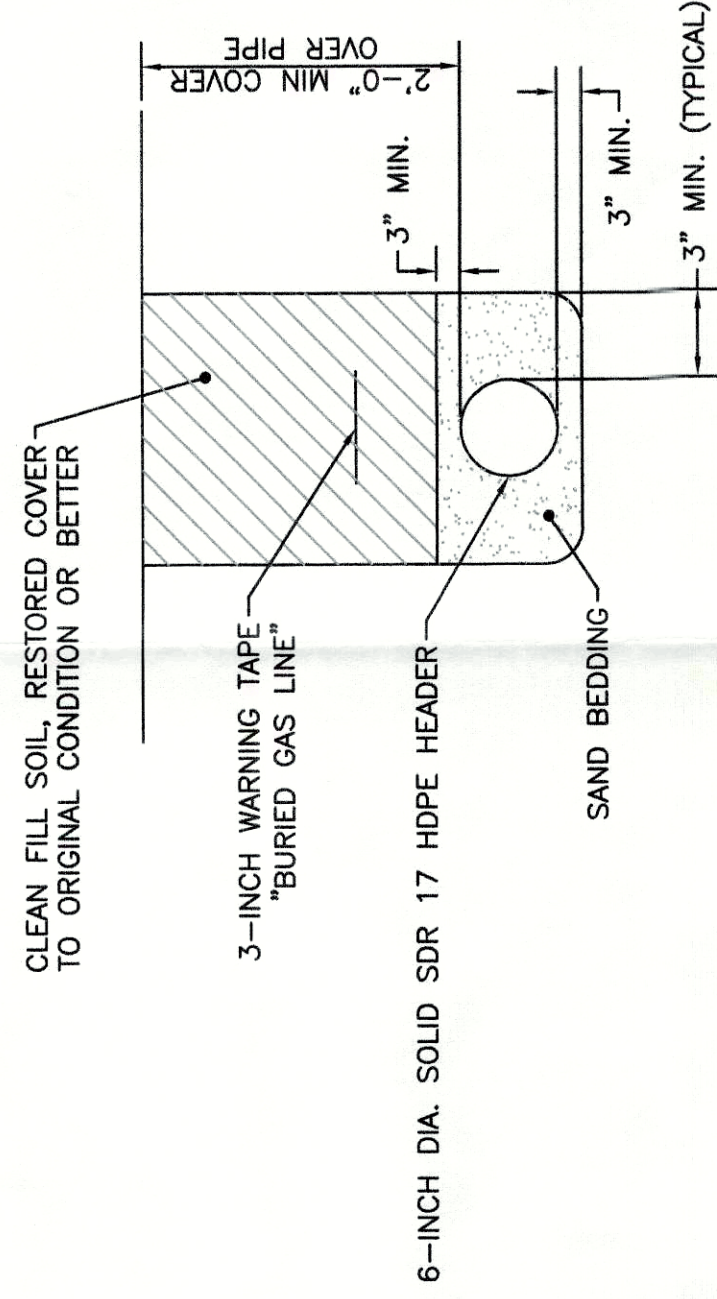
GAS EXTRACTION WELL DETAIL	1
N.T.S.	RD-3

COORDINATES AND ELEVATIONS ARE BASED ON SURVEY INFORMATION. ALL DEPTHS ARE NOTED FROM GROUND ELEVATION.

1. D_R = DEPTH OF REFUSE
 D_B = DEPTH OF BORING
 D_S = DEPTH OF SOLID PIPE
 D_P = LENGTH OF PERFORATED PIPE
2. $D_R \sim D_{-20'}$, 140 FEET MAXIMUM.
3. EXTRACTION WELL LOCATIONS AND ELEVATIONS WERE FIELD VERIFIED. ALL CHANGES FROM WELL SCHEDULE WERE APPROVED BY ENGINEER.
4. PLACED APPROXIMATELY 1-FOOT OF STONE BACKFILL IN BOREHOLE PRIOR TO SETTING WELL CASING.

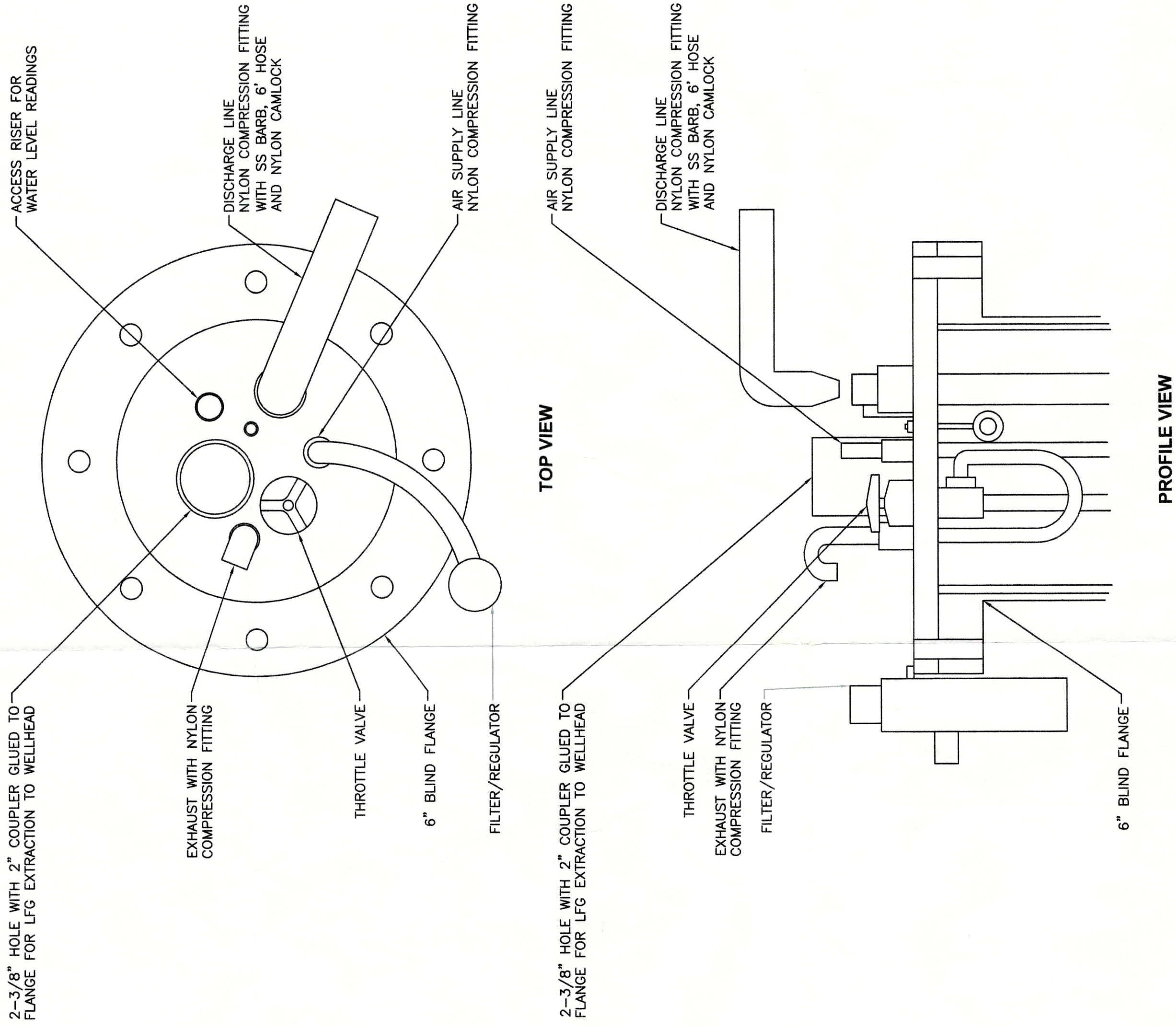
WELL ID	COORDINATES		ELEVATIONS		DEPTHS (FT)		
	NORTH	EAST	LINER	REFUSE	BORING	SOLID	PERF
EW-12R	596333.72	2054377.24	811.80	750	62	42	22
EW-66R	594797.97	2054673.69	814.47	750	60	40	20
EW64R	594611.58	2054663.94	812.55	750	60	40	20
EW-61R	594083.49	2054652.89	817.06	750	60	40	20

LORAIN COUNTY | GAS EXTRACTION WELL SCHEDULE



**GAS MANAGEMENT SYSTEM TYPICAL
TRENCH DETAIL**

N.T.S.

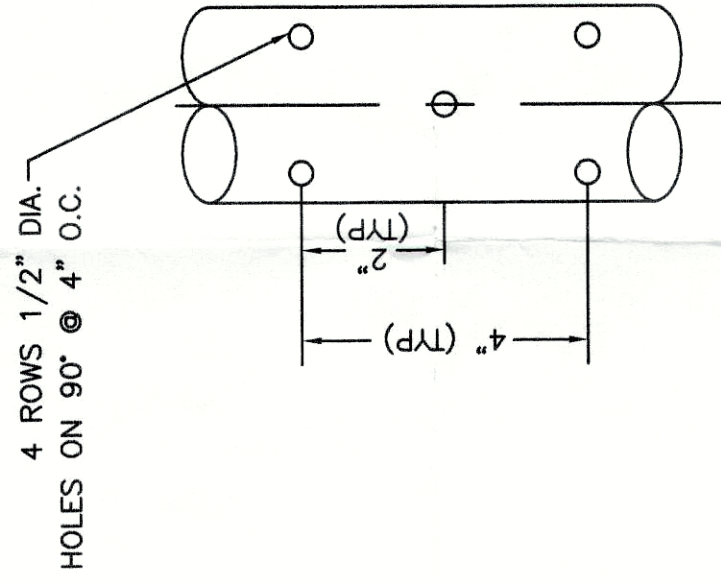


DUAL EXTRACTION FLANGE ASSEMBLY DETAIL

NOTES:

1. THIS FLANGE ASSEMBLY WAS INSTALLED IN ALL WELLS THAT EXHIBITED LIQUID LEVELS THAT MAY IMPACT LFG EXTRACTION.
2. AIR AND FORCE MAIN LINES WERE EXTENDED TO ALL DUAL EXTRACTION WELLS.
3. QED AP-4 BL. PNEUMATIC PUMPS WERE INSTALLED IN ALL DUAL EXTRACTION WELLS.
4. REMOTE WELLS HAD THE DUAL EXTRACTION FLANGE ASSEMBLY INSTALLED ON THE WELL CASING, AND THE WELLHEAD INSTALLED AT THE HEADER TO PROMOTE CONDENSATE DRAINAGE.

PERFORATED PIPE DETAIL



N.T.S.

APPENDIX G

Pipeline Pressure Test Inspection Forms

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: 9/18/2007

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Billy Brown

Description & Location of Pipe Tested: EW 12R

Diameter & SDR: 6" sdr 17

Length: 50'

Gauge Reading PSI: 25 4hours

Time On: 0830 Time Off: 1230 P.M.

Comments: Past by QC.

Air Test Passed Signature: _____

[Signature]

SR. GEOL. B.C.

9/26/07

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: EW/61R EW 64R & 66R
9/18/2007 & 9/19/07

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Ryan May

Description & Location of Pipe Tested: EW 66R, 64R, and 61R

Diameter & SDR: 6" sdr 17

Length: 150'

Gauge Reading PSI: 25 4hours

Time On: EW-61R 0840 1240
EW-64R & 66R 1100 Time Off: 1510 P.M.

Comments: Past by QC.

Air Test Passed Signature: _____

D. Bush
S.R. GEOL, BCL
9/26/07

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: 9/18/2007 9/19/07

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Ryan May

Description & Location of Pipe Tested: LOOP + laterals

Diameter & SDR: 2" sdr 9 and 11 3" sdr 11

Length: 5200

Gauge Reading PSI 2" sdr 9 - 78

Time On: 3" - 9/18/07 2000 9/19/07 0825
2" 9/19/07 0815 Time Off: 9/19/07 1215 P.M.

Comments: Past by QC.

Air Test Passed Signature: _____

D. Ruah
S.R. GEOL, BCL
9/26/07

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: 9/19/2007

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Ryan May

Description & Location of Pipe Tested: 2" for air lines to EW 66R, 64R, and 61R

Diameter & SDR: 2" sdr 11 Length 120' and 60'

Gauge Reading PSI: 75 psi 4 hours

Time On: _____ Time Off: _____

Comments: Passed by Q.C.

Air Test Passed Signature: _____

D. Burch
SA. GEOL., B.C.
10/8/07

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: 9/19/2007

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Ryan May

Description & Location of Pipe Tested: 2" for force main to EW66R, 64R, and 61R

Diameter & SDR: 2" sdr 11 Length 120' and 60'

Gauge Reading PSI: 50 psi 4 hours

Time On: _____ Time Off: _____

Comments: Passed by Q.C.

Air Test Passed Signature: _____

D. Burch
SR. GEOL., BC
10/8/07

PIPE PRESSURE TEST REPORT

Project Name & No: Iorain county landfill 02-07-130 Date: 9/22/2007

Contractor: American Environmental Group Ltd. Time: _____

Person Performing Test: Darren Goodhart

Description & Location of Pipe Tested: Toe Drain

Diameter & SDR: 2" sdr 11 and 3" sdr 11

Length: 180'

Gauge Reading PSI: 2" SDR 11 - 75 PSI
3" SDR 11 - 50 PSI 4 hours

Time On: 12:30 Time Off: 4:30

Comments: Past by QC.

Air Test Passed Signature: _____

D. Burch
SR. GEOL. BC
9/22/07

APPENDIX H

Landfill Gas Extraction Well Boring Logs



CERTIFICATE OF COMPLETION

Type: Partial ☐ Substantial ☐ Final ☒

Project: 1-07-113

LORAIN 1 + 11

Site: Wyandot Landfill

Agreement No.: Date:

Description of Work Completed: Drilling and completion of wells dress up and make up wells

Submitted By: Supplier's Representative

Signature: Adrian M. Castillo Date: 8-4-07

Name (Print): Adrian M. Castillo

Title: Site Supervisor

Representing: American Environmental Group Ltd.

I hereby certify that the above identified work has been inspected and that it has been properly installed. I further certify that all required testing has been completed and that the results have been deemed acceptable. Also the Work is in compliance with the drawings and specifications and is suitable for its intended use. Any identified exception to this Certificate of Certification are attached.

Certified by: CQA ENGINEER / ENGINEER

Signature: Jessica Owen Date: 8-4-07

Name (Print): Jessica Owen

Title: Environmental Scientist

Representing: Brown & Caldwell

Certified / Accepted By: Owner's Representative

(strike one)

Signature: Date:

Name (Print):

Title:

Representing:

Check Here if Attachments ☒



American
Environmental
Group Ltd.

DAILY DIARY

DATE: Thurs 8/2/2007

PROJECT NAME Lorain County Landfill
PROJECT# 1-07-119

DRILLING		CONSTRUCTION	
162' LINEAR FEET OF DRILLING		HEADER #	PIPE DIA.
LINEAR FEET OF DRILLING-ABANDONMENT			LINEAR FT.
162' LINEAR FEET OF WELL COMPLETION		STATION	TRENCH DEPTH
82' PERFORATED PIPE-DIA. 6" HDPE		HEADER #	PIPE DIA.
			LINEAR FT.
82' SOLID PIPE -DIA. 6" HDPE		STATION	TRENCH DEPTH
COMPLETION: (WELL NUMBERS)		SUBHEADER #	PIPE DIA.
EW-12R			LINEAR FT.
EW-64R		STATION #	TRENCH DEPTH
EW-64R			
EW-61R		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
GENERAL INFORMATION		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
WEATHER CONDITIONS		RISER HEIGHT	TRENCH DEPTH
		LATERAL: #	PIPE DIA.
		STATION	LINEAR FT.
		RISER HEIGHT	TRENCH DEPTH
START TIME 6:00 A.M.			
STOP TIME 6:00 P.M.		SUMPS	VALVES

COMMENTS: Arrived on site had safety meeting. Started drilling on EW-12R got to depth of 42' set well pipe and moved rig to EW-64R set up and started drilling as 12R is completed to grade got to depth of 40' set well pipe and moved to EW-64R started drilling as 64R is completed to grade got to depth of 40' set well pipe and moved to EW-61R set up and started drilling as 64R is completed to grade got to depth of 40' set well pipe and completed to grade found out that 2 wells have been add.

Jessica Owen 8-3-07
CLIENT REPRESENTATIVE DATE
Jessica Owen Env. St. BC
NAME & TITLE

Adrian M. Castillo
AEGL SITE SUPERVISOR DATE



DRILLING SUMMARY

PROJ NAME: Lorain County Landfill 1
 PROJ #: 1-07-119
 DATE: 8/2/2007

WELL #	DATE	TOTAL DEPTH	PERF PIPE	SOLID PIPE	DIRT	TRASH	GRAVEL TONS	PLUGS
EW-12R	8/2	42	22	24			10.44	2-2'
EW-66R	8/2	40	20	24			9.57	2-2'
EW-64R	8/2	40	20	24			9.57	2-2'
EW-61R	8/2	40	20	24			9.57	2-2'
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
							0.87	
		162.0	82.0	96.0			49.59	

RENTAL EQUIPMENT

VENDOR	EQUIPMENT	DATE OUT	DATE IN	RENTAL \$

MATERIALS (GRAVEL, BENTONITE, PIPE)

VENDOR	ITEM	DESCRIPTION

NOTES:



American
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Group Ltd.

Well Log

PROJECT NAME Lorain County Landfill

DATE: Thurs 8/2/2007

PROJECT# 1-07-118

Drilling		Well Asbuild	
EW-12R WELL NUMBER OR NAME			
42' LINEAR FEET OF DRILLING			
42 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	Scaver hit	mod	damp	63
8:00				10-20	hit wood	mod	damp	65
9:00				20-30	hitless wood	mod	wet	74
10:00				30-40	hit wood	mod	wet	76
11:00				40-50				
12:00				50-60				
1:00				60-70				
2:00				70-80				
3:00				80-90				
4:00				90-100				
5:00				100-110				
6:00				110-120				
Notes				120-130				
northing				130-140				
easting				140-150				

Jessica Owen 8-3-07
CLIENT REPRESENTATIVE DATE
Jessica Owen Env St BC
NAME & TITLE

Adrian M. Castillo
AEGT SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Loren County Landfill

DATE: Thurs 8/2/2007

PROJECT# 1-07-118

Drilling		Well Asbuild	
EW-001	WELL NUMBER OR NAME		
40'	LINEAR FEET OF DRILLING		
40'	LINEAR FEET OF COMPLETION		
	LINEAR FEET OF ABANDONMENT		
Time in: _____	Time out: _____		
Weather conditions: _____			
Site conditions: _____			
Rig hrs: _____			
Service: <u>Radiation</u> <u>Grass</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	3" cover hhl	mod	damp	65
8:00				10-20	hhl wood	mod	damp	68
9:00				20-30	hhl wood carpit	mod	damp	72
10:00				30-40	hhl wood	mod	damp	78
11:00				40-50				
12:00				50-60				
1:00				60-70				
2:00				70-80				
3:00				80-90				
4:00				90-100				
5:00				100-110				
6:00				110-120				
Notes				120-130				
nothing				130-140				
nothing				140-150				

Gisela Ole 8-3-07
CLIENT REPRESENTATIVE DATE
Gisela Ole Env St. GC
NAME & TITLE

Adrian M. Castillo
AEGL SITE SUPERVISOR DATE



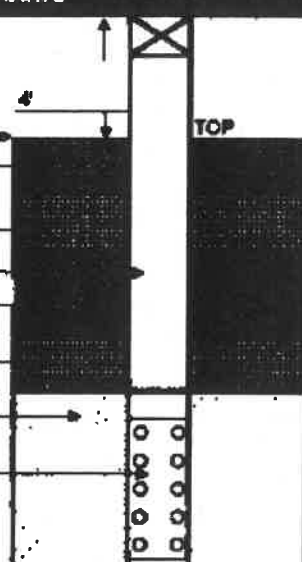
American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain County Landfill

DATE: Thurs 8/2/2007

PROJECT# 1-07-118

Drilling		Well Asbuild	
EW-44R	WELL NUMBER OR NAME		
40'	LINEAR FEET OF DRILLING		
40'	LINEAR FEET OF COMPLETION		
	LINEAR FEET OF ABANDONMENT		
Time in: _____ Time out: _____			
Weather conditions: _____			
Site conditions: _____			
Rig hrs: _____			
Service: _____ Fluidator _____ Grease _____			
NOTES: _____			
Total Batching Time: _____			
		Top of ground elev. _____	TOP
		Backfill Material 2'	
		Bentonite 2'	
		Length of Solid 20'	
		Backfill Material 11'	
		Bentonite 2'	
		Geo Ring + 1' of soil	
		Length of Gravel Pack 22'	
		Length of Perf. Pipe 20'	
		Bore diameter 36" 36"	
		Bottom of bore 40'	

Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
7:00				0-10	3 cover hlt	mod	damp	61
8:00				10-20	hlt wood paper	mod	damp	64
9:00				20-30	hlt wood	mod	damp	66
10:00				30-40	hlt wood	mod	damp	74
11:00				40-50				
12:00				50-60				
1:00				60-70				
2:00				70-80				
3:00				80-90				
4:00				90-100				
5:00				100-110				
6:00				110-120				
Notes nothing nothing				120-130				
				130-140				
				140-150				

Jessica Owen 8/3/07
CLIENT REPRESENTATIVE DATE
Jessica Owen Env. St. BC
NAME & TITLE

Adrian M. Castillo
AEGL SITE SUPERVISOR DATE



American
Environmental
Group Ltd.

Well Log

PROJECT NAME Lorain County Landfill

DATE: Thurs 8/2/2007

PROJECT# 1-07-119

Drilling		Well Asbuilt	
BW-64R WELL NUMBER OR NAME			
40' LINEAR FEET OF DRILLING			
40' 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: _____			
		Top of ground elev. _____	TOP
		Backfill Material <u>2'</u>	
		Bentonite <u>2'</u>	
		Length of Solid <u>20'</u>	
		Backfill Material <u>11'</u>	
		Bentonite <u>2'</u>	
		Geo Ring + 1' of soil	
		Length of Gravel Pack <u>22'</u>	
		Length of Perf. Pipe <u>20'</u>	
		Bore diameter <u>36"</u> <u>36"</u>	
		Bottom of bore <u>40'</u>	

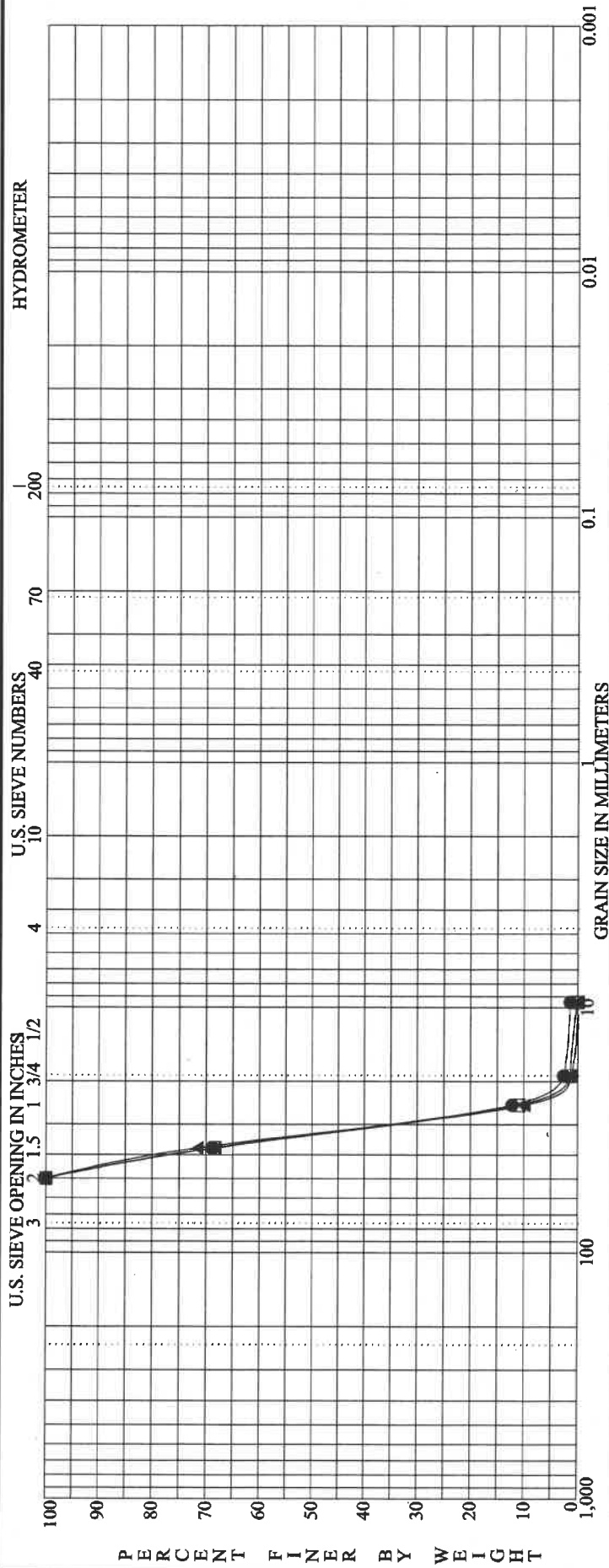
Monitoring Log				Well Boring Log				
Time	OXYGEN	H2S	LEL / CO	Depth	Composition	Degree of Decomp.	Degree of Moisture	Temp
7:00				0-10	3' cover hht	mod	damp	65
8:00				10-20	hht paper wire	mod	damp	66
9:00				20-30	hht paper	mod	damp	73
10:00				30-40	hht wood	mod	damp	76
11:00				40-50				
12:00				50-60				
1:00				60-70				
2:00				70-80				
3:00				80-90				
4:00				90-100				
5:00				100-110				
6:00				110-120				
Notes nothing nothing				120-130				
				130-140				
				140-150				

Jessica Owen 8-3-07
CLIENT REPRESENTATIVE DATE
Jessica Owen Env. St. BC
NAME & TITLE

Adrian M. Castillo
AEG SITE SUPERVISOR DATE

APPENDIX I

No. 4 Stone Laboratory Results



BOULDERS	COBBLES	GRAVEL			SAND			SILT OR CLAY						
		coarse	fine	Classification	coarse	medium	fine	MC%	LL	PL	PI	Cc	Cu	
Specimen Identification - Depth														
●	#4 Stone	as received										0.977	1.501	
☒	#4 Stone	before @ pH 4.0										0.951	1.452	
▲	#4 Stone	after @ pH 4.0										0.936	1.389	
%CARBONATE RESIDUE CONTENT = 0.10														
PERMEABILITY @ 20C =														
Specimen Identification - Depth														
●	#4 Stone	as received	D100	D60	D30	D10		%Gravel	%Sand	%Silt	%Clay			
☒	#4 Stone	before @ pH 4.0	50.00	35.19	28.390	23.4421								
▲	#4 Stone	after @ pH 4.0	50.00	35.34	28.599	24.3442								
			50.00	34.76	28.545	25.0310								

ASTM D422	GRADATION CURVE				PROJECT <u>LORAIN II LFG CQA</u>	
	LOCATION <u>BERLIN, OHIO</u>				DATE <u>7/27/07</u>	
	JOB NO. <u>011.11442.001</u>					

APPENDIX J

Air Monitoring Results

Name of Project/Site: LORAIN I LFG-CQA		Project No: 132501				
Project/Site Location: LORAIN I LANDFILL: OBERLIN, OHIO						
Employee Performing Air Monitoring: (Print & Sign) JESSICA OWEN		Date: 8/2/07				
Photo Ionization/Flame Ionization Detectors (PIDs/FIDs)						
PID	Manufacturer: MSA	Model: ORION SERIES	Serial No.: A6-12531-102			
Initial Calibration Reading: O2: 20.80% LEL: 58% CO: 300PPM 10PPM		End of Use Calibration Reading: O2: 20.80% LEL: 58% CO: 300PPM 10PPM				
Calibration Standard/Concentration: Calibration Gas: 58% LEL Pentane Simulant, 300PPM CO, 10PPM H2S						
Monitoring Data						
TIME	LOCATION/ACTIVITY	LEL %	O2 %	CO (PPM)	H2S (PPM)	COMMENTS
8:00	EW-12R	0	20.8	0	0	
9:00	NA					Set EW-12R
10:00	EW-66R	0	20.8	0	0	
11:00	NA					Set EW-66R
12:30	EW-64R	0	20.9	0	0	
13:30	EW-64R	0	20.8	0	0	
15:00	EW-61R	1	20.8	0	0	