CONSTRUCTION RECORD DOCUMENTATION REPORT 2016-2017 GAS COLLECTION AND CONTROL SYSTEM EXPANSION

J.E.D. Solid Waste Management Facility

Osceola County, Florida

REPORT

Submitted to: Florida Department of Environmental Protection
Waste Management Program, Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767 USA

Prepared for: Omni Waste of Osceola County, LLC
1501 Omni Way
St. Cloud, FL 34773 USA

Submitted by: Golder Associates Inc.
9428 Baymeadows Road, Suite 400
Jacksonville, FL 32256 USA

Florida Board of Professional Engineers
Certificate of Authorization Number 1670

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1 Copy	Golder Associates Inc.

June 2017 **083-82734.51**

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June 6, 2017 083.82734.51

Ms. Chris Ferraro, PE
Environmental Administrator, Central District
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

RE: CONSTRUCTION RECORD DOCUMENTATION REPORT
2016-2017 GAS COLLECTION AND CONTROL SYSTEM EXPANSION
J.E.D. SOLID WASTE MANAGEMENT FACILITY
OSCEOLA COUNTY, FLORIDA
PERMIT NUMBERS: 0199726-031-SC-01 AND SO49-0199726-022

Dear Ms. Ferraro:

On behalf of the Omni Waste of Osceola County, LLC (Omni), Golder Associates Inc. (Golder) is pleased to submit the enclosed report documenting the construction quality assurance (CQA) monitoring for construction of the 2016-2017 gas collection and control system (GCCS) expansion at the J.E.D. Solid Waste Management Facility located in Osceola County, Florida.

The enclosed report contains a narrative describing the construction procedures employed by the contractors and the CQA monitoring of the construction activities performed by Golder. The report also includes a summary of changes with respect to the construction drawings, a CQA certification, an as-built survey for the GCCS expansion, an as-built well schedule, well boring logs, photographic documentation of construction activities, gravel laboratory results, the CQA engineer field monitoring reports, and the Florida Department of Environmental Protection (FDEP) Certification of Construction Completion of a Solid Waste Management Facility. An electronic copy of the report has been included on CD as well.

If there are any questions on any of the information presented herein, please feel free to call Mr. Kirk Wills of Waste Connections at (813) 388-1026 or the undersigned.

Sincerely,

GOLDER ASSOCIATES INC.

DON E. GRIGG LICENSE No. 81578 STATE OF FLORIDA PROFESSIONAL ENGINEER

Don E. Grigg, PE
Florida Professional Engineer No.81578
Certificate of Authorization No. 1670

Kevin S. Brown, PE
Practice Leader and Principal

Digitally signed by Don E. Grigg
DN: cn=Don E. Grigg, o=Golder Associates Inc., ou, email=dgrigg@golder.com, c=US
Date: 2017.06.06 12:24:12 -04'00'

cc: Mr. Kirk Wills – Omni Waste of Osceola County, LLC.
Mr. Ben Gray – Omni Waste of Osceola County, LLC

Enclosure: Construction Record Documentation Report DEG/KSB/ams

Golder Associates Inc.
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1.0 INTRODUCTION

The J.E.D. Solid Waste Management Facility (JED Facility) is owned and operated by Omni Waste of Osceola County, LLC, a subsidiary of Waste Connections, Inc. The facility is located southeast of St. Cloud, Florida, in Osceola County. The JED Facility is required under its Solid Waste Permits (0199726-031-SC-01 and SO49-0199726-022, issued September 7, 2016 and July 12, 2012, respectfully by the Florida Department of Environmental Protection (FDEP)), to install and operate a gas collection and control system (GCCS) at the facility. The GCCS must meet the design drawings and specifications provided in the lateral expansion permit application approved under permit modification SC49-0199726-017. Additionally, the facility's Title V Air Permit, 0970079-012-AV, issued on April 8, 2015 by the FDEP, also requires installation of a GCCS meeting the requirements 40 CFR 60, Subpart WWW Standards of Performance for Municipal Solid Waste Landfills (New Source Performance Standards [NSPS]). The JED Facility became subject to the GCCS requirements of Subpart WWW on December 23, 2008. The GCCS is required to be operational in all waste that is in place for two years or more for areas at final grade, and five years or more for areas at interim grade. Note that the facility also falls under the requirements of the newly issued NSPS, Subpart XXX. The facility is in the process of implementing the new NSPS as required by the promulgated timelines.

1.1 Background

Golder Associates Inc. (Golder) was retained by Omni Waste of Osceola County, LLC (Omni) to provide full time construction quality assurance (CQA) services during the 2016-2017 GCCS expansion at the JED Facility. The facility operates the GCCS which includes a number of vertical gas extraction wells, several horizontal collection wells, connections to sumps and sideslope risers, a hydrogen sulfide treatment system, two flares, and one landfill gas to energy facility, which includes 6 engine/generator sets.

The main components of the 2016-2017 GCCS expansion monitored by Golder were:

- Installation of 21 new gas extraction wells;
- Installation of 4 replacement gas extraction wells;
- Installation of approximately 7,500 feet of header, lateral gas conveyance pipe, and various appurtenances;
- Installation of approximately 5,900 feet of forcemain; and
- Installation of approximately 5,900 feet of pressurized air header.

This report includes a description of the project and the activities observed by Golder during the construction of the GCCS described above. Section 2 provides a summary of the changes in the design that were necessitated by field conditions. Descriptions of the construction activities and the CQA services provided by Golder are presented in Sections 3 and 4, respectively. Section 5 presents the CQA certification by a Florida registered professional engineer.

1.2 Project Description

Construction activities for the 2016-2017 GCCS expansion were performed in accordance with the Phase III Construction Drawings prepared by Golder and Technical Specifications prepared by Geosyntec, both of which were previously submitted to the FDEP. A copy of the drawings and specifications are provided in Appendices A and B, respectively.

Gas wells were installed in the area of the landfill with intermediate cover. Header and lateral gas conveyance piping was installed below grade of the waste. The lateral gas conveyance piping connects the gas extraction wells to the main header system that directs gas to the existing flare/LFGTE system. Construction oversight activities for the vertical gas extraction wells and piping commenced on November 16, 2016 and were completed on March 3, 2017. Note that "Holiday Stand-downs" were observed during November 22, 2017 through November 27, 2017 and December 22, 2017 through January 2, 2017, where no work was performed.

1.3 Scope of Services

The services Golder provided included observation and documentation of the installation of the gas extraction wells, horizontal collectors, header and lateral gas conveyance piping, and tie-ins of the header and laterals to the existing GCCS. This report documents the CQA services provided during the observation of the above-listed components.

Golder conducted its services during this project in accordance with the following documents:

- Construction drawings titled "J.E.D. Solid Waste Management Facility Gas Collection and Control System (GCCS) Phase III Disposal Area," prepared by Golder, dated September 2012, and provided in Appendix A of this report.
- Specifications titled "Technical Specifications" prepared by Geosyntec, and provided in Appendix B of this report.

Omni retained Peavey & Associates Surveying and Mapping, PA (Peavey & Associates), a licensed Professional Surveyor in Florida, to fulfill the surveying needs associated with the 2016 - 2017 GCCS expansion, including development and certification of the as-built survey presented in Appendix C of this report. As part of its services, Golder reviewed the as-built survey to check that the major components of the construction were shown.

2.0 SUMMARY OF CHANGES

The construction was conducted in general accordance with the documents described in Section 1.2 with minor modifications necessitated by field conditions as described below. These modifications did not alter the design intent of the system.

2.1 Extraction Well Locations

The vertical extraction wells installed in general accordance with Phase III Construction Drawings and to replace damaged or faulty gas extraction wells. The locations of the wells were adjusted based upon field conditions. Note that the Cell 9 and 10 wells (GW-125 through GW-132) were installed prior to the timelines set forth under the NSPS in 40 CFR 60.755(b) (2 year/5 year rule). The as-built well schedule presented in Appendix D provides the northing and easting for the extraction wells. Well boring logs for all installed extraction wells are presented in Appendix E.

2.2 Extraction Well Construction

Appendix F documents the laboratory test results of the aggregate backfill placed within the annulus of the borehole around the slotted pipe of the gas extraction wells. One gravel sample was tested for gradation and showed the gravel sample gradation yielded results in between No. 2 and No. 3 stone. Golder believes that no performance impacts of the gas extraction wells will occur due to the use of this larger than typical (No. 4 or No. 57 stone) aggregate. The carbonate content of the gravel sample was 0.0%, which meets construction specifications.

During the setting of well JEDGW114 (after drilling to an apparent depth of 142.5 ft. bgs), gravels were backfilled to the top of ground surface accidently. CB&I excavated to 8 ft. bgs to remove excess gravel and installed a georing. Two (2) 2-ft sections of 30-in HDPE pipe were utilized as encasement to hold granular bentonite in place during installation of bentonite plugs in hole excavated.

Additionally, there were two wells (JEDGW082 and JEDGW127) which encountered mud-like conditions near the bottom of the borehole. For each of these wells, the well screens were installed several feet above the noted bottom of the borehole due to the mud-like conditions.

2.3 Extraction Well Depths

The design depths of the wells were based upon preconstruction survey elevations obtained by JED Facility and the bottom liner system elevations provided by Golder. The extraction wells were designed to terminate approximately 15 feet from the top of protective cover of the base liner system. Since the actual surface elevations changed daily due to landfill operation activities, target well depths were field adjusted based on new survey elevations prior to drilling. The as-built well schedule is provided in Appendix D. The following table summarizes the differences in design versus as-built well depths for wells that were not installed to

the design depth. As noted in the well boring logs presented in Appendix E, wet subsurface conditions were encountered which prevented drilling depth advancement using the bucket auger for a few extraction wells. Additionally, unstable sub-surface conditions caused some partial sloughing/caving of boreholes, thus reducing the overall depth that some wells were set at.

Table 1: Extraction Well Design Depth to Actual Depth Comparison

Well ID	Design Well Depth (ft. bgs)	Actual Well Depth (ft. bgs)	Difference Between Design and Actual Well Depth (ft.)
JEDG65R2*	127.0	128.5	1.5
JEDG68R2*	133.0	128.5	-4.5
JEDG71R1*	131.0	130.5	-0.5
JEDGW082	81.0	62.5	-18.5
JEDG83R1*	88.0	88.5	0.5
JEDGW084	130.0	130.5	0.5
JEDGW091	135.0	134.5	-0.5
JEDGW096	127.0	141.0	14
JEDGW111	121.0	121.5	0.5
JEDGW114	143.0	143.0	0
JEDGW115	143.0	142.5	-0.5
JEDGW116	146.0	149.5	3.5
JEDGW117	127.0	142.5	15.5
JEDGW121	136.0	136.5	0.5
JEDGW122	31.0	40.5	9.5
JEDGW123	75.0	75.5	0.5
JEDGW124	132.0	132.5	0.5
JEDGW125	30.0	30.5	0.5
JEDGW126	73.0	73.5	0.5
JEDGW127	128.0	105.5	-22.5
JEDGW128	30.0	30.5	0.5
JEDGW129	63.0	63.0	0
JEDGW130	122.0	122.5	0.5
JEDGW131	30.0	30.5	0.5
JEDGW132	61.0	61.5	0.5

* Denotes replacement wells. R1 indicates first replacement well, R2 indicates second replacement well, etc.

2.4 Header/Lateral Gas Conveyance Pipe Installation

There were no significant modifications to the details specified in the GCCS Phase III Disposal Area drawings (Appendix A) with respect to the lateral gas conveyance pipe installation; however the location of the piping was modified to accommodate actual field conditions encountered. The location of the installed piping can be found on the as-built survey in Appendix C.

3.0 CONSTRUCTION ACTIVITIES

3.1 Project Participants

The parties involved in the 2016-2017 GCCS expansion included:

- Omni, as the owner;
- Golder, as the design engineer;
- Golder, as the CQA engineer;
- CB&I, as a construction contractor;
- Peavey & Associates, as the surveyor.

3.2 Gas Extraction Well Installation

CB&I performed the drilling and installation of 30 gas extraction wells during the 2016-2017 GCCS expansion. The first installation of the gas wells commenced on November 21, 2016 and was completed on February 9, 2017. The drill rig utilized was a Soilmec SR-30, with a 3-foot-diameter bucket auger, or a 3-foot-diameter water bucket auger. CB&I used an air-monitoring device during all drilling activities to monitor worker breathing zones. Peavey & Associates surveyed the locations of the completed gas wells; the certified as-built survey is provided in Appendix C.

Gas extraction well installation depths were field-adjusted to the existing ground elevation of the landfill based on the ground surface survey conducted prior to drilling. Waste material excavated during drilling was hauled to the active working face of the landfill for disposal each day drilling occurred. The wells were constructed using 8-inch SCH 80 PVC slotted and solid pipe. The as-built well schedule, found in Appendix D, provides the well depths along with the screen and solid pipe lengths. The well pipes were bell and spigot type, and each joint was glued and three lag bolts installed to provide additional support at each joint.

The procedure used for the installation of the extraction wells is summarized below:

- Set the bottom of the slotted pipe approximately ½-foot above the bottom of the borehole;
- Backfill borehole to approximately ½-foot above top of slotted pipe with approved stone;
- Place geocomposite ring (georing) above stone backfill;
- Install 2-foot-thick granular hydrated bentonite plug #1;
- Above bentonite plug #1, backfill borehole with clean cover soil to within approximately 4 feet of existing ground surface or existing final cover geomembrane;
- Install 2-foot-thick granular hydrated bentonite plug #2; and
- Backfill remaining borehole with clean cover soil and slope at the surface to promote surface water runoff.

Appendix E includes well boring logs that show the well construction details, including the materials placed in the borehole annulus. As construction of the lateral pipe system progressed, wellheads were installed and connected to laterals. Appendix G provides representative photographs of the drilling of the extraction wells, the installation of the extraction wells, the installation of the laterals to provide a vacuum source to the extraction wells, and the installation of the wellheads at the extraction wells.

3.3 Header/Lateral Gas Conveyance Pipe, Pressurized Air Header, and Leachate Forcemain Installation

CB&I performed the installation of the header and lateral gas conveyance piping, pressurized air header piping, and leachate forcemain piping associated with the 2016 - 2017 GCCS expansion.

Three excavators (Deere 270D, Doosan DX225LC, and Komatsu PC290LC) were utilized for trench excavation for the pipe installation. Lateral gas conveyance pipe was 8-inch high-density polyethylene (HDPE) standard dimension ratio (SDR) 17 and installed at a minimum 5 percent slope below grade. The lateral gas conveyance piping connects the extraction wells to the main header system that directs gas to the existing flare/LFGTE system. Header gas conveyance piping was 12-inch and 18-inch HDPE SDR 17 and installed at a minimum 5 percent slope below grade. Pressurized air header pipe was 2-inch HDPE SDR 11 and installed in the same trench with the new header/lateral gas conveyance pipe. Leachate forcemain pipe was 2-inch SDR 11 and 4-inch HDPE SDR 17 and installed in the same trench with the newly installed header/lateral gas conveyance pipe.

At the completion of the trench, the HDPE pipes (varying diameter) were placed in the trench and covered with clean fill. Survey risers were placed every 50 feet and at points of interest for the as-built survey and excavated waste material was disposed of at the active working face. The surface was then reworked to existing grades and slopes using a John Deer 650K dozer.

3.4 Header/Lateral Gas Conveyance Pipe Abandonment

CB&I performed the abandonment of existing header and lateral gas conveyance piping. The HDPE pipes were exposed by the excavators (Deere 270D, Doosan DX225LC, and Komatsu PC290LC) as needed, cut to separate from the system, and capped or removed. The abandoned header pipe in Cell 6 and 9 was removed and stored on site for potential future use.

4.0 CONSTRUCTION MONITORING

Construction monitoring was documented by the CQA engineer in daily field monitoring reports, as provided in Appendix H. The field monitoring reports document the overall construction activities and the specific issues encountered during construction on a day-to-day basis.

4.1 Technical Specifications

The construction of the 2016-2017 GCCS expansion was performed in general accordance with the technical specifications prepared by Geosyntec and provided in Appendix B. Materials utilized in the expansion were reviewed for compliance with the requirements of the technical specifications.

4.2 Gas Extraction Well Installation

Golder monitored the drilling and the well construction of all gas extraction wells. Logs showing the installation details for each well are included in Appendix E, and a summary of the well construction details is found in the as-built well schedule included in Appendix D.

4.3 Header/Lateral Gas Conveyance Pipe, Air Supply Line, and Leachate Forcemain Installation

Golder monitored the welding and the installation of the header and lateral pipes during the 2016-2017 GCCS expansion. The CQA engineer observed pipe welding to ensure that the interior of the pipe was generally clean, that pipe shavings from the cutting process were removed, and that the manufacturer's recommended iron temperature and gauge pressure were followed. Golder also monitored the trench construction and pipe integrity during placement for compliance with the requirements of the technical specifications. Piping was pressure tested at 10 psi for an hour to ensure there were no leaks in the newly installed GCCS.

4.4 Header/Lateral Gas Conveyance Pipe Abandonment

Golder monitored the abandonment of existing header and lateral gas conveyance piping to make sure the abandoned pipes were capped or removed properly.

4.5 Geosynthetic Final Cover System

A portion of the final cover system within Cell 3 was impacted by the GCCS expansion and this area was repaired by Comanco Environmental Corporation. Note that Golder was not present during the repairs, however Omni personnel coordinated and observed the repairs. Documentation regarding the liner repair is included in Appendix I.

5.0 SUMMARY AND CERTIFICATION

Omni retained Golder to provide CQA services during the construction of the 2016-2017 GCCS expansion at the JED Facility. These services included the quality assurance monitoring, documentation, and/or testing of the items listed below:

- Installation of 21 new gas extraction wells;
- Installation of 4 replacement gas extraction wells;
- Installation of approximately 7,500 feet of header, lateral gas conveyance pipe, and various appurtenances;
- Installation of approximately 5,900 feet of forcemain; and
- Installation of approximately 5,900 feet of pressurized air header.

Based on the field observations, submittal information from the contractor, field testing results, and the data presented herein, it is Golder's professional opinion that the 2016-2017 GCCS expansion at the JED Facility was installed in substantial conformance with the FDEP-approved design/construction drawings and technical specifications as referenced herein. Modifications and deviations from the technical specifications are discussed in Section 2. These modifications did not alter the design intent of the GCCS. Appendix J provides the signed and sealed FDEP Certification of Construction Completion of a Solid Waste Management Facility form, 62-701.900(2).

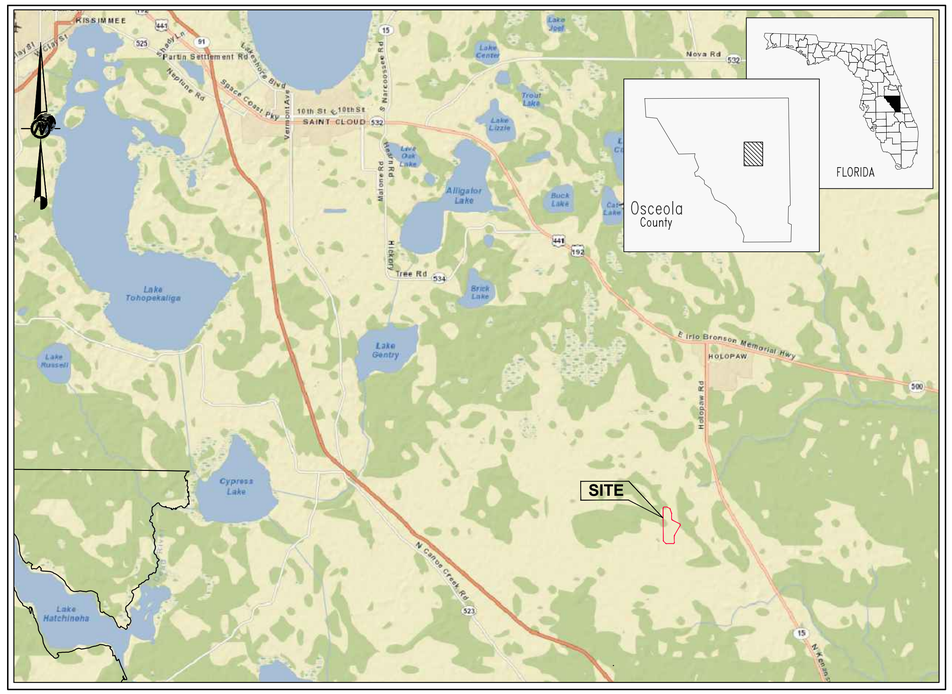
FN: G:\Projects\083\083-82\083-82734\083-82734.51\Final_Reports\GCCS Cover Letter and Report 2016_2017.docx

APPENDIX A

CONSTRUCTION DRAWINGS

J.E.D. SOLID WASTE MANAGEMENT FACILITY
GAS COLLECTION AND CONTROL SYSTEM (GCCS)
PHASE III DISPOSAL AREA

ST. CLOUD, OSCEOLA COUNTY, FLORIDA



SITE LOCATION MAP

LIST OF DRAWINGS		
SHEET	TITLE	REVISION
1	TITLE SHEET	
2	TOPOGRAPHIC MAP	
3	PLAN LAYOUT OF GCCS IN PHASE 3 (CELLS 8 THROUGH 10)	
4	PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 1)	
5	PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 2)	
6	PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 3)	
7	GAS SYSTEM CONTROL POINTS	
8	VERTICAL GAS EXTRACTION WELL DETAILS	
9	GCCS DETAILS (1 OF 2)	
10	GCCS DETAILS (2 OF 2)	
11	HORIZONTAL GAS COLLECTOR DETAILS	
12	HORIZONTAL GAS COLLECTOR CROSS SECTIONS	

Prepared for:

WSI Waste Services, Inc.

OMNI WASTE OF OSCEOLA COUNTY, LLC
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ST. CLOUD, FLORIDA 34773
TEL: 407-891-3720 FAX: 407-891-3730

Prepared by:

Golder Associates
Jacksonville, Florida

September 2012

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9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
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COA No. 1670

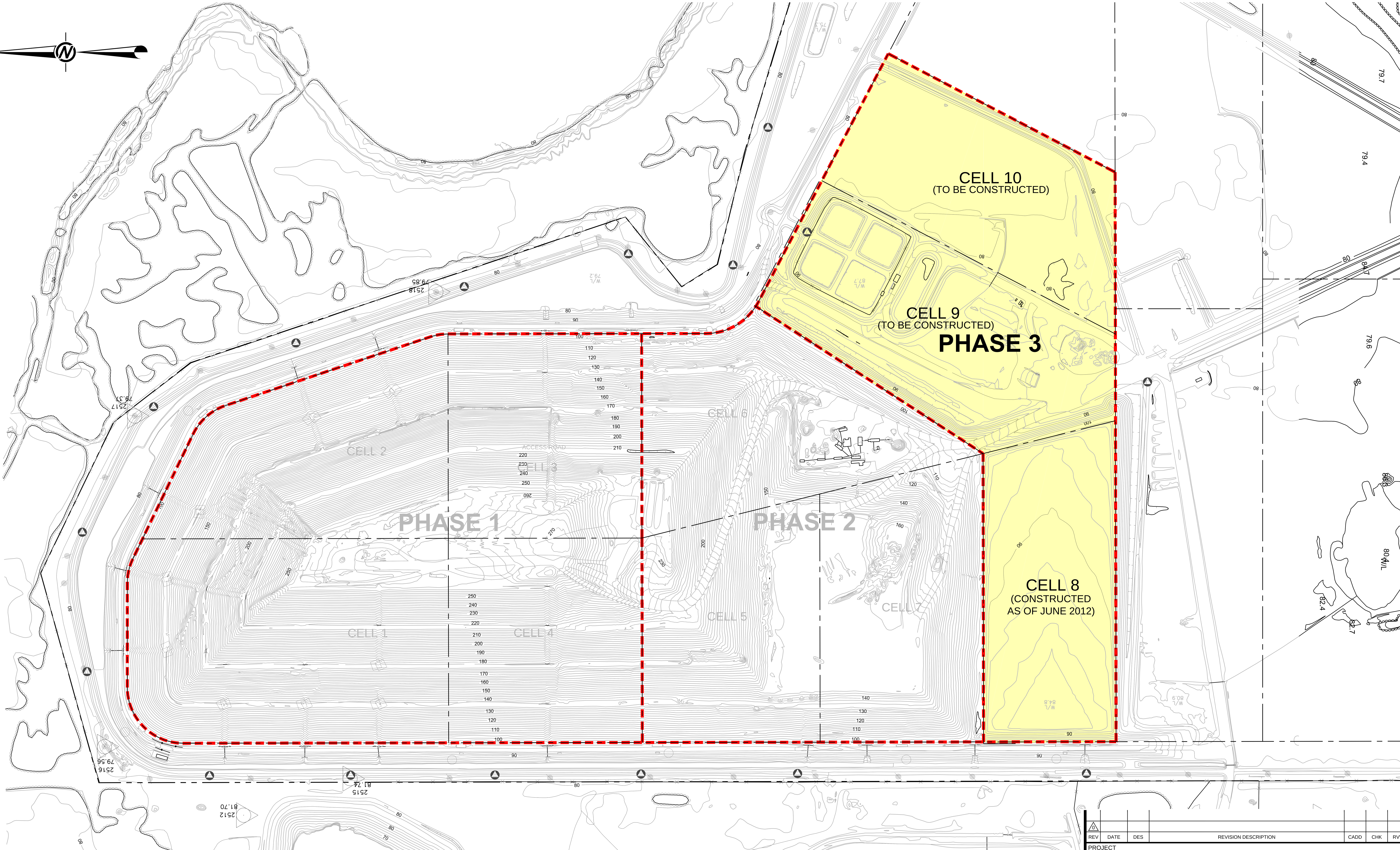
J.E.D. SOLID WASTE MANAGEMENT FACILITY
OSCEOLA COUNTY
FLORIDA

TITLE SHEET/LIST OF DRAWINGS

Kevin S. Brown, P.E.
Florida Registration No. 57819

SHEET 1

PROJECT No.083-82734 FILE No.08382734G001 CADD BCL DATE 09/07/12



LEGEND

— · — · —	PROPERTY BOUNDARY
red dashed line	PHASE BOUNDARY
yellow box	PHASE 3 DISPOSAL AREA

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.

150 0 150 300
SCALE FEET

Kevin S. Brown, P.E.
Florida Registration No. 57819

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
TOPOGRAPHIC MAP

Golder Associates
9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

PROJECT No.		083-82734.22	FILE No.	08382734G002
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CADD	BCL	05/18/12		
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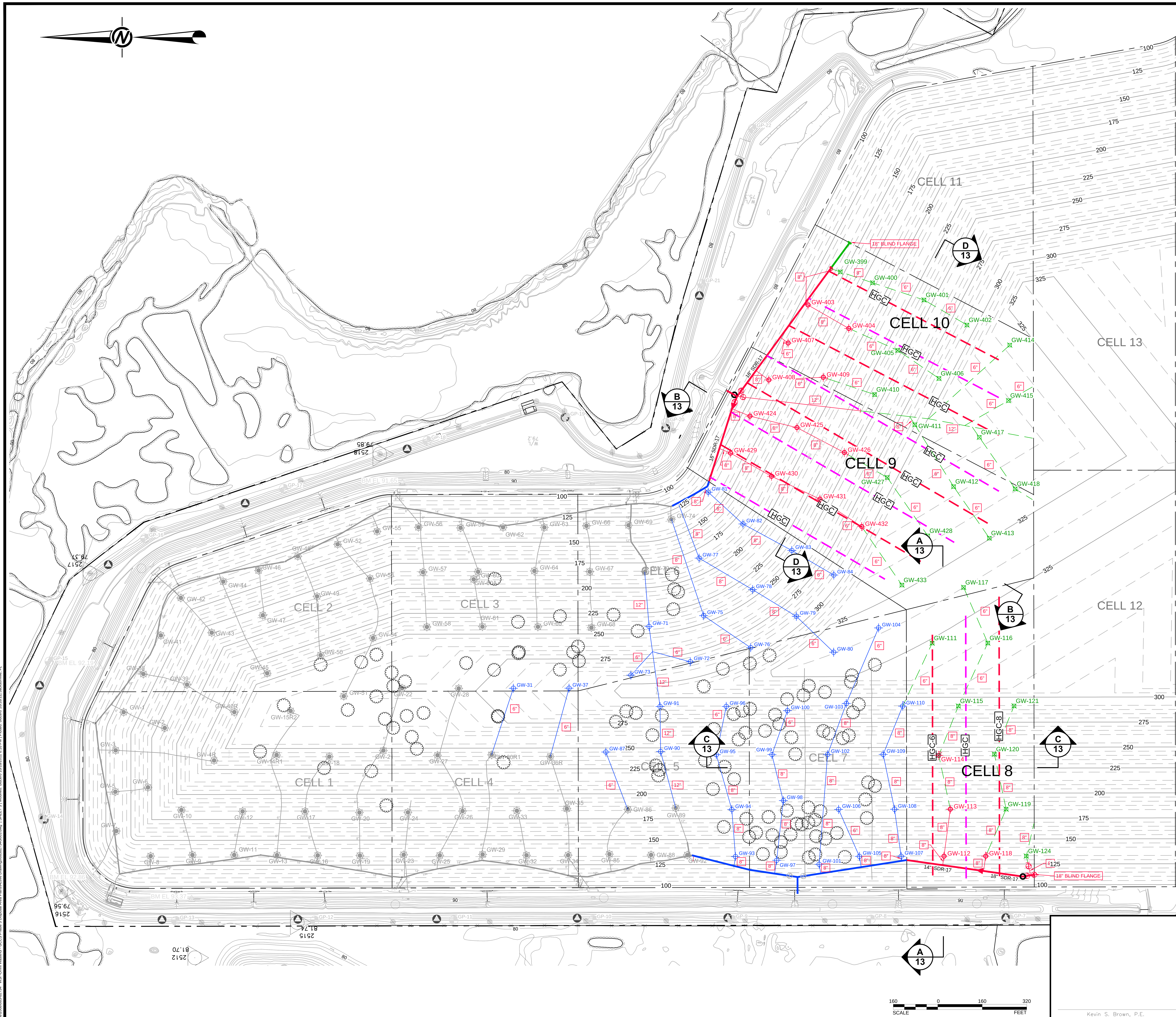
REVIEW	.	.		



LEGEND

- PROPERTY BOUNDARY
- EXISTING GROUND ELEVATION (FEET)
- EXISTING FENCE
- FINAL COVER ELEVATION (FEET)
- EXISTING VERTICAL GAS EXTRACTION WELL
- EXISTING HDPE HEADER PIPE
- EXISTING HDPE LATERAL PIPE
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 1)
- PROPOSED VERTICAL GAS EXTRACTION WELL
- PROPOSED HDPE HEADER PIPE
- PROPOSED HDPE LATERAL PIPE
- FUTURE VERTICAL GAS EXTRACTION WELL
- FUTURE HDPE LATERAL PIPE
- REDUCER
- BLIND FLANGE (DIAMETER VARIES)
- CONDENSATE DRAIN AT LOW POINT
- ISOLATION VALVE
- PROPOSED UPPER TIER HGC (10" SDR-11)
- PROPOSED LOWER TIER HGC (10" SDR-11)
- LATERAL PIPE SIZE
- PREVIOUS PHASE PROPOSED VERTICAL GAS EXTRACTION WELL
- PREVIOUS PHASE PROPOSED HDPE LATERAL PIPE
- PREVIOUS PHASE PROPOSED HDPE HEADER PIPE

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING (OUTSIDE OF THE WASTE LIMITS) WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

GCCS NOTES

1. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
2. LATERAL PIPES SHALL BE 4", 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
3. GRADES INDICATED ON THIS SHEET WITHIN THE WASTE DISPOSAL BOUNDARY ARE TOP OF FINAL COVER SYSTEM GRADES.
4. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED ON SHEET 10, DETAIL 3.
5. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
6. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 11.
7. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH).
8. FUTURE GAS EXTRACTION WELLS SHOWN IN GREEN LOCATED WITHIN CELLS 8-10, WILL NOT BE INSTALLED UNTIL WASTE IS IN CELLS 11, 12, AND CELL 13 AND IS SUFFICIENT TO ALLOW INSTALLATION AT OR NEAR FINAL GRADES.
9. ALL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED WITH A MINIMUM OF 5% SLOPE.
10. THE EXACT LOCATIONS AND NUMBERING OF GCCS FEATURES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS AT THE TIME OF INSTALLATION.
11. EXCESS EXCAVATED WASTE (INCLUDING DRILL CUTTINGS) WILL BE HAULED TO THE ACTIVE WORKING FACE FOR DISPOSAL. SHOULD WASTE BE UTILIZED AS BACKFILL, DAILY COVER WILL BE UTILIZED IN ACCORDANCE WITH PERMIT AND REGULATORY REQUIREMENTS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT

J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE

PLAN LAYOUT OF GCCS IN PHASE 3 (CELLS 8 THROUGH 10)

Golder Associates
9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

PROJECT No.		083-82734.22	FILE No.	08382734G003
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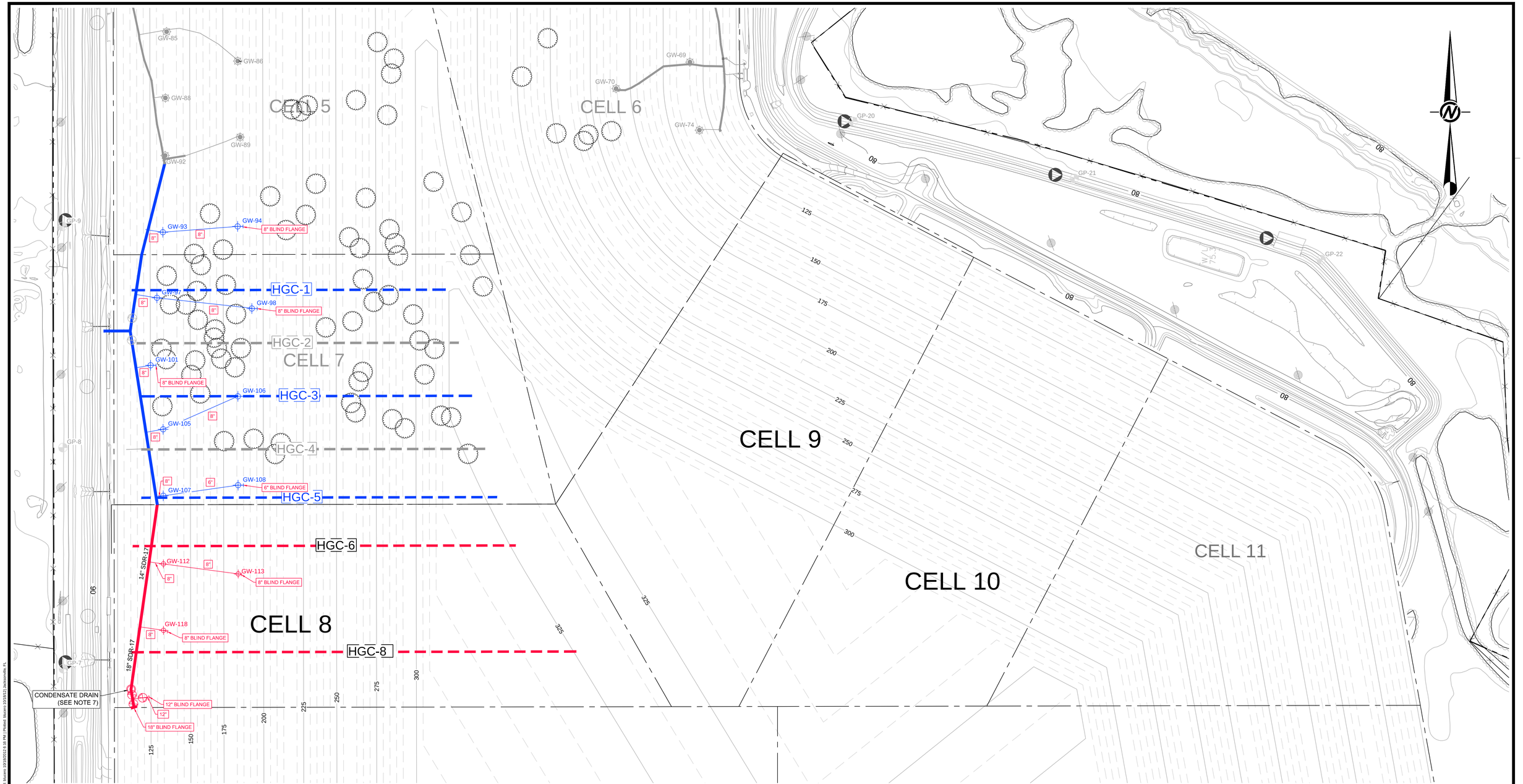
REVIEW	.	.		



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERMITTENT STREAM
- INTERCELL BERM LOCATION
- 80 EXISTING GROUND ELEVATION (FEET)
- EXISTING FENCE
- 280 FINAL COVER ELEVATION (FEET)
- GP-18 EXISTING GAS MONITORING PROBE
- GW-35 EXISTING VERTICAL GAS EXTRACTION WELL
- EXISTING HDPE HEADER PIPE
- EXISTING HDPE LATERAL PIPE
- GW-419 PROPOSED VERTICAL GAS EXTRACTION WELL
- PROPOSED HDPE HEADER PIPE
- PROPOSED HDPE LATERAL PIPE
- BLIND FLANGE (DIAMETER VARIES)
- APPROXIMATE LIMITS OF ASBESTOS (SEE GCCS NOTE 1)
- CONDENSATE DRAIN AT LOW POINT
- ISOLATION VALVE
- CONDENSATE KNOCKOUT POT
- PROPOSED UPPER TIER HGC (10" SDR-11)
- PROPOSED LOWER TIER HGC (10" SDR-11)
- EXISTING LOWER/UPPER TIER HGC
- 6" LATERAL PIPE SIZE
- GW-91 PREVIOUS PHASE PROPOSED VERTICAL GAS EXTRACTION WELL
- PREVIOUS PHASE PROPOSED HDPE LATERAL PIPE
- PREVIOUS PHASE PROPOSED HDPE HEADER PIPE
- PREVIOUS PHASE UPPER TIER HGC (10" SDR-11)

GCCS NOTES

1. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
2. LATERAL PIPES SHALL BE 4", 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
3. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
4. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED IN SHEET 11.
5. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
6. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 11.
7. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH).
8. ALL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED WITH A MINIMUM OF 5% SLOPE.
9. PROPOSED GCCS COMPONENTS BASED UPON BULLSEYE DESIGN SERVICES, INC., DWG # 2.
10. THE EXACT LOCATIONS AND NUMBERING OF GCCS FEATURES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS AT THE TIME OF INSTALLATION.
11. EXCESS EXCAVATED WASTE (INCLUDING DRILL CUTTINGS) WILL BE HAULED TO THE ACTIVE WORKING FACE FOR DISPOSAL. SHOULD WASTE BE UTILIZED AS BACKFILL, DAILY COVER WILL BE UTILIZED IN ACCORDANCE WITH PERMIT AND REGULATORY REQUIREMENTS.

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING (OUTSIDE OF THE WASTE LIMITS) WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

100 0 100 200
SCALE FEET

Kevin S. Brown, P.E.
Florida Registration No. 57819

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 1)

Golder Associates
9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

PROJECT No.		083-82734.22	FILE No.		08382734G004
DESIGN	DEG	05/18/12	SCALE		AS SHOWN
CADD	BCL	05/18/12			
CHECK	.	.			
REVIEW	.	.			

SHEET 4

N:\PROJ\083\82734 - WSI Omni Waste\6 - GCCS Phase 3 Disposal Area Plans\Acad Drawings\82734G004.dwg | SHEET 4 | Modified: Autumn 19/18/2012 8:43 PM | Printed: Autumn 19/18/12 | Jacksonville, FL

LEGEND

Symbol	Description
	PROPERTY BOUNDARY
	APPROXIMATE LOCATION OF INTERMITTENT STREAM
80	EXISTING GROUND ELEVATION (FEET)
x	EXISTING FENCE
280	FINAL COVER ELEVATION (FEET)
GP-18	EXISTING GAS MONITORING PROBE
GW-35	EXISTING VERTICAL GAS EXTRACTION WELL
	EXISTING HDPE HEADER PIPE
	EXISTING HDPE LATERAL PIPE
GW-114	PROPOSED VERTICAL GAS EXTRACTION WELL (CURRENT SEQUENCE)
	PROPOSED HDPE HEADER PIPE (CURRENT SEQUENCE)
	PROPOSED HDPE LATERAL PIPE (CURRENT SEQUENCE)
	REDUCER
	BLIND FLANGE (DIAMETER VARIES)
	INTERCELL BERM LOCATION
	APPROXIMATE LIMITS OF ASBESTOS (SEE GCCS NOTE 1)
	CONDENSATE DRAIN AT LOW POINT
	ISOLATION VALVE
	CONDENSATE KNOCKOUT POT
	PROPOSED UPPER TIER HGC (10" SDR-11)
	PROPOSED LOWER TIER HGC (10" SDR-11)
	EXISTING LOWER & UPPER HGC
8"	LATERAL PIPE SIZE
GW-112	EXISTING VERTICAL GAS EXTRACTION WELL (PREVIOUS SEQUENCE)
GW-91	PREVIOUS PHASE PROPOSED VERTICAL GAS EXTRACTION WELL
	PREVIOUS PHASE PROPOSED HDPE LATERAL PIPE
	PREVIOUS PHASE PROPOSED HDPE HEADER PIPE
	PREVIOUS PHASE UPPER TIER HGC (10" SDR-11)

GCCS NOTES

1. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
2. LATERAL PIPES SHALL BE 4", 6" OR 8" DIA. SDR-17 HDPE PIPES AS SHOWN ON THIS SHEET.
3. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
4. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED ON SHEET 10.
5. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
6. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 11.
7. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH).
8. ALL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED WITH A MINIMUM OF 5% SLOPE.
9. PROPOSED GCCS COMPONENTS BASED UPON BULLSEYE DESIGN SERVICES, INC., DWG # 5.
10. THE EXACT LOCATIONS AND NUMBERING OF GCCS FEATURES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS AT THE TIME OF INSTALLATION.
11. EXCESS EXCAVATED WASTE (INCLUDING DRILL CUTTINGS) WILL BE HAULED TO THE ACTIVE WORKING FACE FOR DISPOSAL. SHOULD WASTE BE UTILIZED AS BACKFILL, DAILY COVER WILL BE UTILIZED IN ACCORDANCE WITH PERMIT AND REGULATORY REQUIREMENTS.

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

100 0 100 200
SCALE FEET

Kevin S. Brown, P.E.
Florida Registration No. 57819

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 2)

Golder Associates
9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

PROJECT No.		083-82734.22
DESIGN	DEG	05/18/12
CADD	BCL	05/18/12
CHECK	.	.
REVIEW	.	.

FILE No. 08382734G005
SCALE AS SHOWN
SHEET 5

LEGEND

	PROPERTY BOUNDARY		INTERCELL BERM LOCATION
	APPROXIMATE LOCATION OF INTERMITTENT STREAM		APPROXIMATE LIMITS OF ASBESTOS (SEE GCCS NOTE 1)
80	EXISTING GROUND ELEVATION (FEET)		CONDENSATE DRAIN AT LOW POINT
	EXISTING FENCE		ISOLATION VALVE
280	FINAL COVER ELEVATION (FEET)		CONDENSATE KNOCKOUT POT
GP-18	EXISTING GAS MONITORING PROBE		PROPOSED UPPER TIER HGC (10" SDR-11)
GW-35	EXISTING VERTICAL GAS EXTRACTION WELL		PROPOSED LOWER TIER HGC (10" SDR-11)
	EXISTING HDPE HEADER PIPE		EXISTING LOWER & UPPER HGC
	EXISTING HDPE LATERAL PIPE	8"	LATERAL PIPE SIZE
GW-409	PROPOSED VERTICAL GAS EXTRACTION WELL (CURRENT SEQUENCE)	GW-112	EXISTING VERTICAL GAS EXTRACTION WELL (PREVIOUS SEQUENCE)
	PROPOSED HDPE HEADER PIPE (CURRENT SEQUENCE)	GW-91	PREVIOUS PHASE PROPOSED VERTICAL GAS EXTRACTION WELL
	PROPOSED HDPE LATERAL PIPE (CURRENT SEQUENCE)		PREVIOUS PHASE PROPOSED HDPE LATERAL PIPE
	BLIND FLANGE (DIAMETER VARIES)		PREVIOUS PHASE PROPOSED HDPE HEADER PIPE
			PREVIOUS PHASE UPPER TIER HGC (10" SDR-11)

GCCS NOTES

1. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY OMNI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
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3. GRADES INDICATED ON THIS SHEET WITHIN THE LANDFILL ARE TOP OF FINAL COVER SYSTEM GRADES.
4. A 15-FT WIDE BENCH WILL BE PROVIDED ON THE SIDE SLOPE OF THE LANDFILL EVERY 40 VERTICAL FEET. GAS EXTRACTION WELLS ADJACENT TO THESE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE BENCH AS INDICATED ON SHEET 10.
5. THE BOTTOM LINER SYSTEM IS AT A RELATIVELY HIGHER ELEVATION ADJACENT TO THE INTERCELL BERMS. CONTRACTOR SHALL PROVIDE ADDITIONAL ATTENTION DURING INSTALLATION OF GAS EXTRACTION WELLS ADJACENT TO THE INTERCELL BERMS.
6. A HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER (I.E., AT EACH HPH) AS NOTED ON SHEET 11.
7. A CONDENSATE DRAIN SHALL BE PROVIDED AT EACH LOW POINT ALONG HEADER (I.E., AT EACH LPH).
8. ALL PIPING WITHIN THE LIMITS OF WASTE TO BE INSTALLED WITH A MINIMUM OF 5% SLOPE.
9. PROPOSED GCCS COMPONENTS BASED UPON BULLSEYE DESIGN SERVICES, INC., DWG # 6.
10. THE EXACT LOCATIONS AND NUMBERING OF GCCS FEATURES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS AT THE TIME OF INSTALLATION.
11. EXCESS EXCAVATED WASTE (INCLUDING DRILL CUTTINGS) WILL BE HAULED TO THE ACTIVE WORKING FACE FOR DISPOSAL. SHOULD WASTE BE UTILIZED AS BACKFILL, DAILY COVER WILL BE UTILIZED IN ACCORDANCE WITH PERMIT AND REGULATORY REQUIREMENTS.

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. THE PROPERTY BOUNDARY BASED ON A COMPOSITE BOUNDARY SURVEY PROVIDED BY JOHNSTON SURVEYING INC., KISSIMMEE FLORIDA, DATED AUGUST 12, 1999.
4. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.
5. THE TOPOGRAPHIC INFORMATION PROVIDED DOES NOT NECESSARILY REPRESENT CURRENT CONDITIONS. THE CONTRACTOR SHALL UNDERSTAND CURRENT CONDITIONS BASED ON FIELD RECONNAISSANCE AND/OR ADDITIONAL TOPOGRAPHIC SURVEYS AT THEIR EXPENSE.

100 0 100 200
SCALE FEET

Kevin S. Brown, P.E.
Florida Registration No. 57819

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
PLAN LAYOUT OF GCCS IN PHASE 3 (SEQUENCE 3)

Golder Associates
9428 Baymeadows Way, Suite 400
Jacksonville, Florida 32256
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

PROJECT No.		083-82734.22	FILE No.	08382734G006
DESIGN	DEG	05/18/12	SCALE	AS SHOWN
CADD	BCL	05/18/12		
CHECK	.	.	**SHEET 6**	
REVIEW	.	.		

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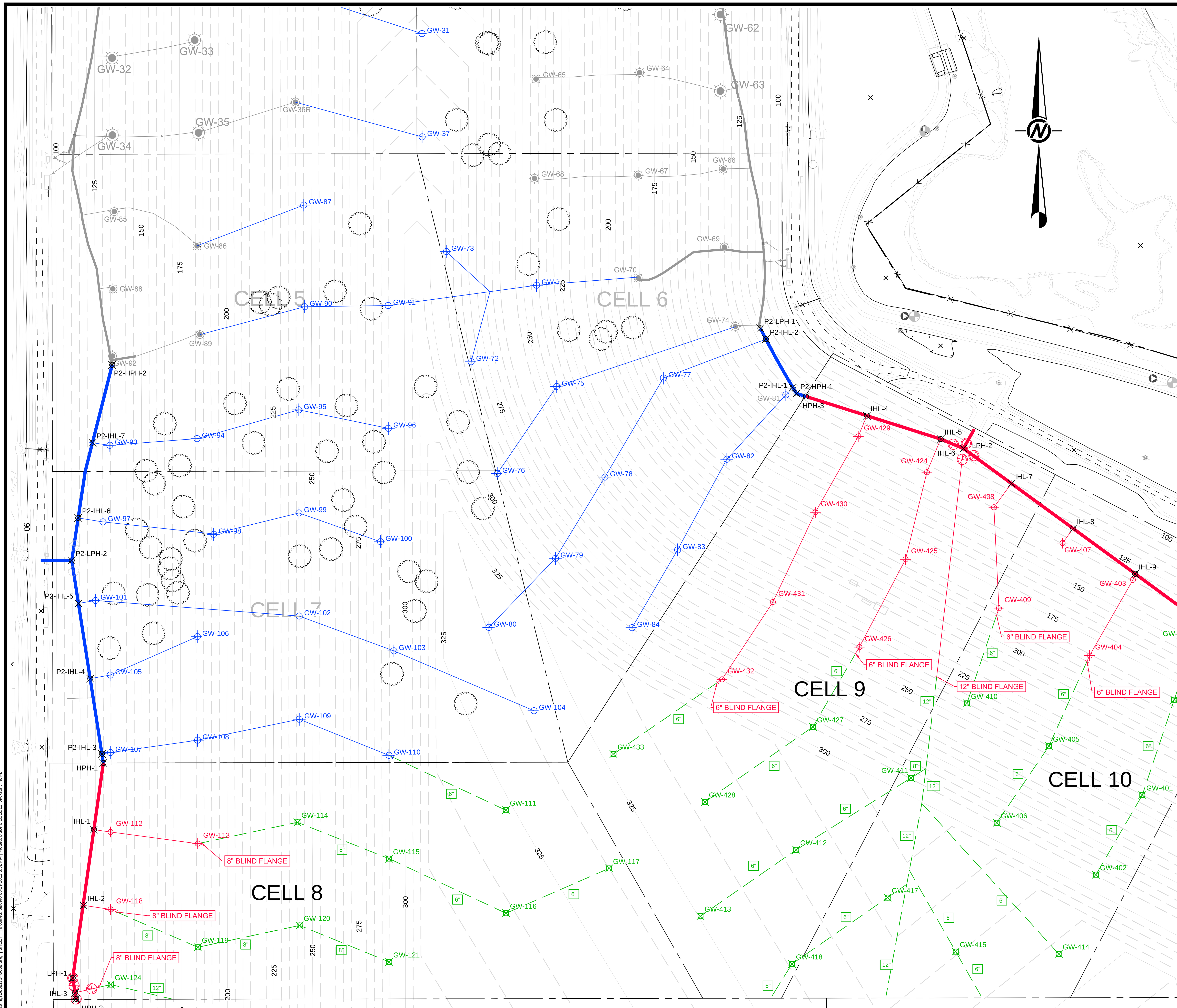

HEADER PIPE CONTROL POINTS

POINTS ALONG HEADER PIPES	NORTHING	EASTING	ELEVATION
HPH-1	1354677.20	624065.35	
HPH-2	1354219.31	624012.58	
HPH-3	1355388.10	625427.37	
HPH-4	1354882.58	626285.31	
IHL-1	1354548.01	624046.99	
IHL-2	1354401.01	624026.97	
IHL-3	1354231.65	624010.60	
IHL-4	1355350.73	625545.51	
IHL-5	1355305.49	625688.54	
IHL-6	1355287.09	625732.72	
IHL-7	1355219.35	625825.54	
IHL-8	1355131.89	625945.36	
IHL-9	1355043.90	626065.33	
IHL-10	1354950.71	626192.38	
LPH-1	1354259.97	624006.06	
LPH-2	1355287.09	625732.72	

PREVIOUS PHASE HEADER PIPE CONTROL POINTS

POINTS ALONG HEADER PIPES	NORTHING	EASTING	ELEVATION
P2-HPH-1	1355393.90	625409.03	
P2-HPH-2	1355449.21	624082.42	
P2-IHL-1	1355405.09	625401.58	
P2-IHL-2	1355499.25	625349.87	
P2-IHL-3	1354694.82	624062.60	
P2-IHL-4	1354840.81	624039.85	
P2-IHL-5	1354986.62	624017.13	
P2-IHL-6	1355152.50	624016.62	
P2-IHL-7	1355298.25	624044.44	
P2-LPH-1	1355520.33	625338.95	
P2-LPH-2	1355069.97	624004.14	

HPH = HIGH POINT ALONG HEADER PIPE
LPH = LOW POINT ALONG HEADER PIPE
IHL = INTERSECTION HEADER PIPE
P2 = PHASE 2

GAS EXTRACTION WELLS

GAS WELL	NORTHING	EASTING	TOP OF FINAL COVER ELEVATION	TOP OF LINER PROTECTIVE LAYER ELEVATION	BOTTOM OF GAS WELL ELEVATION	TOTAL WELL DEPTH	SCREEN LENGTH (SLOTTED PIPE)
GW-111	1354585.70	624845.51	324.3	90.6	105.6	218.6	203.6
GW-112	1354543.42	624079.15	134.5	82.3	97.3	37.3	22.3
GW-113	1354520.60	624248.16	180.8	83.6	98.6	82.3	67.3
GW-114	1354562.06	624441.62	240.4	86.2	101.2	139.2	124.2
GW-115	1354491.65	624619.24	294.5	86.8	101.8	192.8	177.8
GW-116	1354385.70	624845.85	319.2	89.4	104.4	214.8	199.8
GW-117	1354472.67	625045.71	330.0	90.7	105.7	224.3	209.3
GW-118	1354393.24	624079.41	134.5	81.6	96.6	38.0	23.0
GW-119	1354319.75	624248.50	180.8	84.5	99.5	81.3	66.3
GW-120	1354362.06	624445.89	241.7	85.8	100.8	140.9	125.9
GW-121	1354291.24	624619.58	294.5	88.7	103.7	190.8	175.8
GW-124	1354247.31	624079.66	134.5	84.1	99.1	35.4	20.4
GW-399	1354915.72	626180.29	145.6	83.5	98.5	47.1	32.1
GW-400	1354799.88	626141.27	180.9	85.1	100.1	80.8	65.8
GW-401	1354615.03	626079.49	240.0	87.5	102.5	137.5	122.5
GW-402	1354460.54	625989.53	294.5	89.2	104.2	190.4	175.4
GW-403	1355032.32	626061.33	134.5	81.0	96.0	38.6	23.6
GW-404	1354885.60	625977.26	180.8	82.8	97.8	83.1	68.1
GW-405	1354709.71	625898.32	240.0	84.5	99.5	140.5	125.5
GW-406	1354561.10	625797.13	294.5	86.6	101.6	192.9	177.9
GW-407	1355103.69	625924.78	134.5	83.6	98.6	35.9	20.9
GW-408	1355173.17	625791.84	134.5	83.6	98.6	36.0	21.0
GW-409	1354977.46	625801.51	180.9	86.2	101.2	79.7	64.7
GW-410	1354792.74	625739.46	240.0	87.6	102.6	137.4	122.4
GW-411	1354648.04	625630.78	294.5	90.0	105.0	189.6	174.6
GW-412	1354508.74	625408.50	313.6	91.3	106.3	207.3	192.3
GW-413	1354380.03	625222.96	324.8	91.7	106.7	218.1	203.1
GW-414	1354306.83	625917.31	321.1	91.0	106.0	215.2	200.2
GW-415	1354311.26	625717.71	314.7	88.8	103.8	210.9	195.9
GW-417	1354416.09	625585.74	308.4	91.0	106.0	202.4	187.4
GW-418	1354287.39	625400.21	319.7	96.8	111.8	207.9	192.9
GW-424	1355241.16	625661.75	134.5	81.1	96.1	38.4	23.4
GW-425	1355072.12	625620.38	180.8	83.6	98.6	82.2	67.2
GW-426	1354901.82	625530.75	240.0	85.7	100.7	139.3	124.3
GW-427	1354747.27	625440.92	294.5	87.5	102.5	192.0	177.0
GW-428	1354601.51	625231.32	318.7	88.7	103.7	215.1	200.1
GW-429	1355310.64	625528.81	134.5	82.8	97.8	36.8	21.8
GW-430	1355163.50	625445.55	180.8	84.4	99.4	81.4	66.4
GW-431	1354989.37	625363.24	240.0	86.1	101.1	138.9	123.9
GW-432	1354839.37	625264.70	294.5	88.0	103.0	191.5	176.5
GW-433	1354694.52	625054.26	324.0	92.2	107.2	216.8	201.8

PREVIOUS PHASE GAS EXTRACTION WELLS

GAS WELL	NORTHING	EASTING	TOP OF FINAL COVER ELEVATION	TOP OF LINER PROTECTIVE LAYER ELEVATION	BOTTOM OF GAS WELL ELEVATION	TOTAL WELL DEPTH	SCREEN LENGTH (SLOTTED PIPE)
GW-31	1356091.81	624683.01	281.3	100.8	115.8	165.5	150.5
GW-37	1355891.59	624683.36	291.3	101.0	116.0	175.3	160.3
GW-71	1355603.72	624905.14	241.6	84.8	99.8	141.7	126.7
GW-72	1355455.45	624778.32	285.3	103.7	118.7	166.6	151.6
GW-73	1355669.04	624730.24	294.5	101.7	116.7	177.9	162.9
GW-75	1355407.44	624944.22	241.6	87.1	102.1	139.4	124.4
GW-76	1355238.42	624829.07	294.5	104.2	119.2	175.3	160.3
GW-77	1355423.80	625151.00	180.9	83.4	98.4	82.5	67.5
GW-78	1355231.61	625037.69	241.7	85.7	100.7	141.0	126.0
GW-79	1355074.09	624941.79	294.5	87.6	102.6	191.9	176.9
GW-80	1354940.06	624812.75	329.8	88.3	103.3	226.5	211.5
GW-81	1355391.09	625388.23	134.5	85.4	100.4	34.2	19.2
GW-82	1355266.32	625273.96	180.9	86.4	101.4	79.5	64.5
GW-83	1355090.43	625178.54	241.6	88.5	103.5	138.1	123.1
GW-84	1354939.60	625090.30	294.6	90.2	105.2	189.4	174.4
GW-87	1355759.20	624453.91	245.1	87.9	102.9	142.3	127.3
GW-90	1355562.08	624455.51	245.6	90.5	105.5	140.0	125.0
GW-91	1355564.43	624617.41	294.5	92.9	107.9	186.6	171.6
GW-93	1355293.20	624077.87	134.5	88.4	103.4	31.1	16.1
GW-94	1355306.32	624246.82	180.8	90.8	105.8	75.1	60.1
GW-95	1355362.06	624444.19	241.7	93.0	108.0	133.7	118.7
GW-96	1355326.21	624617.82	294.5	96.1	111.1	183.5	168.5
GW-97	1355144.79	624064.55	130.0	83.7	98.7	31.3	16.3
GW-98	1355120.63	624279.13	191.5	85.4	100.4	91.1	76.1
GW-99	1355162.06	624444.53	241.7	87.8	102.8	138.9	123.9
GW-100	1355106.20	624602.56	289.3	88.4	103.4	185.9	170.9
GW-101	1354992.32	624050.17	125.1	80.9	95.9	29.2	14.2
GW-102	1354962.06	624444.87	241.7	84.3	99.3	142.4	127.4
GW-103	1354894.59	624628.54	297.9	87.3	102.3	195.6	180.6
GW-104	1354778.55	624900.09	328.9	92.0	107.0	221.9	206.9
GW-105	1354847.64	624078.63	134.5	82.6	97.6	37.0	22.0
GW-106	1354922.13	624247.48	180.8	83.0	98.0	82.9	67.9
GW-107	1354697.36	624078.89	134.5	85.2	100.2	34.4	19.4
GW-108	1354721.29	624247.82	180.8	86.5	101.5	79.4	64.4
GW-109	1354762.06	624445.21	241.7	87.7	102.7	139.0	124.0
GW-110	1354691.92	624618.90	294.5	91.6	106.6	187.9	172.9

LEGEND

- PROPERTY BOUNDARY
- 250 — FINAL COVER ELEVATION
- GP-18 — EXISTING GAS MONITORING PROBE
- GW-53 — EXISTING VERTICAL GAS EXTRACTION WELL
- EXISTING HDPE HEADER PIPE
- EXISTING HDPE LATERAL PIPE
- APPROXIMATE LIMITS OF ASBESTOS (SEE NOTE 4)
- INTERCELL BERM LOCATION
- GW-409 — PROPOSED VERTICAL GAS EXTRACTION WELL
- GW-413 — FUTURE VERTICAL GAS EXTRACTION WELL
- PROPOSED HDPE HEADER PIPE
- PROPOSED HDPE LATERAL PIPE
- UPPER TIER HGC
- LOWER TIER HGC
- FUTURE HDPE LATERAL PIPE
- 6" — LATERAL PIPE SIZE
- PREVIOUS PHASE PROPOSED VERTICAL GAS EXTRACTION WELL
- GW-91 — PREVIOUS PHASE PROPOSED HDPE LATERAL PIPE
- PREVIOUS PHASE PROPOSED HDPE HEADER PIPE

NOTES

1. NORTHING AND EASTING COORDINATES SHOWN REPRESENT FLORIDA STATE PLANE EAST ZONE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. THE ELEVATIONS SHOWN REPRESENT NATIONAL GEODETIC VERTICAL DATUM OF1929 (NGVD29)(FEET).
3. TOPOGRAPHIC INFORMATION SHOWN ON THIS DRAWING (OUTSIDE OF THE WASTE LIMITS) WAS PROVIDED BY BASE MAPPING CO. LTD BASED ON AN AERIAL PHOTOGRAPH TAKEN ON 18 MAY 2012.
4. APPROXIMATE LIMITS OF ASBESTOS SHOWN WERE BASED ON GRID AND GPS TRACKING BY SITE OPERATIONS. THE LIMITS OF ASBESTOS WERE ASSUMED TO BE WITHIN 20-FT RADIUS OF THE COORDINATES PROVIDED BY WSI. CONTRACTOR SHALL MARK THE INDICATED AREAS IN FIELD TO PREVENT INSTALLATION OF GAS EXTRACTION WELLS IN AREAS WHERE ASBESTOS WAS DISPOSED.
5. PROPOSED GAS EXTRACTION WELLS GW-402, GW-412 TO GW-415, AND GW-417 TO GW-418 WHICH ARE ALL LOCATED WITHIN CELLS 8-10, WILL NOT BE INSTALLED UNTIL CELLS 11, 12, AND CELL 13 HAVE BEEN BUILT-UP ENOUGH TO ALLOW INSTALLATION NEAR FINAL GRADES.

100 0 100 200
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
GAS SYSTEM CONTROL POINTS

Kevin S. Brown, P.E.
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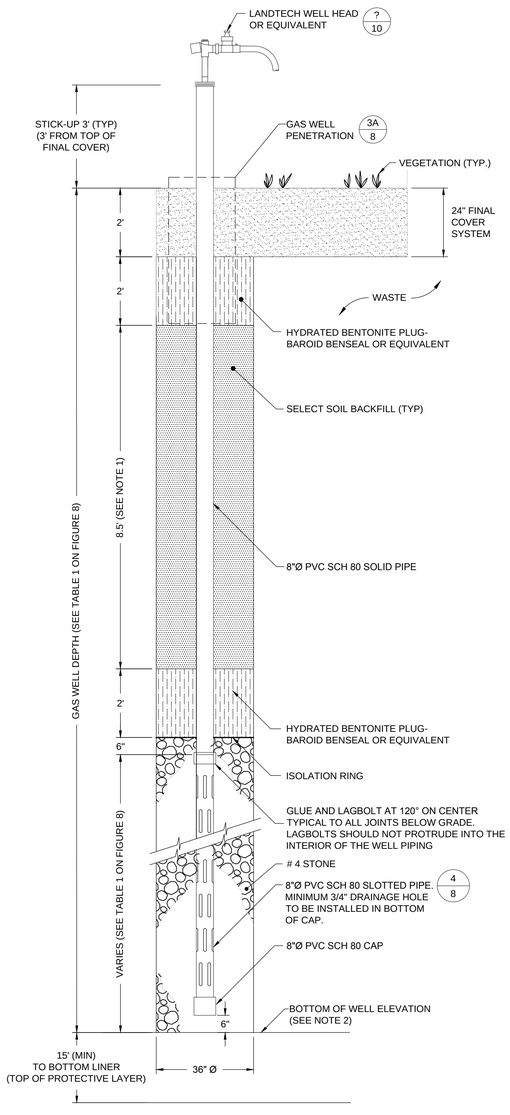
Tel: 904/363-3430 Fax: 904/363-3445
COA No. 1670

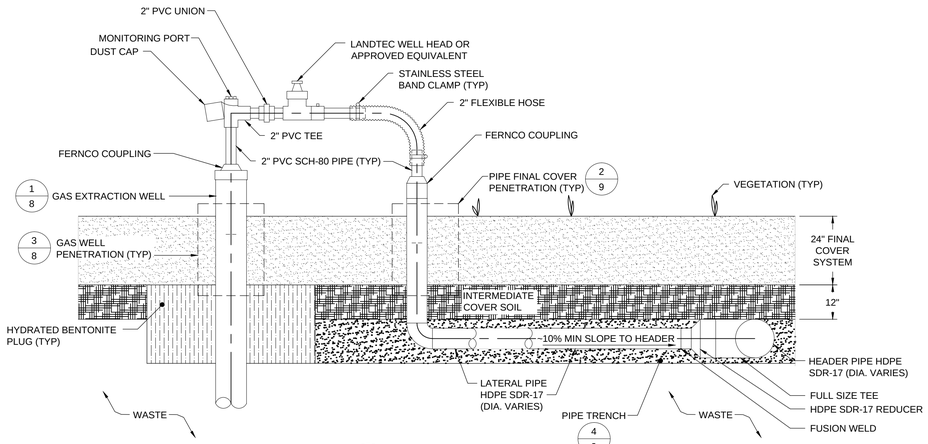
PROJECT No.	083-82734.22		FILE No. 08382734G008
DESIGN	DEG	05/18/12	SCALE AS SHOWN
CADD	BCL	05/18/12	SHEET 7
CHECK	.	.	
REVIEW	.	.	



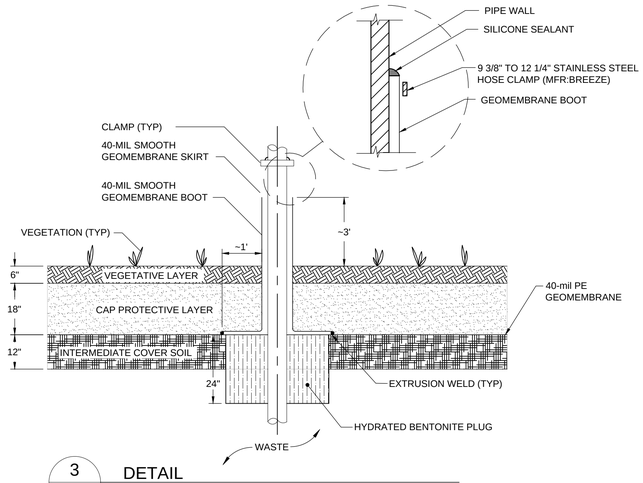
1 8 DETAIL
GAS EXTRACTION WELL
SCALE: N.T.S.
XREF: FL1452.03X021

NOTES:

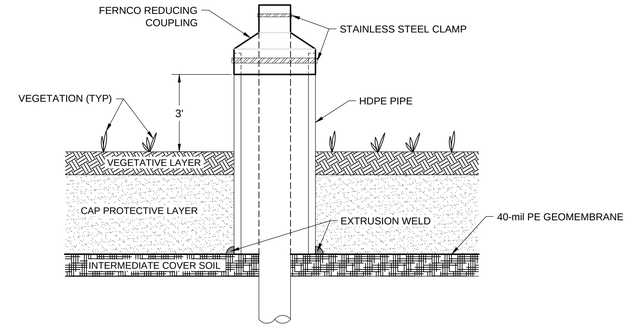
1. THE LENGTH OF SOLID PIPE EXTENDING BELOW THE FINAL COVER GEOMEMBRANE SHALL BE NO LESS THAN 13 FEET.
2. BOTTOM ELEVATION OF ALL GAS EXTRACTION WELLS SHALL BE MINIMUN 15' FROM THE BOTTOM LINER (TOP OF PROTECTIVE COVER LAYER).



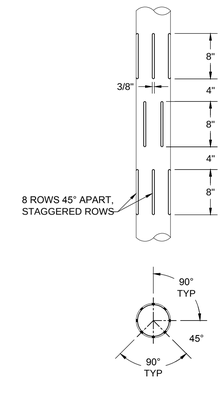
2 8 DETAIL
WELLHEAD TO LATERAL
SCALE: N.T.S.



3 8 DETAIL
GAS WELL FINAL COVER PENETRATION
SCALE: N.T.S.
XREF: FL1832B.01X022



3A 8 DETAIL
GAS WELL/PIPE FINAL COVER PENETRATION (OPTIONAL)
SCALE: N.T.S.



4 8 DETAIL
PIPE SLOTS
SCALE: N.T.S.
XREF: 1452.03X020

NOTES

1. EXACT CONSTRUCTION DETAILS MAY VARY ACCORDING TO FIELD CONDITIONS AND MANUFACTURER SPECIFIC DETAILS WHILE KEEPING THE GENERAL CONCEPTS OF THE DETAILS PRESENTED ON THIS DRAWING.
2. DETAILS 1,2,3, AND 4 BASED UPON PREVIOUS CONSTRUCTION LEVEL DRAWINGS FOR PHASES 1 AND 2 (DATED 04/10 AND 12/10 RESPECTIVELY) PREPARED BY GEOSYNTEC CONSULTANTS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
VERTICAL GAS EXTRACTION WELL DETAILS

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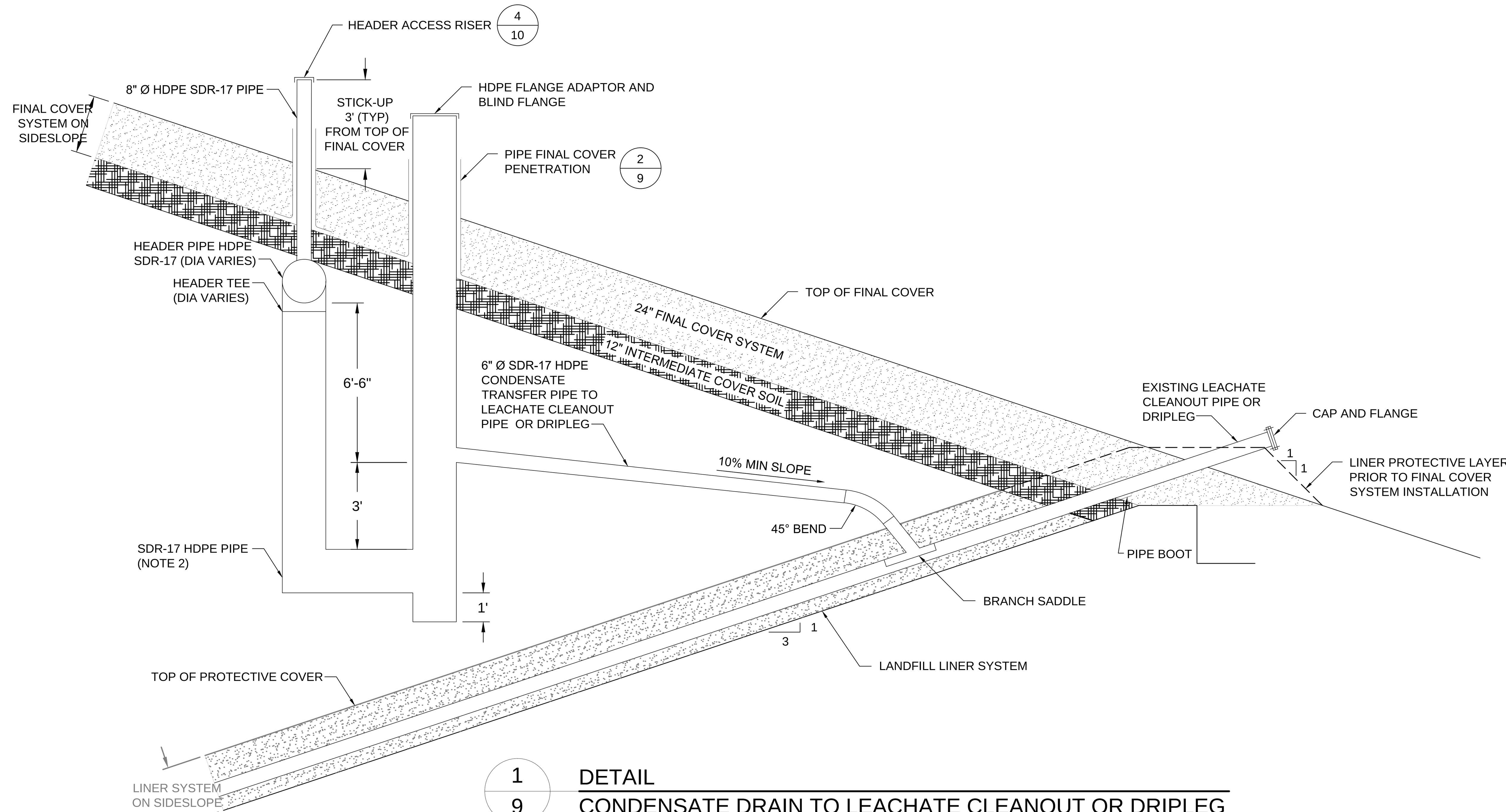
COA No. 1670

PROJECT No.		083-82734.22
DESIGN	DEG	05/18/12
CADD	BCL	05/18/12
CHECK	.	.
REVIEW	.	.

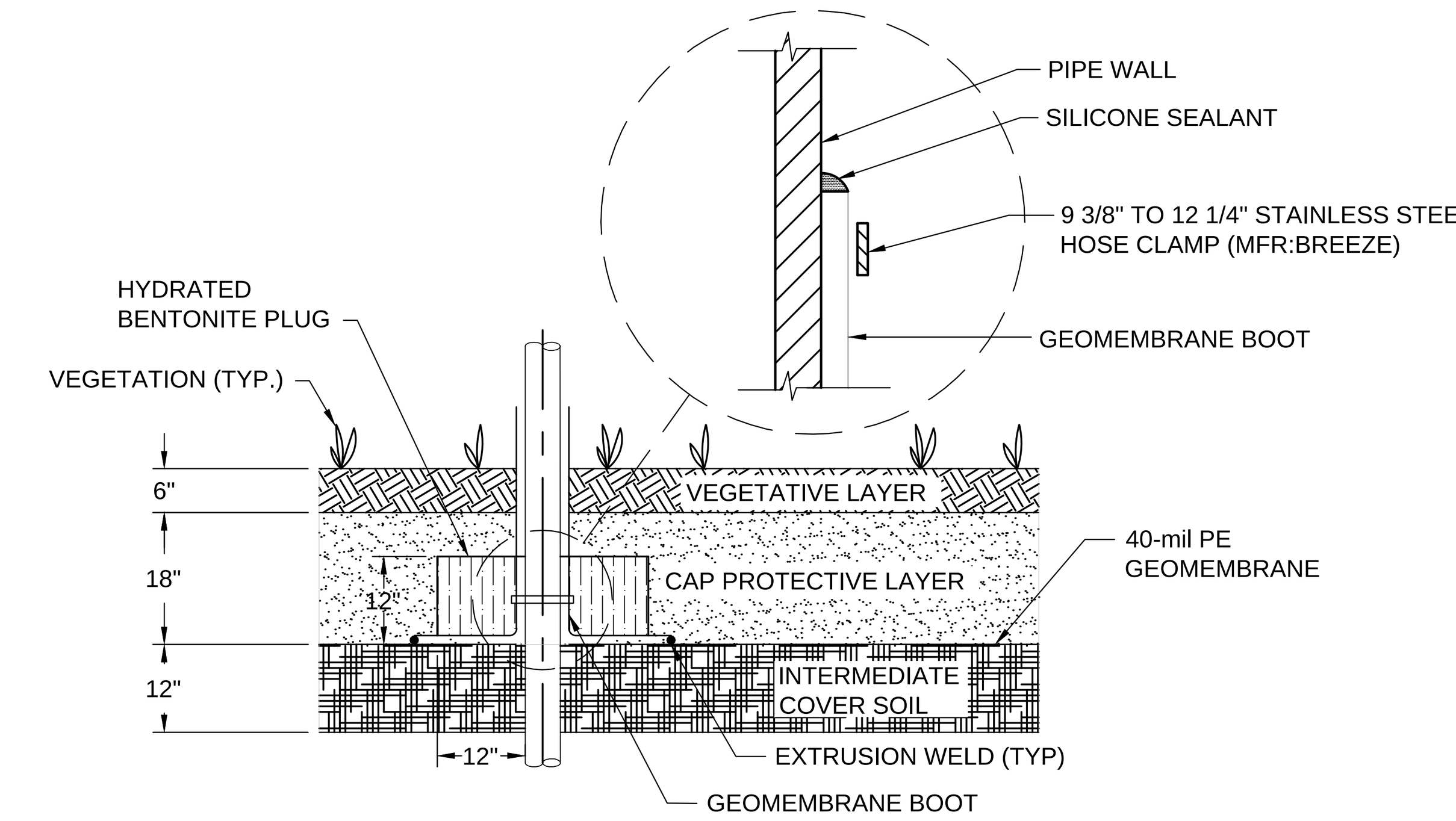
FILE No. 08382734G009
SCALE NOT TO SCALE

SHEET 8

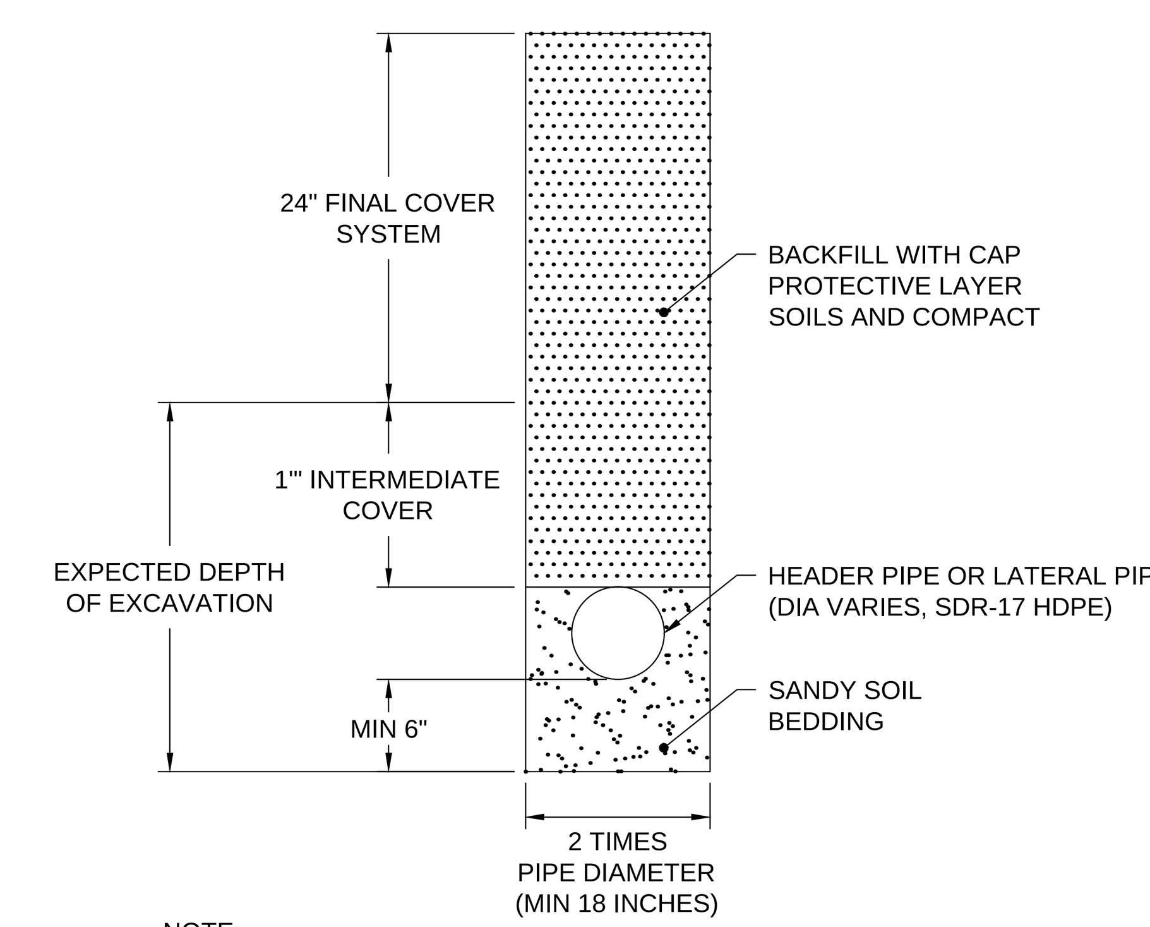


1
9
DETAIL
CONDENSATE DRAIN TO LEACHATE CLEANOUT OR DRIPLEG
SCALE: N.T.S.

NOTE: DRAIN DEPTH MAY VARY BASED UPON FINAL BUILD-OUT CONDITIONS



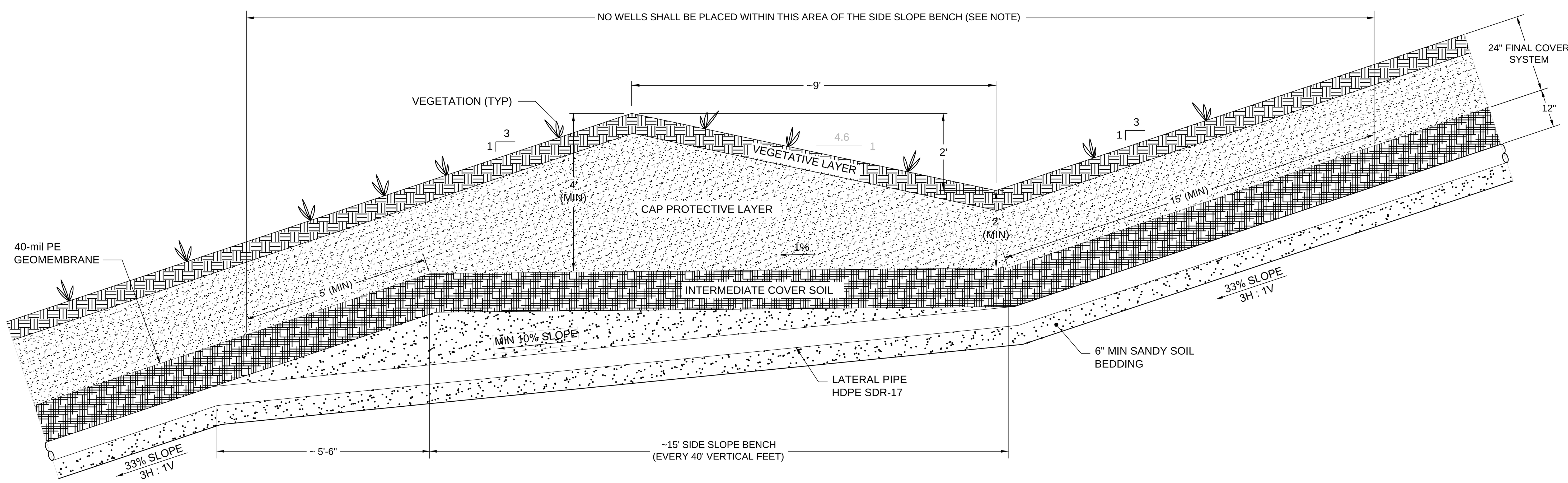
2
9
DETAIL
PIPE FINAL COVER PENETRATION
SCALE: N.T.S.



NOTE:

HEADER AND LATERAL PIPES SHALL TYPICALLY BE INSTALLED 3-FT BELOW THE TOP OF FINAL COVER AS INDICATED. HOWEVER, ALL PIPES SHALL BE INSTALLED AT CONSTANT SLOPE BETWEEN THE END POINTS.

4
9
DETAIL
PIPE TRENCH
SCALE: N.T.S.



NOTE:

GAS EXTRACTION WELLS ADJACENT TO THE SIDE SLOPE BENCHES SHALL BE OFFSET FROM THE EDGE OF THE 15-FT WIDE BENCH AS INDICATED.

3
9
DETAIL
LATERAL PIPE TRENCH AT BENCH CROSSING
SCALE: N.T.S.

NOTES

1. EXACT CONSTRUCTION DETAILS MAY VARY ACCORDING TO FIELD CONDITIONS AND MANUFACTURER SPECIFIC DETAILS WHILE KEEPING THE GENERAL CONCEPTS OF THE DETAILS PRESENTED ON THIS DRAWING.
2. DETAILS 1,2,3, AND 4 BASED UPON PREVIOUS CONSTRUCTION LEVEL DRAWINGS FOR PHASES 1 AND 2 (DATED 04/10 AND 12/10 RESPECTIVELY) PREPARED BY GEOSYNTEC CONSULTANTS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
GCCS DETAILS (1 OF 2)

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COA No. 1670

PROJECT No.		083-82734.22	FILE No.	08382734G010
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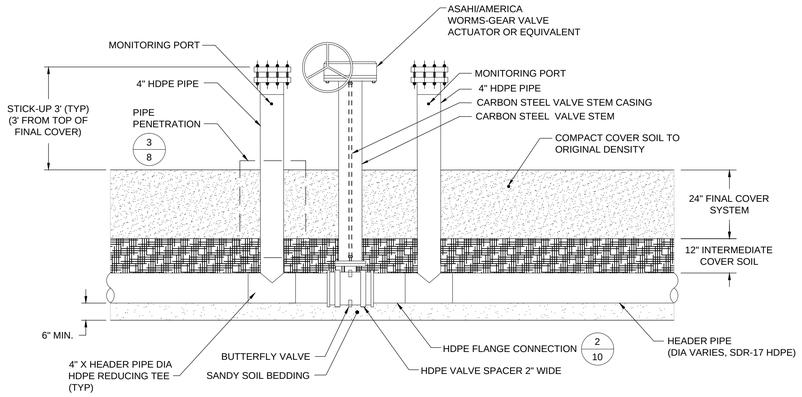
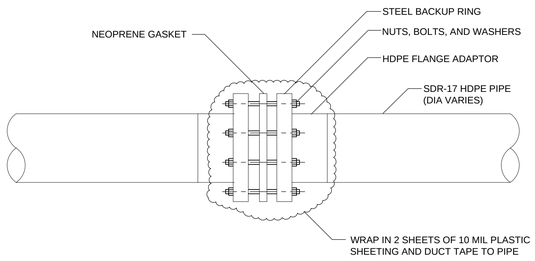
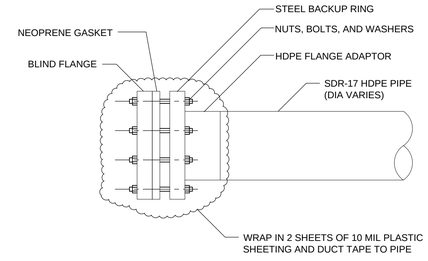
CADD	BCL	05/18/12		
CHECK	.	.	SHEET 9	
REVIEW	.	.		



1/10 DETAIL
ISOLATION VALVE
SCALE: N.T.S.



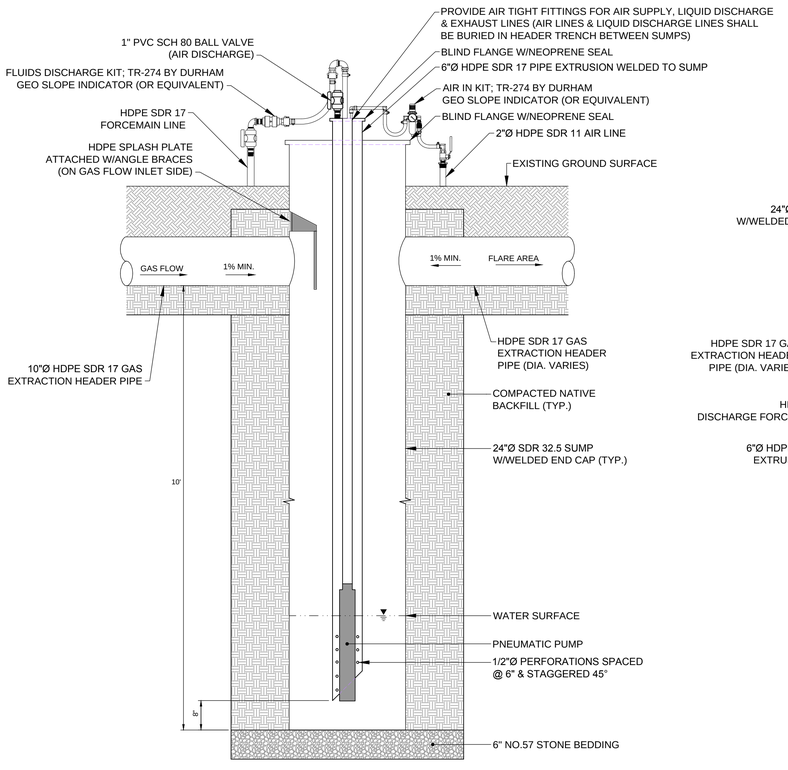
2/10 DETAIL
FLANGE CONNECTION (TYP.)
SCALE: N.T.S.



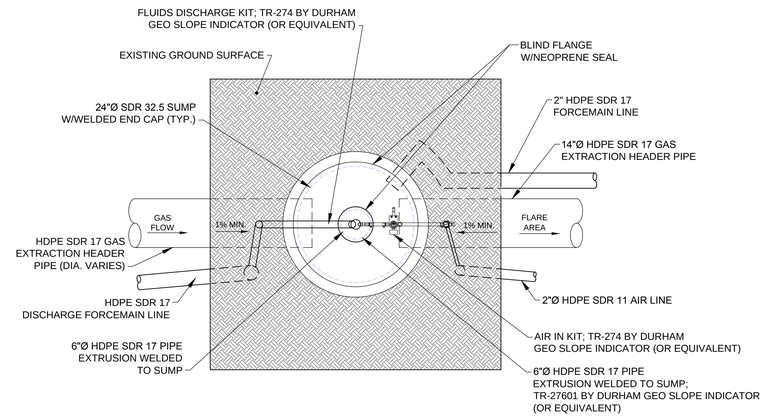
3/10 DETAIL
BLIND FLANGE (TYP)
SCALE: N.T.S.

4/10 DETAIL
HEADER ACCESS RISER
SCALE: NTS

NOTE: HEADER ACCESS RISER SHALL BE PROVIDED AT EACH HIGH POINT ALONG HEADER PIPE



SECTION



PLAN

5/10 DETAIL
CONDENSATE SUMP (OPTIONAL)
SCALE: NTS

NOTES

1. EXACT CONSTRUCTION DETAILS MAY VARY ACCORDING TO FIELD CONDITIONS AND MANUFACTURER SPECIFIC DETAILS WHILE KEEPING THE GENERAL CONCEPTS OF THE DETAILS PRESENTED ON THIS DRAWING.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
GCCS DETAILS (2 OF 2)

Kevin S. Brown, P.E.
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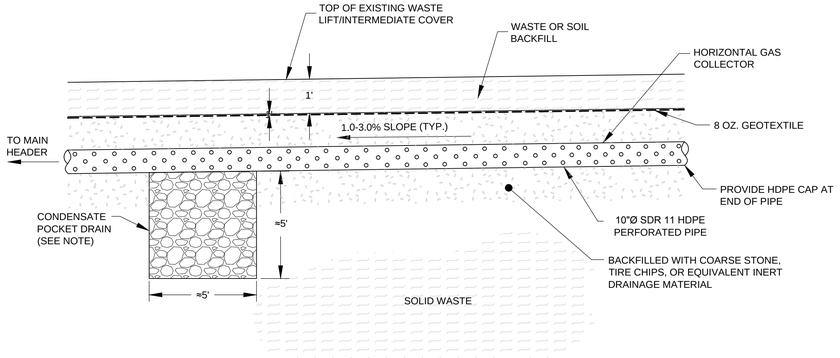
COA No. 1670

PROJECT No.		083-82734.22
DESIGN	DEG	05/18/12
CADD	BCL	05/18/12
CHECK	.	.
REVIEW	.	.

FILE No.	08382734G010
SCALE	NOT TO SCALE

SHEET 10

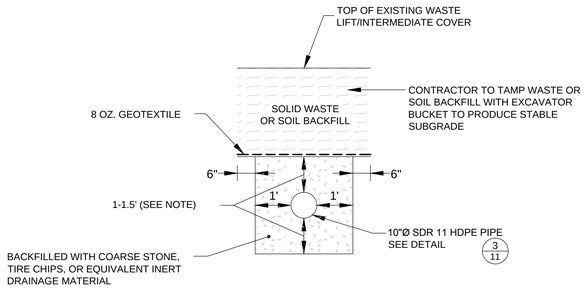


NOTES:
1. CONDENSATE POCKET DRAIN TO BE INSTALLED APPROXIMATELY EVERY 150 LINEAR FEET ALONG HORIZONTAL GAS COLLECTOR. DRAINS TO BE APPROXIMATELY 5'x5'x5' AND BACKFILLED WITH COARSE STONE, TIRE CHIPS, OR EQUIVALENT INERT DRAINAGE MATERIAL.

2. TO ALLOW FOR INCREASED SETTLEMENT AND COMPRESSIBILITY WHEN USING TIRE CHIPS AS BACKFILL MEDIA, INCREASE DEPTHS TO 1.5' ABOVE AND BELOW PIPE. DIMENSIONS OF TRENCH ARE MINIMUM. OWNER MAY INCREASE SIZE OF TRENCH BASED ON MATERIAL USED.

1/11 TYPICAL PROFILE OF HORIZONTAL GAS COLLECTOR

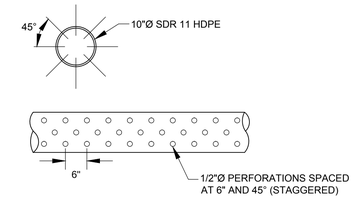
NTS



NOTE: TO ALLOW FOR INCREASED SETTLEMENT AND COMPRESSIBILITY WHEN USING TIRE CHIPS AS BACKFILL MEDIA, INCREASE DEPTHS TO 1.5' ABOVE AND BELOW PIPE. DIMENSIONS OF TRENCH ARE MINIMUM. OWNER MAY INCREASE SIZE OF TRENCH BASED ON MATERIAL USED.

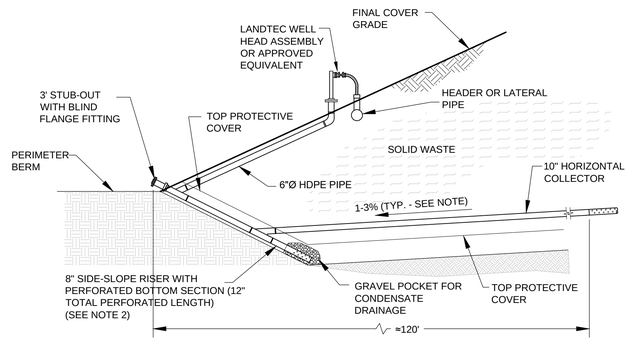
2/11 TYPICAL SECTION OF 10"Ø HDPE HORIZONTAL GAS COLLECTOR

NTS



3/11 HDPE PERFORATED PIPE DETAIL

NTS

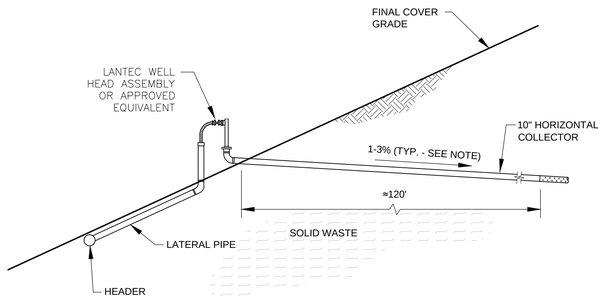


NOTES:
1. SLOPE DIRECTION AND GRADE OF HORIZONTAL GAS COLLECTOR WILL BE BASED ON SLOPE DIRECTION AND GRADE OF FILL OPERATIONS.

2. 8" SIDESLOPE RISER TO BE INSTALLED DIRECTLY ON UNDERLYING BASE OF GEOCOMPOSITE LINER DURING CELL CONSTRUCTION. PLACE ADDITIONAL STRIP OF GEOCOMPOSITE BENEATH PIPE FOR ADDITIONAL CUSHION.

4/11 CONNECTION DETAIL HORIZONTAL GAS COLLECTOR 1ST LEVEL

NTS



NOTE: SLOPE DIRECTION AND GRADE OF HORIZONTAL GAS COLLECTOR WILL BE BASED ON SLOPE DIRECTION AND GRADE OF FILL OPERATIONS.

5/11 CONNECTION DETAIL HORIZONTAL GAS COLLECTOR 2ND LEVEL

NTS

NOTES

1. EXACT CONSTRUCTION DETAILS MAY VARY ACCORDING TO FIELD CONDITIONS AND MANUFACTURER SPECIFIC DETAILS WHILE KEEPING THE GENERAL CONCEPTS OF THE DETAILS PRESENTED ON THIS DRAWING.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1						

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
HORIZONTAL GAS COLLECTOR DETAILS

Kevin S. Brown, P.E.
Florida Registration No. 57819

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9428 Baymeadows Way, Suite 400
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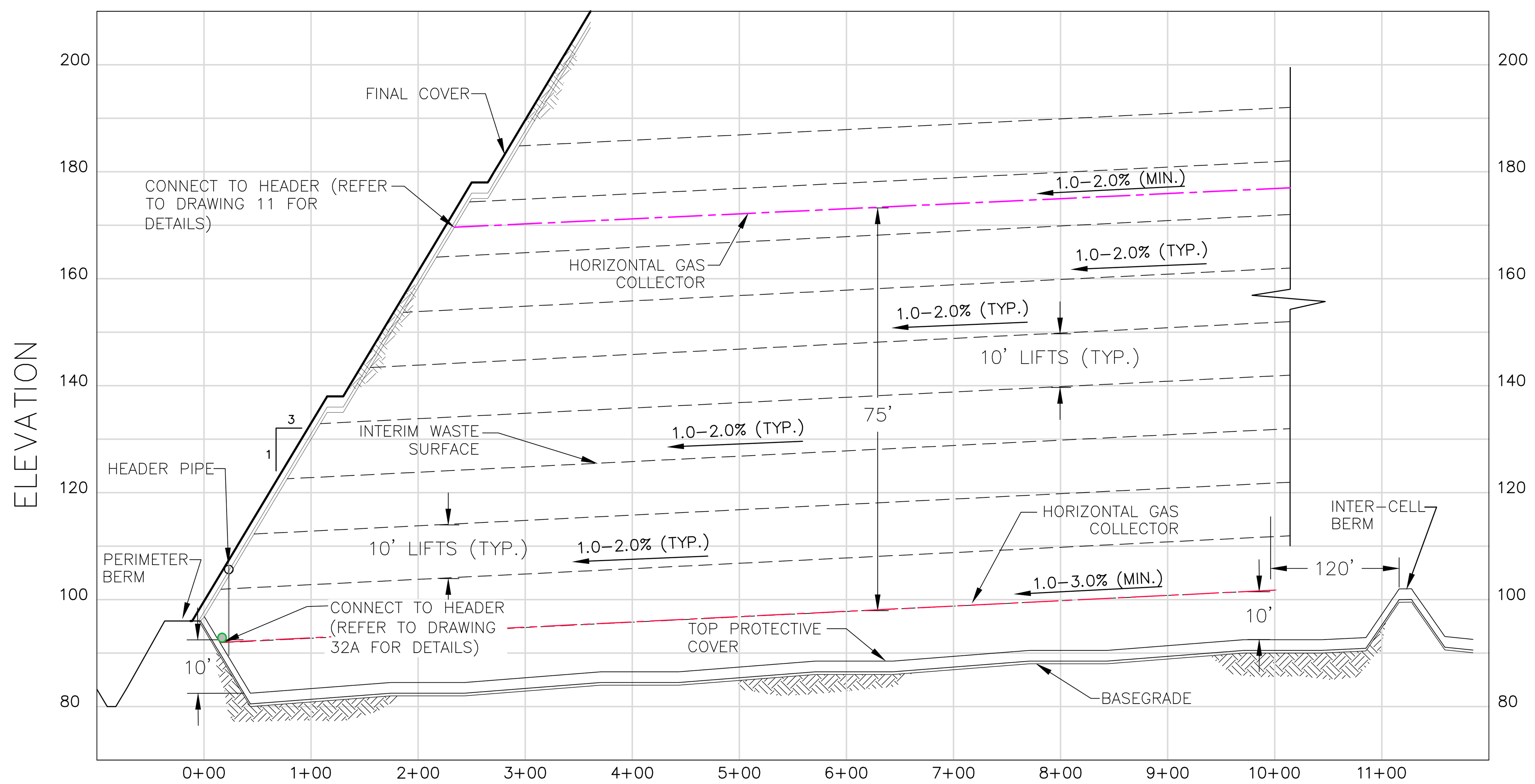
COA No. 1670

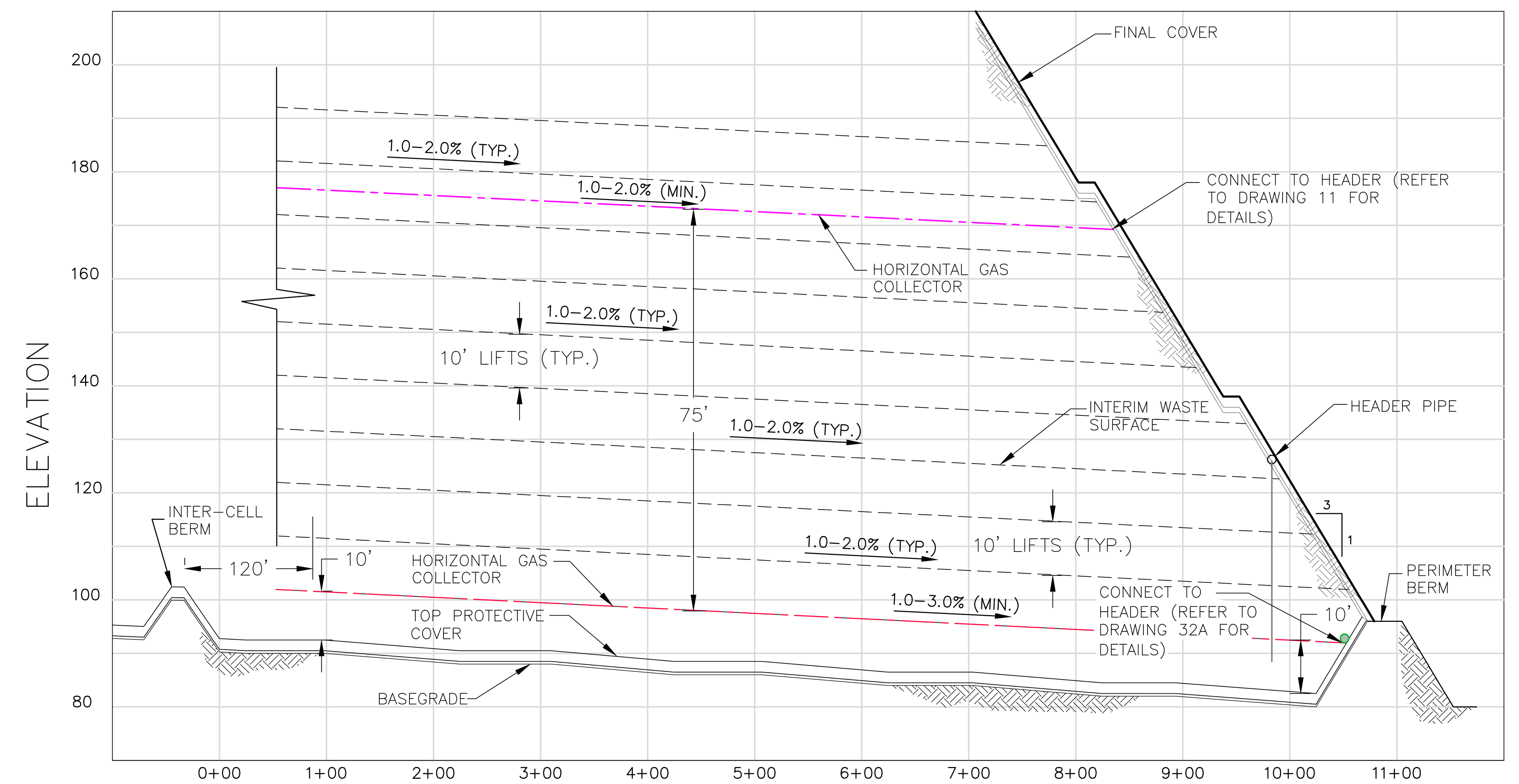
PROJECT No.	083-82734.22		FILE No.	08382734G011
DESIGN	DEG	05/18/12	SCALE	NOT TO SCALE
CADD	BCL	05/18/12		
CHECK	.	.		SHEET 11
REVIEW	.	.		



NOTE: ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.

A / 12 CELLS 7 & 8 TYPICAL CROSS SECTION

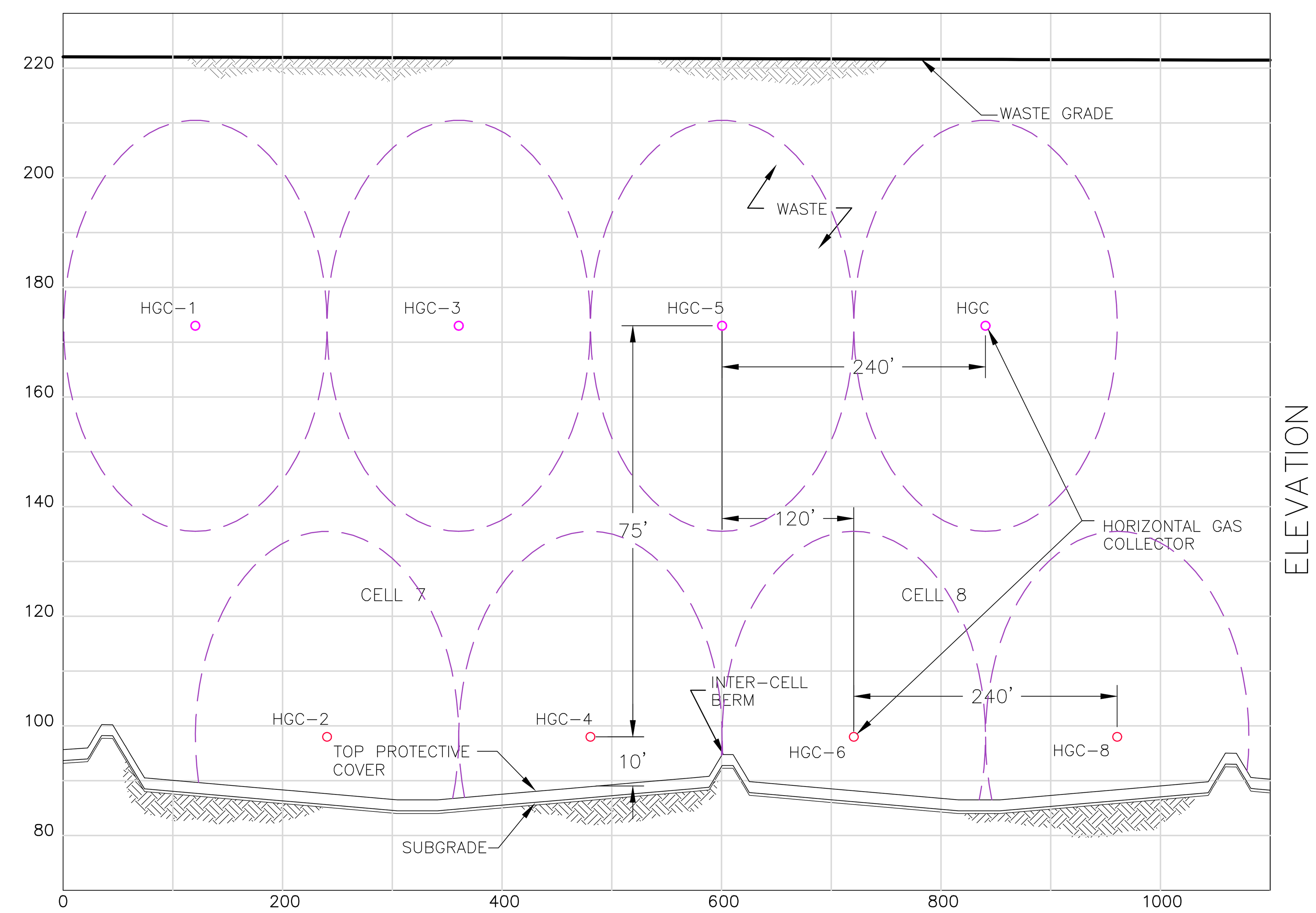
20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTE: ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.

B / 12 CELLS 9 & 10 TYPICAL CROSS SECTION

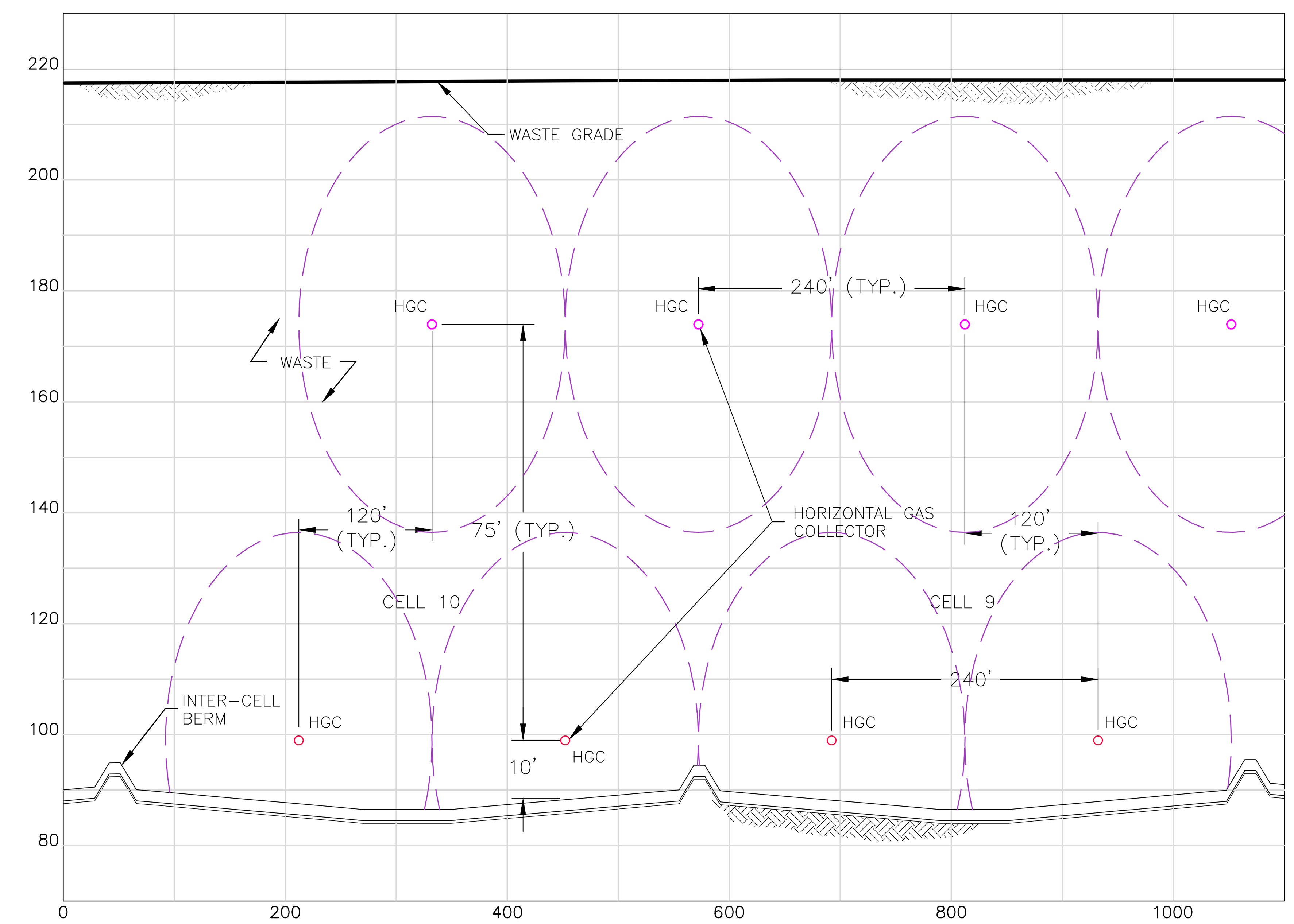
20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTES:
1. ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.
2. NUMBER SEQUENCE OF HORIZONTAL COLLECTORS MAY VARY DEPENDING ON ORDER OF INSTALLATION. NUMBERING WILL BE CONSECUTIVE AS INSTALLATION OCCURS.

C / 12 SECTION THRU CELLS 7 AND 8

20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET



NOTES:
1. ACTUAL SLOPE DIRECTION MAY VARY BASED ON FILL OPERATIONS.
2. NUMBER SEQUENCE OF HORIZONTAL COLLECTORS MAY VARY DEPENDING ON ORDER OF INSTALLATION. NUMBERING WILL BE CONSECUTIVE AS INSTALLATION OCCURS.

D / 12 SECTION THRU CELLS 9 AND 10

20 0 20 VERTICAL SCALE FEET
100 0 100 HORIZONTAL SCALE FEET

PROJECT
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA

TITLE
HORIZONTAL GAS COLLECTOR CROSS SECTIONS

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COA No. 1670

PROJECT No.		083-82734.22	FILE No.	08382734G012
DESIGN	DEG	05/18/12	SCALE	AS SHOWN
CADD	BCL	05/18/12	SHEET 12	
CHECK	.	.		
REVIEW	.	.		

APPENDIX B
TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

SECTION 02221

TRENCHING AND BACKFILLING INSIDE THE LIMITS OF WASTE

PART 1. GENERAL

1.01 SCOPE OF APPLICATION

A. Furnish all labor, material, tools, equipment and incidentals required to perform trench excavation and backfill operations necessary to achieve the specified grades and elevations shown on the Drawings. Review with the Owner's Representative the location, limits, and methods to be used prior to commencing work under this section. Provide support for as-built survey work by installing and removing survey markers.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITALS (RESERVED)

PART 2- PRODUCTS

2.01 PIPE BEDDING

A. Clean sandy soils or equivalent material approved by the Owner's Representative.

2.02 GENERAL FILL

A. Mineral soil, substantially free from organic materials, loam, wood, trash and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of SM, ML, SC, and CL or amendments such as bentonite to facilitate tight compaction as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.03 STOCKPILES

A. All pipe bedding and other material purchased by the Contractor can be stockpiled on site as directed by the Owner's Representative.

B. General fill material soils are available onsite or in a borrow area adjacent to the site. The Contractor shall load and haul this material as directed by the Owner.

PART 3- EXECUTION

3.01 EXCAVATION

A. Trench excavation is anticipated to be through daily or intermediate soil cover and refuse.

B. Safety precautions must be taken during these construction activities that conform to all OSHA regulations, safety requirements of these specifications, and project Health and Safety Plan.

C. Contours of existing ground elevations are approximate and are based on aerial topographic mapping. The contours of the final cover are design future grades and may not represent conditions at the time of construction. The Contractor shall satisfy himself as to the existing contours and elevations at the time of construction.

D. Trenches shall be excavated to the alignments shown on the Drawings. Contractor shall be responsible for reviewing the field stakeouts along proposed trench alignments in the field before starting trenching work. Minimum bottom trench width shall be 2 times the pipe diameter but not less than 18 inches. If more than one pipe is to be installed in a common trench, pipes shall be separated by a horizontal distance of at least 1/4 times the larger pipe diameter.

E. Excavated cover material shall be separated from excavated refuse wherever possible and any cover material free of refuse shall be used as backfill material. Any material not suitable for backfill will be loaded and hauled to the working face by the Contractor for disposal as directed by the Owner.

F. The work area shall be cleared of refuse and litter at the end of each work day. The excavated refuse and collected litter are to be loaded and hauled by the Contractor to the operating portion of the landfill for disposal.

G. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles on the landfill

surface. These stock piles shall either be covered with: (i) temporary plastic covers that are anchored firmly by use of weights to prevent uplift by winds; or (ii) a minimum of 12 in of soil cover. The contractor shall haul and dispose the stored materials as soon as the waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

H. To the extent possible, the trench invert shall slope uniformly in accordance with the Drawings. Minimum trench slope will be 5 percent for all gas collection pipe trenches within waste footprint.

I. The Contractor may not excavate more trench than can be completely backfilled after installation of the pipe. Excavations shall not be left open overnight.

J. All excavation shall be open cut unless otherwise permitted by the Owner's Representative.

3.02 LIQUIDS & WATER

A. Perched pockets of leachate may be encountered during trenching operations. The Contractor shall notify the Owner's Representative immediately if leachate is encountered. The Owner's Representative will furnish revised construction plans which may include backfilling the affected area, realignment of the trench, sump installation, or placement of a gravel French drain (or some combination of these alternatives).

B. The Contractor shall take every precaution to prevent water from entering an open trench. Should water enter the trench the water shall be removed so as to return the trench bottom to a firm, dry condition.

3.03 ROAD CROSSING

A. Schedule all road crossings with Owner's Representative to minimize disruption to waste disposal operations and traffic.

B. Corrugated metal pipe or an equivalent approved by the Owner's Representative shall be used as a casing to protect pipes along the road crossing. The annulus between the pipes and casing shall be filled with cement grout. Owner's Representative may approve construction of road crossing without a sleeve depending on the nature of traffic expected on the road, size and strength of pipe, pipe cover, etc.

3.04 BLASTING

A. Blasting will not be permitted for purposes of excavation.

3.05 BACKFILL

A. Pipe bedding shall be placed and compacted (maximum of 9 inch lifts) using hand compaction tools, as required. The depth of bedding shall be a minimum of 6 inches below and above the pipe. This bedding material shall provide continuous support for the pipe and be well-compacted and free of rocks and other debris.

B. Next, the trench shall, be backfilled with general fill, placed and compacted in 8-12 inch layers using mechanical compaction equipment. The compaction of this material shall conform to the surrounding material and to the satisfaction of the Owner's Representative. During common fill placement all roots, debris and stones larger than 4 inches in largest dimension shall be completely removed from the backfill material.

3.06 FINISH GRADING

A. All areas covered by the work, including excavated and filled sections, shall be uniformly back-bladed to the finished ground elevations. The finish surface shall be reasonably smooth and free of irregularities and shall provide a presentable and well-drained area.

B. Excess backfill material shall be stockpiled onsite as directed by the Owner's Representative.

C. The work area shall be cleaned and restored by the Contractor to a condition ready for re-vegetation or final cover construction by the Owner.

3.07 COMPACTION

A. Compaction of backfill material shall be by tracking over the fill material with Contractor's onsite pipeline equipment to be consistent with the surrounding daily or intermediate cover material.

3.08 PROTECTION OF UNDERGROUND PIPING AND UTILITIES

A. The Contractor shall take all necessary precautions to protect underground piping during the course of the construction. The Owner's Representative/Owner shall make available information pertaining to the location and existence of underground piping and utilities. Contractor shall be responsible for field verification of the locations. Contractor shall perform excavation using hand tools close to the anticipated pipe locations.

3.09 FIELD SURVEYING SUPPORT

A. Proposed trench routes shall be marked on the ground using stakes by the surveyor. The Contractor shall review the staked out route and discuss with the Owner's Representative and obtain approval before commencing work.

B. The Contractor shall provide markers to perform as-built survey along the trench location to survey the pipe line route and elevations generally at 100 feet intervals and more frequently if the alignment of the route changes. The markers shall be 6-in diameter PVC pipes or equivalent installed to stand vertically while touching the buried pipes. As an alternative, the contractor may choose to leave the top of pipe exposed at similar intervals, to be backfilled with soil following completion of the as-built survey. All marker pipes shall be removed by the Contractor after the as-built survey to be performed by the Owner. The marker pipe locations shall be backfilled with soil by the Contractor.

3.10 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of trenching and backfilling work and approval by the Owner's Representative.

END OF SECTION

SECTION 02222

TRENCHING AND BACKFILL OUTSIDE THE LIMITS OF WASTE

PART 1. GENERAL

1.01 SCOPE OF APPLICATION

A. Furnish all labor, material, tools, equipment and incidentals required to perform trench excavation and backfill operations necessary to achieve the specified grades and elevations shown on the Drawings. Review with the Owner's Representative the location, limits and methods to be used prior to commencing work under this section. Provide support for as-built survey work by installing and removing survey markers.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITALS (RESERVED)

PART 2- PRODUCTS

2.01 PIPE BEDDING

A. Clean sandy soils or equivalent material approved by the Owner's Representative.

2.02 GENERAL FILL

A. Mineral soil, substantially free from organic materials, loam, wood, trash and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of SM, ML, SC, and CL or amendments such as bentonite to facilitate tight compaction as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.03 STOCKPILES

A. All pipe bedding and other material purchased by the Contractor can be stockpiled on site as directed by the Owner's Representative.

B. General fill material soils are available onsite at the designated borrow area. The Contractor shall load and haul this material as directed by the Owner.

PART 3- EXECUTION

3.01 EXCAVATION

A. Trench excavation is anticipated to be in the berms constructed on-site and/or in the native soils.

B. Safety precautions must be taken during these construction activities that conform to all OSHA regulations, safety requirements of these specifications, and project Health and Safety Plan. If refuse is encountered, inform the Owner's Representative immediately.

C. Contours of existing ground elevations are approximate and are based on aerial topographic mapping. The contours and elevations of the present ground are believed to be reasonably correct, and are presented only as an approximation. However, the Contractor shall satisfy himself as to the existing contours and elevations.

D. Trenches shall be excavated to the alignments shown on the Drawings. Contractor shall be responsible for reviewing the field stakeouts along proposed trench alignments in the field before starting trenching work. Minimum bottom trench width shall be 2 times the pipe diameter but not less than 18 inches. If more than one pipe is to be installed in a common trench, pipes shall be separated by a horizontal distance of at least 1/4 times the larger pipe diameter.

E. Excavated material shall be reused as backfill material. Any material not suitable for backfill will be loaded and hauled to the working face by the Contractor for disposal as directed by the Owner.

F. The Contractor may not excavate more trench than can be completely backfilled after installation of the pipe. Excavations shall not be left open overnight.

G. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles near the excavation without obstruction to traffic and other landfill operations. These stock piles shall be covered with temporary plastic covers and anchored firmly by use of weights to prevent uplift by winds. The contractor shall haul and dispose the stored materials as soon as the

waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

H. To the extent possible, the trench invert shall slope uniformly in accordance with the Drawings. Minimum trench slope will be 1 percent for gas pipe trenches. Slight adjustments in the depths and alignments may be necessary to maintain a minimum cover of 2 feet. Decrease in pipe slope is not acceptable. There are no minimum slope requirements for trenches that will not have gas collection pipes installed in them (i.e. no minimum slope requirements for compressed air, condensate forcemain, and leachate forcemain pipe trenches).

I. All excavation shall be open cut or ditch witched unless otherwise permitted by the Owner's Representative.

3.02 LIQUIDS & WATER

A. The Contractor will be responsible for the furnishing, operation, and maintaining of dry excavations, and shall pump out or otherwise remove and dispose of as fast as it may collect, any water, other liquids, which may be found or may accumulate in the excavations, regardless of whether it be water or liquid from groundwater, storm water runoff, or from existing conduits and works. If such water be muddy or carrying settleable solids, it shall be disposed of in a proper manner.

B. There shall be at the work site, at all times during construction, proper and approved machinery of sufficient capacity to meet the maximum requirements for the removal and disposal of water or other liquids, in such manner as not to interfere with the proper laying of pipeline or other work under this or other contract, nor endanger existing structures.

C. The Contractor shall take every precaution to prevent water from entering an open trench. Should water enter the trench the water shall be removed so as to return the trench bottom to a firm, dry condition.

3.03 ROAD CROSSING

A. Schedule all road crossings with Owner's Representative to minimize disruption to waste disposal operations and traffic.

B. Corrugated metal pipe or an equivalent approved by the Owner's Representative shall be used as a casing to protect pipes along the road crossing. The annulus between the pipes and casing shall be filled with cement grout. Owner's Representative may approve construction of road crossing without a sleeve depending on the nature of traffic expected on the road, size and strength of pipe, pipe cover, etc.

3.04 BLASTING

A. Blasting will not be permitted for purposes of excavation without approval of the Owner's Representative and obtaining all relevant permits.

3.05 BACKFILL

A. Pipe bedding shall be placed and compacted (maximum of 9 inch lifts) using hand compaction tools, as required. The depth of bedding shall be a minimum of 6 inches below and above the pipe. This bedding material shall provide continuous support for the pipe and be well-compacted and free of rocks and other debris.

B. Next, the trench shall be backfilled with general fill, placed and compacted in 8-12 inch layers using mechanical compaction equipment. The compaction of this material shall conform to Part 3, Section 3.07 of this specification. During common fill placement all roots, debris and stones larger than 4 inches in largest dimension shall be completely removed from the backfill material.

C. Remove excessively wet soil before placement or additional lifts.

3.06 FINISH GRADING

A. All areas covered by the work, including excavated and filled sections, shall be uniformly back-bladed to the finished ground elevations. The finish surface shall be reasonably smooth and free of irregularities and shall provide a presentable and well-drained area.

B. Excess backfill material shall be stockpiled onsite as directed by the Owner's Representative.

C. The work area shall be cleaned and restored to a condition ready for revegetation by the Owner.

3.07 COMPACTION

A. Compaction of backfill material within the waste footprint shall be accomplished by tracking with construction equipment (e.g. bulldozer) to match the grades of the surrounding cover material.

B. For compaction of backfill outside the waste boundary, backfill shall be compacted to at least 95 percent of the maximum standard Proctor dry unit weight at a moisture content generally within ±3 percent of the optimum moisture content as determined by ASTM D 698, or as directed by the Owner's Representative.

C. After completion of the work, or when so ordered by the Owner's Representative, the material remaining in stockpile areas and not needed for other works, shall be rough graded to the grades and elevations directed by the Owner's Representative.

3.08 PROTECTION OF UNDERGROUND PIPING AND UTILITIES

A. The Contractor shall take all necessary precautions to protect underground piping during the course of the construction. The Owner's Representative/Owner shall make available information pertaining to the location and existence of underground piping and utilities. Contractor shall be responsible for field verification of the locations. Contractor shall perform excavation using hand tools close to the anticipated pipe locations.

3.09 FIELD SURVEYING SUPPORT

A. Proposed trench routes shall be marked on the ground using stakes by the surveyor. The Contractor shall review the staked out route and discuss with the Owner's Representative and obtain approval before commencing work.

B. The Contractor shall provide markers to perform as-built survey along the trench location to survey the pipe line route and elevations generally at 100 feet intervals and more frequently if the alignment of the route changes. The markers shall be 2-in diameter PVC pipes or equivalent installed to stand vertically while touching the buried pipes. All marker pipes shall be removed by the Contractor after the as-built survey to be performed by the Owner. The marker pipe locations shall be backfilled with bentonite by the Contractor.

3.10 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of trenching and backfilling work and approval by the Owner's Representative.

END OF SECTION

SECTION 02610

LANDFILL GAS WELL

PART 1 - GENERAL

1.01 SCOPE OF APPLICATION

A. Supply all equipment, materials, and labor needed to install landfill gas (LFG) extraction wells, wellheads, well hoses, and connections to lateral gas collection pipes as specified herein and as indicated on the Drawings.

1.02 REFERENCES

A. ASTM D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure).

1.03 SUBMITTALS

A. Submit to the Owner's Representative Certificates of Compliance on materials furnished, and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of pipe and appurtenances furnished.

B. The Contractor shall submit to the Owner's Representative samples of all well backfill materials furnished.

C. The Contractor shall keep detailed well logs and construction diagrams for all wells drilled, including the total depth of the well, the static water level, the temperature of spoils, depth, thickness, and description of soil or waste strata, (including dates from any readable material), and the occurrence of any water bearing zones. Well logs shall be submitted to the Owner's Representative.

D. The Contractor shall obtain the ground surface elevation and location survey data from the Owner after the as-built survey and include them on the well construction logs.

1.04 SITE CONDITIONS

A. Obstructions and saturated conditions such as sludge, and foundry sands are sometimes encountered when drilling in a landfill, many of which can be drilled through. Contractor is expected to make reasonable effort to drill through obstructions and saturated conditions and will be paid for offset re-drilling and boring abandonment only if approval is given by the Owner's Representative. Contractor will be paid for abandonment of abandoned hole and for well installation at new location. Wells shall not be relocated under any circumstances without the permission of the Owner's Representative.

PART 2- PRODUCTS

2.01 AGGREGATE

A. The aggregate shall be classified as GP in accordance with the Unified Soil Classification System (per ASTM D 2487), and shall meet the AASHTO M43 gradation requirements for No. 57 coarse aggregate. Sieve analysis for this coarse aggregate shall be performed in accordance with ASTM C 136. The gradation for #57 coarse aggregate, by AASHTO standards, is as follows:

- 100% passing a 1.5 inch sieve;
- 95-100% passing a 1 inch sieve;
- 25-60% passing a ½ inch sieve;
- 0-10% passing the #4 sieve; and
- 0-5% passing the #8 sieve.

B. The aggregate shall have less than 2 percent by weight passing the No. 200 sieve when tested in accordance with ASTM C 136.

C. The aggregate shall be tested for carbonate content by means of ASTM D 3042 – "Standard Test Method for Insoluble Residue in Carbonate Aggregates" with the following revision to the method: the aggregate shall have less than 5 percent loss of weight when tested at a pH of 4 instead of the pH specified in ASTM D 3042.

2.02 BENTONITE SLURRY MIX

A. Coarse-ground, granualized bentonite from an approved source is to be mixed thoroughly with potable water at a ratio of 5 gallons of water to every 50 lbs. of bentonite.

B. "Soil/bentonite plug," if used, shall refer to a mixture consisting of four parts soil backfill to one part bentonite.

2.03 GENERAL FILL

A. Mineral soil that is substantially free from organic materials, loam, wood, trash, and other objectionable materials that may be compressible or that cannot be properly compacted. Common fill shall not contain stones larger than 4 in. in the largest diameter, broken concrete, masonry rubble, or other similar materials. Natural soils visually classified as SP-SM, SW-SM, SM, ML, SP-SC, SW-SC, SC, and CL or as mixtures of these soil types in Unified Soil Classification System (USCS) are acceptable soil types. Soils classifying as SW and SP can be used if they are mixed with adequate quantities of bentonite to facilitate construction of low permeability backfill around the wells as approved by the Owner's Representative.

B. The soil shall be visually inspected and approved by the Owner's Representative before use. Contractor shall notify the Owner's Representative of any changes in the soil borrow source and submit new soil samples for inspection and approval.

2.04 FILTER FABRIC

A. 8 oz/yd^2 Non-woven Geotextile donut shaped filter fabric isolation ring with a 36-in diameter and 8-in opening.

2.05 SOLID WALL PIPE

A. All pipe and fittings shall be rigid PVC Schedule 80. Refer to Section 15061 for PVC pipe.

2.06 SLOTTED PIPE

A. Slots in PVC extraction well piping shall be 8 inch long by 3/8 inch wide, spaced 90° around the circumference of pipe and 4 inch along the length of the pipe. Contractor shall present other configuration types to the Owner's Representative for approval. Slotting may be done in the factory, or in the field. If slotting is performed in the field, the slotting must be completed per the specs and approved by the Owner's Representative on site.

2.07 WELLHEAD

A. All wellheads shall be 2-in LandTec Accu-Flo wellheads or equivalent approved by the Owner's Representative and consistent with the Drawings.

2.08 WELLHOSE

A. All well hoses shall be standard 2-in LandTec well hoses or equivalent approved by the Owner's Representative and consistent with the Drawings.

PART 3- EXECUTION

3.01 DRILLING

A. Extraction wells shall be drilled at the locations marked on the field by the Owner's Representative. Contractor shall verify all field markings with the Owner's Representative before starting drilling work. Wells shall not be relocated under any circumstances without the permission of the Owner's Representative.

B. Extraction wells are to be 36 inch diameter, drilled to the depth shown on the Drawings. Contractor must use dry drilling equipment; wet rotary drilling equipment may not be used. All borings shall be made with bucket type augers.

C. The boring depths shall be evaluated based on the information presented on the Drawings. The boring depths may be adjusted in the field by the Owner's Representative. Three reasons limiting depth might be as follows:

1. If water is encountered in a boring, the Contractor may be directed to drill beyond the point at which it was encountered. If wet conditions remain, the boring may be terminated and the length of perforated pipe adjusted by the Owner's Representative, or the well may be relocated. If wet conditions cease (e.g. due to trapped water layer), then drilling will continue to the design depth.

2. If a no-progress obstruction is encountered, the Contractor shall make a conscious effort to drill through the obstruction. If drilling through is not possible, the Contractor shall immediately contact the Owner's Representative and as directed by the Owner's Representative install a shorter well or relocate the well and abandon the drill hole. If the drill rates drop below 2 linear feet of drilling per hour due to the presence of any obstructions, the Contractor shall immediately contact the Owner's Representative/Owner to inform them of the situation. If the Owner's Representative/Owner asks the Contractor to continue drilling through the obstruction, the Contractor can charge the Owner at the hourly drilling rate provided in the bid form until the drilling rate increases above 2 linear feet of drilling per hour or the Owner's Representative/Owner instructs the Contractor to stop the drilling.

3. If for any reason the Contractor suspects that drilling may have advanced to or beyond the liner system. The Contractor shall immediately notify the Owner and the Owner's Representative in this case.

E. As soon as drilling is completed, a safety screen shall be placed over the top of the bore. This screen shall stay in place until backfilling is within 4 feet of the surface. Safety screen size should be large enough to accommodate all backfill materials and any tools used during backfill yet not large enough for any human to accidentally fall through.

F. The bore for the well shall be both vertical and straight and the well pipe shall be installed in the center of the bore hole. The Contractor will take all tension off of the pipe by mechanical means and center the pipe in the middle of the borehole before starting to backfill. Contractor shall use clamping devices, or other method approved by Owner's Representative, to aid in centering of the pipe. Wells that are leaning more than 5 degrees from the vertical shall be replaced by the Contractor at his own expense.

G. PVC well pipe shall be solvent cemented and lag bolted.

H. Contractor shall leave a minimum 5 feet stickup of the solid well casing above the existing landfill grades (daily or intermediate cover) at the well location.

I. Contractor shall remove all working platforms constructed for the drill rig after the installation of the well. Hauling, construction, removal and other work tasks related to well installation shall be carried out with minimal disturbance to the vegetation on the landfill.

3.02 BACKFILLING

A. Backfilling of the well shall commence immediately after well drilling is completed and the well piping has been installed in the borehole. Backfill materials shall be installed as indicated on the Drawings and as approved by the Owner's Representative.

B. Gravel pack shall be poured or scooped through the screen at a rate that will not endanger the integrity of the well casing. Care shall be taken during backfilling to prevent bridging.

C. The filter fabric shall be installed after the gravel backfill reached the level shown on the Drawings.

D. The well seal will be formed by evenly distributing two 50 lb. bags of bentonite material around the annulus of the well and then adding 10 gallons of fresh water in a manner that will allow for a thorough saturation of the bentonite material. This process will be continued until a minimum plug thickness of 2 feet has been achieved. Alternatively, well seal can be formed by mixing bentonite with water in a surface mixer and then pouring the slurry down hole.

E. Soil backfill shall be rodded in the boring to provide even distribution and compaction. Finished grade at the well location shall prevent any water accumulation near the well location by promoting drainage away from the well.

F. All material layer thicknesses shall be verified by taking measurements before, during, and after installation of each layer.

3.03 WELLHEAD AND HOSE INSTALLATION

A. Wellheads and hoses shall be installed per the manufacturer specifications.

B. Wellhead and hose installations shall provide the flexibility to make adjustments to accommodate differential settlements. Installation shall be at 1 feet above minimum wellhead adjustment.

C. Well hose connection shall be about 4 feet length and shall be fitted in a manner that prevents the accumulation of condensate.

D. The well pipe and lateral pipe vertical extension shall be spaced at 2 feet ± 6 inches. The lateral pipe vertical extension shall be sticking up about 4 feet from the existing grades (daily or intermediate cover) of the landfill. This would result in the well casing pipe being 1 feet above the lateral pipe vertical extension.

3.04 DISPOSAL

A. Excavated refuse is to be loaded and hauled by the Contractor to the operating portion of the landfill for disposal as directed by the Owner.

B. If waste disposal operations at the working face are not going on at a particular day or time, the Contractor shall store the excavated materials in stockpiles on the landfill surface. These stock piles shall either be covered with: (i) temporary plastic covers that are anchored firmly by use of weights to prevent uplift by winds; or (ii) a minimum of 12 in of soil cover. The contractor shall haul and dispose the stored materials as soon as the waste disposal operations at the working face commence. The Contractor shall also clean the storage location of all excavated materials.

3.05 INITIAL DEWATERING

A. The Contractor shall dewater the wells after the installation if needed. The Contractor shall provide all materials required to dewater and shall also dispose of the pumped liquid as directed by the Owner/Owner's Representative.

3.06 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A. Field quality control shall be the responsibility of the Contractor. Field quality assurance shall be the responsibility of the Owner's Representative.

B. Visual soil classification and approval of soil by the Owner's Representative.

C. Field inspection of all construction materials and approval by the Owner's Representative.

D. Field inspection of well installation work and approval by the Owner's Representative.

E. All wells shall be inspected by the Owner's Representative after setting the well casing in the borehole and backfilling with gravel, but before placement of bentonite, unless as directed otherwise by the Owner's Representative on a case by case basis. The Contractor shall inform the Owner's Representative before backfilling with bentonite for each well.

END OF SECTION

SECTION 15051
HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART I GENERAL

1.01 SCOPE OF APPLICATION

A. Supply and installation of SDR 17 High Density Polyethylene (HDPE) single contained gas collection pipe and fittings in nominal pipe sizes of 2, 4, 6, 8, 12, 14, 18, 20, and 26 inches.

B. Supply and installation of SDR 17 High Density Polyethylene (HDPE) single contained condensate gravity drain or transfer pipe and fittings in nominal pipe size of 4 and 6 inches.

1.02 REFERENCES (Reserved)

1.03 SUBMITTALS

A. The Contractor shall submit all manufacturer quality assurance certificates to the Owner's Representative and obtain approval before using the materials in construction.

B. The Contractor shall submit all field pressure testing results to the Owner's Representative for approval.

1.04 MANUFACTURER'S QUALITY ASSURANCE

A. The pipe and fittings manufacturer shall have an established quality assurance program responsible for inspecting incoming and outgoing materials.

B. The pipe and fittings manufacturer shall have an established quality assurance program responsible for assuring the long term performance of materials and products.

C. The pipe and fitting manufacturer shall maintain permanent QC and QA records.

1.05 PACKAGING DELIVERY AND HANDLING

A. The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, a receiving inspection shall be performed by the Contractor, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed,

and tested in accordance with manufacturer's recommendations, and the requirements of this specification.

PART 2- PRODUCTS

2.01 PHYSICAL PROPERTIES:

A. Materials used for the manufacture of polyethylene pipe and fittings shall meet all industry standards.

B. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.

2.02 PIPE AND FITTINGS:

A. DIMENSIONS:

1. Pipe Dimensions: The nominal inside diameter of the pipe shall be true to the specified pipe size in accordance with ASTM D 2513. Standard laying lengths shall be 40 feet ±2". Exceptions may be made for 2 inch diameter pipes in coils if suitable strengthening devices are used.

2. Fitting Dimensions: Fittings such as coupling, flanges, wyes, tees, adaptors, etc. for use in laying pipe shall have standard dimensions that conform to ASTM.

B. Where possible, pipe and fittings should be produced by the same manufacturer from identical materials meeting the requirements of this specification. Special or custom fittings may be exempted from this requirement.

C. Pipe and fittings shall be pressure rated to meet the service pressure requirements specified by the Owner's Representative. Whether molded or fabricated, fittings shall be fully pressure rated to at least the same service pressure rating as the pipe to which joining is intended.

D. Marking:

A. Each standard and random length of pipe and fitting in compliance with this standard shall be clearly marked with the following information:

1. ASTM Standard Designation

2. Pipe Size

3. Class & Profile Number

4. Production Code

5. Standard Dimension Ratio

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Field quality control is the responsibility of the Contractor. The Owner's Representative shall inspect and approve the Contractor's field quality control measures.

B. Pipe shall be rejected for failure to conform to Specifications or the following:

1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 in. in length at either end of pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5% of shipment or delivery.

2. Cracks sufficient to impair strength, durability or serviceability of pipe.

3. Defects indicating improper proportioning, mixing, and molding.

4. Damaged ends, where such damage prevents making satisfactory joint.

C. Acceptance of fittings, stubs or other specifically fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to these Specifications.

3.02 INSTALLATION

A. Trench, backfill, and compact in accordance with Sections 02221 and 02222.

B. Heat Fusion of Pipe:

1. Weld in accordance with manufacturer's recommendation for butt fusion methods. Provide at least one fusion operator certified by the pipe manufacturer and with prior field experience in at least 3 projects to manage the fusing operations for the project.

2. Butt fusion equipment for joining procedures shall be capable of meeting conditions recommended by pipe manufacturer including, but not limited to, temperature requirements, alignment, and fusion pressures.

3. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.

4. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.

5. Do not subject pipe to strains that will overstress or buckle piping or impose excessive stress on joints.

6. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures. Branch saddle fusion equipment shall be of size to facilitate saddle fusion within trench.

7. Before butt fusing pipe, inspect each length for presence of dirt, sand, mud, shavings, and other debris or animals. Remove debris from pipe.

8. Cover at end of each working day open ends of fused pipe. Cap to prevent entry by animals or debris.

9. Use compatible fusion techniques when polyethylenes of different melt indexes are fused together. Refer to manufacturer's specifications for compatible fusion.

C. Flange Jointing:

1. Use on flanged pipe connection sections.

2. Connect slip-on carbon steel backup flanges with stainless steel nuts and bolts.

3. Butt fuse fabricated flange adapters to pipe.

4. Observe following precautions in connection of flange joints.

a. Align flanges or flange valve connections to provide tight seal. Require nitrile-butadiene gaskets if needed to achieve seal. Gaskets are required for flange/valve connections.

b. Place U.S. Standard round washers as may be required on some flanges in accordance with manufacturer's recommendations. Bolts shall be lubricated in accordance with manufacturers recommendations.

c. Tighten flange bolts in sequence and accordance with manufacturer's recommendations. Do not over-torque bolts.

5. Pull bolt down by degrees to uniform torque in accordance with manufacturer's recommendation.

6. Protect below grade bolts and flanges by covering with a polyethylene wrap. Duct tape warp to HDPE pipe.

7. Electrofusion couplers, where used, installed per manufacturer's specifications.

D. Pipe Placement:

1. Grade control equipment shall be of type to accurately maintain design grades and slopes during installation of pipe.

2. Dewatering: Remove standing water in trench before pipe installation.

3. Unless otherwise specifically stated, install pipe in accordance with manufacturer's recommendations.

4. Maximum lengths of fused pipe to be handled as one section shall be placed according to manufacturer's recommendations as to pipe size, pipe SDR, and topography so as not to cause excessive gouging or surface abrasion; but not to exceed 500 ft.

5. Cap pipe sections longer than single joining (usually 40 ft.) on both ends during placement except during fusing operations.

6. Notify Owner's Representative prior to installing pipe into trench and allow time for Owner's Representative's inspection. Correct irregularities found during inspection.

7. Complete tie-ins within trench whenever possible to prevent overstressed connections.

8. Allow pipe sufficient time to adjust to trench temperature prior to testing, segment tie-ins or backfilling activity.

9. Install reducers adjacent to laterals and tees.

10. To reduce branch saddle stress, install saddles at slope equal to and continuous with lateral piping.

11. Place in trench by allowing minimum 12 inch/100 ft for thermal contraction and expansion.

12. Coordinate construction of pipes near access roads with OWNER to limit impediment of landfill operations or operations of other Contractors.

3.03 PIPE TESTING

A. Air Test all pipe sections and fittings after placement in trench, in accordance with manufacturer's recommendations. Wells and other system openings should be blocked off for testing. Pressure test below ground systems (only). Special precautions are required for this type of testing. It is not recommended that above ground systems be pressure tested.

B. Keep all persons at a safe distance during pressure testing.

C. Disconnect the test section from all GCCS components that are not being tested. Failure of a section should result in compressed air being released to atmosphere.

D. Completely backfill extraction pipes before pressure testing to provide adequate restraint.

E. Heat fusion joints most be properly cooled before pressure testing. Mechanical connections should be installed and tightened per manufacturer instructions.

F. Repair work should be carried out only after release of pressure. Release pressure gradually.

3.04 VALVES

A. Valves shall be provided at the locations specified on the Drawings.

B. Valves shall be provided in accordance with the details provided on the project construction drawings. All valves shall meet the industry standard requirements.

C. Valves shall include monitoring ports at either side in accordance with the details provided by the Owner's Representative.

END OF SECTION

SECTION 15061

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF APPLICATION

A. Supply 8 inch diameter polyvinyl chloride (PVC) Schedule 80 pipe and fittings for well casings. Both solid and slotted pipes are required to be provided.

1.02 REFERENCES

A. ASTM D-2855: Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and fittings

B. ASTM D-402: Standard Practice for Safe Handling of Solvent Cements Primers, and Cleaners used for Joining Thermoplastic Pipe and Fittings

1.03 SUBMITTALS

A. The Contractor shall submit all manufacturer quality assurance certificates to the Owner's Representative and obtain approval before using the materials in construction.

PART 2 PRODUCTS

2.01 PIPE & FITTINGS

A. Materials used for the manufacture of polyethylene pipe and fittings shall meet all industry standards.

B. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.

2.02 SLOTTED PIPE

A. Refer to Section 02610 for Gas Well slotting requirements.

PART 3 EXECUTION

3.01 PVC PIPE HANDLING

A. PVC pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into the extraction well borings. Pipe and pipe fittings shall not be dropped or dumped.

3.02 PVC PIPE INSTALLATION

A. PVC pipe installation shall conform to these specifications and manufacturer's recommendations.

3.03 JOINING OF PVC PIPES

A. Joining of pipes shall be in accordance with ASTM D-2855.

B. All pipe shall be inspected for cuts, scratches, or other damages prior to installation. Pipe with imperfections shall not be used.

C. All burrs, chips, etc., shall be removed from pipe interior and exterior.

D. All loose dirt and moisture shall be wiped from the interior and exterior of the pipe end and the interior of the fitting.

E. All pipe cuts shall be square, perpendicular to the center line of pipe.

F. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement does not get wiped off during insertion into the fitting socket.

G. A coating of CPS primer as recommended by pipe supplier shall be applied to the entire interior surface of the fitting socket, and to an equivalent area on the exterior of the pipe prior to applying solvent cement.

H. The solvent cement shall be applied in strict accordance with manufacturer's specifications.

I. Pipe shall not be primed or solvent welded when it is raining or when atmospheric temperature is below 40°F or above 90°F when under direct exposure to the sun. This requirement may be waived by the Owner's Representative for extraction well pipe joining vertically by utilizing lag screws as specified in Section 02610.

J. After solvent welding, the pipe shall remain undisturbed until cement has thoroughly set. As a guideline for joint settling time, use 1 hour for ambient temperatures 60-100°F, or 2 hours when ambient temperature is 40-60°F. This requirement may be waived for extraction well piping utilizing lag screws as specified in Section 02610.

K. Pipe and pipe fittings shall be selected so that there will be as small a deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting will be rejected.

END OF SECTION

SECTION 11315

CONDENSATE MANAGEMENT SYSTEM

PART 1 GENERAL

1.01 SCOPE OF APPLICATION

A. This section covers the minimum requirements for the supply, installation, and startup of: (i) six condensate "U tube" drains installed at all low points along the header (i.e., at all LPHs except LPH-3) with gravity drain connections to existing leachate cleanouts; (ii) one 36 inch diameter condensate knockout pot with gravity drain connection to the proposed condensate sump tank; (iii) one condensate "U tube" drain with connections to condensate drains from flare and blower on the pressure side stub and the two knockout pots near the flare station on the vacuum side stub, and a condensate gravity drain connection to the proposed condensate sump tank; and (iv) one 36 inch diameter condensate sump tank with an electrical pump and force main line connection to Cell 1 leachate sump/cleanout.

B. Equipment supplied under this section shall have a proven performance of not less than two years in actual landfill condensate liquid collection and pump service.

1.02 SITE CONDITIONS

A. Condensate liquid from the gas collected from several wells will flow through a section of the gas collection pipe to an engineered low point within the gas piping system. Condensate liquid shall freely drain to a sealed condensate "U tube" drain to be installed at this engineered low point within waste limits. Liquid collected in the condensate "U tube" drain shall gravity drain through a 6 inch diameter pipe to an existing cleanout as shown on the Drawings.

B. A 36-inch diameter condensate knockout pot with gravity drain connection to the proposed condensate sump tank will be installed outside the waste limits as shown on the Drawings to remove condensate before the gas enters the knockout pot (provided by the Manufacturer) located on the flare skid.

C. A condensate "U tube" drain is installed near the flare station to provide separation of drain pipes under positive pressure (flare and blower condensate connections) and vacuum (two knockout pots) before connecting the drain to the proposed condensate sump tank.

D. A 36-inch diameter condensate sump tank with an electrical pump and force main line connection to Cell 1 leachate sump/cleanout is installed to provide adequate storage for condensate in case of pump failure.

1.03 GENERAL PRODUCT DESCRIPTION

A. The condensate “U tube” drain shall be 6 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

B. The condensate knockout pot shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

C. The condensate sump tank shall be 36 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

D. Integral to the condensate sump shall be an automatic electrical pump that meets the requirements set forth in Part 2, Section 2.06 of this specification.

C. The equipment shall be rated for service in harsh and potentially explosive environments.

1.04 CONDENSATE SYSTEM DIMENSIONS

A. The condensate system dimensions shall be as shown on the drawings.

1.05 SUBMITTALS

A. The condensate knockout pot, sump tank, and pump manufacturer’s specifications.

B. A piping and instrumentation diagram showing the workings of the automatic electrical pump system.

1.06 REFERENCES

A. Pipe Material

1. The sump used as part of the condensate liquid sump shall meet the following ASTM specifications:
   HDPE Pipe 03350 standard specifications for polyethylene plastic pipe and fittings materials.

PART 2 PRODUCTS

2.01 CONDENSATE “U TUBE” DRAIN

A. The condensate “U tube” drain shall be 6 inch diameter HDPE SDR 17 with dimensions as shown on the Drawings.

B. The condensate “U tube” drain shall have 6 inch diameter HDPE SDR 17 gravity drain connections to existing leachate cleanouts as shown on the Drawings.

2.02 CONDENSATE KNOCKOUT POT

A. The condensate knockout pot shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings. The knockout pot shall be liquid and gas tight and shall be designed to withstand vacuum of 100 inches of water and pressure of 5 psig.

B. The condensate knockout pot shall have 4 inch diameter HDPE SDR 17 gravity drain connection to the proposed condensate sump tank as shown on the Drawings.

2.03 CONDENSATE SUMP TANK AND "U TUBE"

A. The condensate sump tank shall be 36-inch diameter HDPE SDR 17 with dimensions as shown on the Drawings. A 6-inch HDPE "U tube" connection shall be used to drain liquid into the sump. The sump shall be liquid and gas tight and shall be designed to withstand vacuum of 100 inches of water and pressure of 5 psig.

B. The condensate "U tube" drain shall have connections to condensate drains from flare and blower on the pressure side stub and the two knockout pots near the flare station on the vacuum side stub, and a condensate gravity drain connection to the proposed condensate sump tank. Isolation valves shall be installed on drain lines as shown on the Drawings.

C. The sump shall be designed to have an 8 inch deep solids settling area. Further, the design shall be such that solids will not affect the pump or control system operation.

2.04 EQUIPMENT ENCLOSURE HOUSING (VAULT)

A. All operable components of the condensate pump and control assembly shall be located in a polyethylene vault assembly that is integrally mounted to the top of the condensate liquid sump. The vault shall be able to withstand continuous high temperatures near the flare station.

B. All equipment in the vault shall be arranged to be easily accessible for operation and maintenance.

C. Service connections including the liquid discharge and electrical lines shall be bulkhead mounted on a common wall of the vault.

2.05 PIPING

A. Piping requirements are addressed in HDPE specifications Section 15051.

2.06 LIQUID PUMP

A. The pump installed in the condensate sump shall be an EPG Companies SurePump Vertical Sump Drainer. The specific model selected must use 3-phase

power and be capable of pumping rates of 20 to 30 gallons per minute with 20 feet of head. Equivalent pumps must be approved by the Owner's Representative.

2.07 LEVEL CONTROL AND ALARM

A. An adjustable level control shall be provided for the pump. Peak head levels that determine initiation of pumping shall be decided upon when actual field conditions are known. The upper limit shall not exceed 1 foot below the height of the equalization line or condensate inlet pipe (whichever is lower), as installed on the condensate sump. The lower limit should not exceed the point at which air will be pulled into the pump as installed.

B. An alarm display shall be provided for high level alarm conditions.

2.08 CONNECTIONS

A. All materials used in the high pressure liquid discharge line shall be rated for 100 psig pressure with a safety factor of 3.

B. The pressure equalizing line which runs between the landfill condensate liquid pump system and the top of the LFG header shall be PVC hose, PVC or PE pipe, or other non-corrosive material with 1 inch diameter or larger.

2.09 SEALS

A. A PVC flexible membrane seal shall be used to seal the excavation as part of the backfill operations.

2.10 BACKFILL MATERIAL

A. Soil backfill shall not have any large stones or other foreign materials present and should be suitable for adequate compaction as approved by the Owner's Representative. Care shall be taken that the materials adjacent to the condensate sump are fine graded and that no objects are present that could cause damage to the sump.

PART 3 EXECUTION

3.01 HANDLING AND SETTING THE CONDENSATE SUMP UNIT

A. The condensate sump unit and the knockout pot unit shall be lifted and handled according to written procedures supplied by the manufacturer.

B. The units are to be set within 1/4 percent of vertical.

C. The units shall be set so that it is concentrically located in the prepared hole.

D. The units shall be installed in an area that does not allow accumulation or ponding of water. The vault assembly shall be at least 6 inches higher than surrounding grade unless installed in a water tight vault

3.02 CONDENSATE SUMP AND PUMP CONNECTIONS

A. Prior to making connections, all lines shall be purged of debris and thoroughly cleaned.

C. Condensate liquid discharge: The condensate liquid discharge line shall be connected to the condensate sump using good engineering practices. Materials and installation shall be as indicated on the Drawings.

D. Equalizing line: A pressure equalizing line shall be connected between the condensate sump and the top of the LFG header. The equalizing line shall be free draining to either the landfill gas collection pipe or the sump and shall be free of kinks or other obstructions to liquid or air flow.

3.03 TESTING

A. Check sump storage tank, lines and block valve positions prior to operation.

B. Testing shall include the minimum operations:

1. Pressure test to verify that all connections are tight.
2. Leak test connections prior to setting and backfill.
3. Dry operation of the pump for two minutes.

3.04 ACCEPTANCE

A. Prior to acceptance the following verifications shall be made:

1. Verify units are installed vertically.
2 Verify units have been installed per manufacturer's recommendations.
3. Verify all connections have been: pressure tested per the manufacturer's recommendations.
4. Verify the pipes and connections are clean and free of debris.
5. Verify the level switch displacers are installed at elevations appropriate for the installation. As-built displacer elevations shall be recorded and submitted to the Owner's Representative by the Contractor prior to project acceptance.
6. Verify all required functional testing has been completed.

END OF SECTION

SECTION 11910

LANDFILL GAS FLARE/BLOWER SKID

PART 1 - GENERAL

1.01 SCOPE OF APPLICATION

A. Provide all materials, equipment, and labor needed to install the blower/flare skid assemblies and appurtenances in accordance with the Drawings.

1.02 REFERENCES (RESERVED)

1.03 SUBMITTALS

A. Submit to the Owner's Representative for approval manufacturer's literature, shop drawings, or other information pertaining to the assembly, operation, lubrication, adjustments, and other maintenance and repairs of equipment installed under this Section, together with detailed parts lists, drawings, and/or photographs. The Contractor shall also prepare and submit shop drawings showing the layout, orientation and dimensions of the flare, blower/motor assembly, condensate knockout pot, piping, valves and fittings to be installed. All electrical and mechanical drawings for the flare control system shall be submitted.

B. Submit blower characteristic curves indicating capacity for flow versus pressure head and efficiency as tested at the factory for approval prior to shipment.

C. Submit signage layout drawings.

D. Submit operation and maintenance manual.

E. Submit all applicable warranty documents.

F. Submit additional field services rate information for a year.

PART 2- PRODUCTS

2.01 FLARE

A. A utility flare manufactured by John Zink, LFG Specialties, Perennial Energy, or equivalent approved by the Owner's Representative can be used. The flare shall be designed in accordance with the United States of Environmental Protection Agency (USEPA) established criteria for open flares, 40 CFR 60.18. The flare shall be capable of burning low Btu gas and shall include a burner; automatic pilot ignition; electric igniter; pilot gas automatic valves and pilot gas pressure

regulator; stack; automatic gas safety shut-off valve; high and low pressure switches; control panel; flame arrester; piping and all other necessary appurtenances to have a complete operational system. The flare shall be capable of combusting LFG with the following composition:

1. Btu Content - 300 to 600 Btu/scf

2. LFG Flow Rate – 360 to 3600 scfm

3. Carbon Dioxide - 20 to 45 percent

4. Hydrogen Sulfide - up to 1,500 ppm

5. Moisture Content - saturated

6. LFG Supply Pressure - 1 to 15 in. w.c.

The flare shall have a minimum destruction efficiency of 98%. The emission factors for the flare shall not exceed the following:

1. CO: 0.37 lb/MMbtu or 374 lb/million dscf of methane (using conversion factor of 1012 Btu/scf)

2. NOx: 0.07 lb/MMbtu or 71 lb/million dscf of methane (using conversion factor of 1012 Btu/scf)

B. Stack: The flare stack shall be carbon steel with rust preventive coating, fitted with necessary connections. The portion of the stack exposed to flame and high temperatures shall be stainless steel. The flare shall be designed for 110 mph wind loading.

C. The electrical connections shall be 480 volts, 60 Hz, and 3 phase.

2.02 FLAME ARRESTER

A. Supply a flame arrester compatible with the required LFG flow rates. Flame arrester shall be sized to match the blower discharge pipe or flare inlet pipe, whichever is larger, with 125 lb. rating ANSI flanged connections. The housing construction shall be cast aluminum. Maximum head loss through the flame arrester shall not exceed 5 in. w.c. at 3,600 cfm as supplied by Varec, Groth, Protectoseal, or other manufacturer approved by Owner’s Representative.

2.03 PILOT PROPANE (LPG) TANK AND PIPING

A. The propane tank shall be a standard 200 lb tank equipped with fuel gauges. The pressure of the gas shall meet the requirements of the flare pilot system. Mechanical force shall be provided to boost the gas pressure as required.

2.04 CONDENSATE DRAIN PIPES FOR FLARE COMPONENTS

A. The flame arrester, flare stack, and other parts of the system recommended by the flare manufacturer shall be equipped with condensate drain piping. Pipes shall be sized in accordance with the manufacturer's recommendations.

B. Condensate drains on the pressure side of the blower shall include an automatic drip trap as supplied by Varec, Groth, Protectoseal, or other manufacturer approved by the Owner's Representative.

2.05 AUTOMATIC GAS INLET (SHUTOFF) VALVE

A. Supply electrically operated automatic inlet (shutoff) valve at the discharge of the blower. Automatic valve shall also include a mechanism to close upon loss of power.

2.06 CONTROLS

A. The controls shall provide for automatic and manual operation and ignition of the flare unit, and shall include a weatherproof control panel, trouble light contacts, automatic start/stop for pilot ignition, controllers, spark plugs, orifices, ultraviolet (UV) scanners, thermocouplers, timers, and all other necessary components for a complete operational, automatic system. The controls shall include an automatic dialer with capacity to store and dial up to 6 phone numbers in a hierarchical order, with the provision to stop dialing other receivers as soon as the call is acknowledged as accepted by one receiver.

2.07 IGNITION PROCEDURE AND CONTROL SEQUENCE

A. Remote spark ignition of propane gas/air mixture creates pilot flame that ignites LFG main flame.

B. Once pilot is proven, blower turns on and electric gas inlet valve is opened.

C. When main flame is successfully ignited (as detected by an UV scanner), pilot gas is automatically shut off.

D. If pilot is not ignited within the preselected time interval (as set on the timer), pilot gas is shut off and "Pilot Ignition Failure" is signalled with trouble light.

E. If main flame is not ignited within the preselected time interval, pilot gas is shut off and "Flare Ignition Failure" is signaled with trouble light.

F. If main flame is extinguished after successful ignition, pilot is automatically turned on and reignition attempted for a designated time interval. The waiting time before starting reignition procedures after a main flame failure should be programmable by the operator.

G. If the main flame is not successfully reignited in the designated time interval after being extinguished during normal operation or upon initial ignition, the automatic shutoff valve is closed, the blower(s) shut down, and the telephone dialer and alarm is activated to notify the locations stored in memory.

2.08 BLOWER ASSEMBLIES

A. The blower assemblies shall be, variable frequency drive (VFD), multistage centrifugal-type blowers capable of delivering 3,600 cubic feet per minute (cfm) of landfill gas at 55 inches of water column (in-w.c.) total pressure head. Blowers manufactured by Gardener Denver, New York Blower, Aerovent, Hoffman, Hauck or equivalent approved by the Owner's Representative can be used. The assembly shall be factory mounted on the flare steel skid and delivered to the site as a complete unit. A total of two blowers (to be used alternatively with one serving as a backup) shall be supplied and installed.

B. The motor and blower housings shall each be provided with a nameplate which states the manufacturer, model number, serial number, and the pertinent information regarding electrical requirements, size, capacity, etc.

C. Each blower motor shall be 25 HP, or as recommended by the blower manufacturer to be compatible with electrical service of 480-volt, 3-phase, and 60-hertz. The blower motors shall be high efficiency, non-sparking, totally enclosed, fan cooled (TEFC), explosion proof motor.

D. Motor starter shall be equipped with ammeter (meter relay), Hand-Off Automatic switch, red run light, time switch, and hour meter. Combination controller shall incorporate I-T-E Type ETI, or equal, motor circuit protector and full-voltage, non-reversible starter, in NEMA 1 enclosure with acrylic window for viewing indicators.

E. The blowers shall be supplied with a factory applied phenolic coating or other coating to protect all internal parts that will be in contact with landfill gas and to provide resistance to corrosion. Impellers, if constructed of aluminum or stainless steel, shall not require coating.

F. The blower controls shall include a thermal protection package to monitor the blower inlet and outlet bearing temperatures. Sufficient wiring shall be provided by the Contractor to span the distance between the control panel and the blower bearings.

2.09 EXPANSION JOINTS

A. Expansion joints between the blower inlet and outlet and connected piping shall be supplied by the blower manufacturer and shall be manufactured by Lamson or equivalent approved by the Owner's Representative.

2.10 VALVES

A. Butterfly valves located on the inlet of each blower shall be supplied by the blower manufacturer and shall be a Lamson, wafer-type with a lever or equivalent approved by the Owner's Representative.

B. Flanged butterfly valves may require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk. If spacers are necessary for any butterfly valve, the Contractor will install valve spacers subject to approval by the Owner's Representative.

C. Butterfly control valves shall be provided upstream and downstream side of the blower as shown on the Drawings. These valves shall have wheel-type controls.

2.11 CONDENSATE KNOCKOUT POT

A. A 36-in diameter and 72-inch high condensate knockout pot shall be provided with flanged inlet and outlet connectors.

B. The knockout pot shall include a stainless steel demister pad with a 98% filtration efficiency for free liquid and solid particles of 20 micron or larger.

C. The knockout pot shall have an appropriate internal coating to resist acidic condensate. The external finish shall be rust resistant.

D. The knockout pot shall have a removable lid for inspection and repair.

E. The knockout pot shall have a heavy duty gage glass liquid level indicator, a liquid level switch for high condensate level alarm/shutdown, and a 2-in gravity drain connection with a manual valve.

2.12 SIGNAGE

A. Gas direction arrows shall be placed on all piping in the blower pad area. The moisture trap shall be marked "MOISTURE TRAP". Letters and numerals shall be at least 3 inches high. Numerals identifying Blower Nos. 1 and 2 shall be mounted on the blower coupling guard.

B. "Danger - No Smoking" signs shall be prominently displayed on all tour sides of the fenced enclosure. Signs shall be metal or approved equivalent construction with 2" high lettering. The Contractor shall submit signage layout Drawings for the Owner's Representative's approval.

2.13 SPARE PARTS

A. The Contractor shall provide the following spare parts:
   1. 20 ounces of approved grease, or equivalent
   2. One each vacuum and pressure gauge
   3. Parts recommended by the blower manufacturer.

2.14 INTRUMENTATION

A. Provide a pressure gauge on the outlet and a vacuum gauge on the inlet side of each blower. Pressure and vacuum gauges shall be capable of measuring 0 to 20 and 0 to 70 in w.c., respectively, with the smallest measurement unit of at least 1 in. w.c. Gauges shall have at least a 2.5-inch-diameter dial as supplied by the blower manufacturer.

B. Instrumentation for the flare such as thermocouples as specified in Section 2.06 shall be provided.

C. Provide a digital flow meter manufactured by Fluid Components, Thermal Instruments, or equivalent approved by the Owner's Representative. The flow meter shall be capable of measuring 0 to 4,000 scfm landfill gas flow rate, with the smallest measurement unit of at least 1 scfm. The flow meter shall be capable of directly reading the flow rate in standard cubic feet per minute (scfm). The flow meter shall be installed in a straight section of the gas pipe away from installations such as valves and reducers that may cause flow disturbances.

D. Provide a temperature gage capable of measuring from 0 to 200°F with the smallest measurement unit of at least 1°F at the upstream side of the blower.

2.15 DATA RECORDER

A. Provide an electronic data recorder manufactured by Yokogawa or equivalent manufacturer approved by the Owner's Representative capable of recording data from all electronic gages on the flare/blower skid. Flare temperature and gas flow rate are required by regulations to be recorded. Some other gages that should be recorded are vacuum (inlet side of blower), pressure (out let side of blower), landfill gas temperature etc.

2.16 SKID

A. Provide a heavy duty structural steel sub-base with non-skid floor plate welded over all open areas. The skid shall be constructed to withstand all loads and hauling forces. All necessary bracing, mounting pads, and piping supports shall be provided for proper equipment installation and alignment.

B. The skid shall have adequate grounding and lightening protection.

PART 3- EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with the Drawings and Specifications.

B. Install the blower assemblies in compliance with the manufacturer's recommendations, the referenced codes, the Drawings, and as specified below. The flare and controls shall be installed in accordance with manufacturer's recommendations. All necessary support angles and anchor bolts shall be furnished and installed per the flare manufacturer's recommendations. The connection requirements and stack sizes vary from one manufacturer to another. The Contractor shall prepare the installation surfaces only after the flare unit is approved by the Owner's Representative and stack sizes and piping connections are determined.

C. The blower assemblies shall be mounted on neoprene isolation pads provided with the blower. Do not bolt down the blower motor assemblies directly to the skid without isolation pads.

D. The Contractor shall check and, if necessary, adjust the alignment of the motor coupling in accordance with the instructions of the blower manufacturer.

E. Equipment shall be field-tested to verify proper alignment and operation, including: freedom from binding, scraping, vibration, shaft runout, or other defects.

F. Shop-painted items which have damage to the shop coatings shall be touched up to match the basic color of the equipment, as approved by the Owner's Representative.

3.02 STARTUP AND TESTS

A. Furnish all equipment, materials, and labor necessary for testing the operation of the complete system, valves and appurtenances, upon completion of the installation. The blowers shall be tested to assure proper operation and delivery of specified flow rates and vacuums.

B. Adequate startup training shall be provided. Training schedule shall be submitted and approved by the Owner.

END OF SECTION

APPENDIX C
AS-BUILT SURVEY

SEE SHEET 2 FOR PIPE TABLE INFORMATION

CELL 4

CELL 3

CELL 5

CELL 6

CELL 7

CELL 9

CELL 10

CELL 6 SUMP PAD

CELL 9 SUMP PAD

W/L 80.1

LEGEND:

NO.	NUMBER
ELEV.	ELEVATION
x 6516	ASBULT POINT NUMBER
LB	LICENSE BUSINESS

MAGNETIC

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

SURVEYOR's NOTES:

1.) North and coordinate basis is the East Zone of the Florida State Plane Coordinate System. The published values used for this survey are NAD 83 2007 adjustment

2.) Vertical information depicted on this report are GPS derived elevations based on the National Geodetic Vertical Datum of 1929 (NGVD29).

3.) All PVC well casings are 8" diameter schedule 80.

4.) All Lateral and Header piping are HDPE SDR17

5.) All elevations shown are top of pipe unless otherwise noted.

REVISION | DATE | NO.

DEBORAH L. PEAVEY LICENSE NUMBER No. 6345 STATE OF FLORIDA PROFESSIONAL SURVEYOR & MAPPER

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND SEAL OF SURVEYOR

Drawn By: DLP | Party Chief: SP | Field Book: 51 | FILE NAME: WC Hollpaw gps 2017.dwg

Peavey & Associates
SURVEYING & MAPPING PA
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CLIENT:
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Waste Services, Inc.
1501 Omni Way
St. Cloud, Fl 34773

ASBULT SURVEY - GCCS 2017
CELLS 3,4,5,6,9&10 - J.E.D.
SOLID WASTE MANGEMENT FACILITY
1501 OMNI WAY ST. CLOUD, FL

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION NUMBER 6345
FLORIDA BUSINESS NUMBER 7779

3/5/2017
SURVEY DATE

SCALE	DRAWING NO.
1"=60'	343
PROJECT NO.	SHEET
1009	1

POINT NUMBER	NORTHING	EASTING	TOP OF PIPE ELEVATION	DESCRIPTION (Elevations shown represent the top of pipe)
8002	1355649.7	1355649.7	111.6	C6 riser
8003	1355519.6	625121.9	172.8	Electrofusion 6"saddle
8025	1355315.9	624600.8	256.1	GW117 lateral
8026	1355319.3	624602.2	254.9	GW117
8027	1355418.4	624757.0	257.3	GW96
8028	1355421.3	624754.8	258.1	GW96 lateral
8032	1355422.3	624805.6	248.6	8"pipe
8033	1355430.2	624854.9	246.8	8"pipe
8034	1355440.5	624901.8	236.3	8"pipe
8036	1355451.9	624938.2	235.9	GW84 lateral
8037	1355449.3	624939.4	234.0	GW84
8040	1355451.1	624949.3	225.8	8"pipe
8041	1355468.9	624994.2	212.3	8"pipe
8042	1355488.1	625037.5	198.4	8"pipe
8043	1355509.9	625081.5	183.7	8"pipe
8047	1355525.5	625097.2	183.7	GW82
8048	1355521.7	625099.6	185.2	GW82 lateral
8049	1355544.5	625100.8	184.0	18"flange/access riser
8050	1355607.8	625082.6	179.5	12"pipe
8051	1355594.5	625039.5	192.8	12"pipe
8052	1355594.7	624993.3	206.4	12"pipe
8053	1355589.4	624946.8	218.3	12"pipe
8055	1355593.5	624905.4	234.8	GW71R1 lateral
8056	1355589.3	624905.7	233.4	GW71R1
8057	1355589.9	624906.9	227.7	12"tee
8058	1355590.7	624907.1	229.5	2"pipe
8059	1355589.7	624906.6	229.8	2"pipe
8060	1355589.0	624889.6	232.6	12"pipe
8061	1355588.5	624841.4	243.1	12"tee to GW081 lateral
8062	1355589.3	624811.1	244.2	12"pipe
8063	1355588.6	624791.1	245.7	12"pipe
8064	1355588.5	624740.3	248.8	12"pipe
8065	1355584.2	624691.9	251.7	12"pipe - high point
8066	1355582.0	624641.8	249.2	12"pipe
8067	1355582.6	624618.2	248.2	12"x8"tee to GW079
8068	1355580.5	624589.4	248.8	12"pipe
8070	1355743.6	624579.3	259.3	GW116
8071	1355744.7	624578.0	260.1	GW116 lateral
8072	1355742.4	624578.7	255.8	8"tee
8078	1355708.4	624711.0	257.7	GW81
8079	1355705.2	624709.5	259.1	GW81 lateral
8080	1355708.3	624711.1	252.6	12"-90
8081	1355678.6	624751.5	249.8	8"pipe
8082	1355647.2	624789.6	247.3	8"pipe
8083	1355787.8	624884.3	236.2	8"pipe
8084	1355787.1	624902.9	236.1	GW68R2 lateral
8085	1355783.5	624904.9	235.6	GW68R2 lateral
8086	1355783.1	624906.0	230.0	8" tee/riser
8093	1355794.4	624912.3	229.2	8"pipe
8094	1355834.3	624798.4	247.3	8"pipe
8095	1355864.7	624756.5	250.0	8"pipe
8096	1355902.8	624708.9	258.2	GW114 lateral riser
8097	1355899.5	624706.9	258.2	GW114
8098	1355898.5	624706.0	255.1	high point
8101	1355899.2	624706.4	253.1	8"tee
8102	1355916.1	624672.9	251.5	8"pipe
8103	1355961.6	624530.3	242.6	8"pipe
8001	1355958.4	624476.6	237.0	GW115 lateral
8104	1355955.7	624480.1	238.3	GW115
8106	1355720.6	624552.6	251.6	8"-6" reducer & 6"tee, tie-in to GW36R riser
8107	1355688.0	624515.4	244.5	8"pipe
8108	1355650.8	624482.8	232.7	8"pipe
8110	1355654.4	624476.4	230.8	GW90A lateral
8111	1355648.0	624479.8	237.6	GW90A
8112	1355647.6	624480.3	232.2	8"tee
8115	1355606.5	624460.1	225.1	8"pipe
8116	1355569.9	624492.3	235.2	8"pipe
8117	1355574.7	624539.0	243.8	8"pipe
8118	1355337.1	624554.1	246.5	8"pipe
8119	1355356.5	624505.4	235.6	8"pipe
8120	1355362.0	624459.3	223.2	8"pipe electrofusion coupling @ GW095
8121	1355245.2	624789.1	242.4	GW111
8122	1355242.7	624789.4	244.2	GW111 lateral
8124	1355245.2	624789.9	239.9	8"-90
8125	1355248.7	624838.7	237.7	8"pipe
8126	1355256.1	624888.9	234.5	8"pipe
8127	1355269.3	624938.2	232.1	8"pipe
8128	1355286.3	624996.4	237.7	GW91 lateral
8129	1355290.7	624995.6	236.2	GW91
8130	1355290.6	624995.7	228.7	8"tee
8131	1355300.5	625032.3	221.5	8"pipe
8132	1355310.2	625079.8	208.8	8"pipe
8133	1355317.5	625126.6	195.7	8"pipe
8134	1355321.5	625164.7	191.2	GW83R1 lateral
8135	1355326.3	625165.4	182.9	GW83R1
8136	1355325.9	625165.5	184.2	8"tee
8138	1355526.4	625098.1	178.0	8"tee
8139	1355533.5	625105.7	175.1	8"pipe
8140	1355596.5	625113.8	170.3	18"pipe
8141	1355615.6	625118.8	169.6	18"pipe
8142	1355617.2	625119.3	170.3	18"valve
8143	1355620.4	625120.2	169.3	18"tee
8144	1355623.7	625121.2	170.0	18"valve
8145	1355625.2	625121.5	169.1	18"pipe
8146	1355621.3	625117.4	170.0	18"x12"reducer
8147	1355621.8	625115.3	170.2	12"pipe
8148	1355622.6	625113.0	170.8	12"pipe
8149	1355622.2	625114.1	171.2	12"valve
8150	1355623.6	625108.6	172.0	12" 45bend
8151	1355623.3	625107.8	172.1	12"pipe
8152	1355621.3	625104.7	173.0	12"pipe
8153	1355619.9	625102.3	173.6	12"pipe
8154	1355618.5	625100.1	174.3	12"pipe
8155	1355620.2	625103.0	173.4	12"tee / GW070 riser
8156	1355642.2	625127.6	167.1	18"pipe
8157	1355673.9	625136.2	161.6	18"pipe

POINT NUMBER	NORTHING	EASTING	TOP OF PIPE ELEVATION	DESCRIPTION (Elevations shown represent the top of pipe)
8157	1355673.9	625136.2	161.6	18"pipe
8158	1355684.7	625137.0	169.2	18"tee w/ 8"reducer
8159	1355673.6	625135.7	173.8	18"tee
8160	1355741.4	625146.9	161.8	18"pipe
8161	1355797.7	625154.4	158.8	18"tee
8162	1355798.0	625151.4	158.8	18"x8"tee / reducer
8163	1355798.3	625150.2	159.0	8"pipe
8164	1355808.3	625156.5	157.9	18"x8"tee
8165	1355808.9	625156.6	159.4	GW066 remote wellhead
8166	1355684.9	625137.8	167.0	8"pipe
8167	1355673.0	625136.0	167.1	8"pipe
8169	1355237.8	625800.2	105.3	18"x8"reducer
8170	1355232.7	625804.7	106.2	end 2" & 4" pipe
8171	1355301.5	625682.9	102.5	18"header
8172	1355323.9	625580.3	109.0	18"header
8175	1355331.9	625543.1	117.8	6"saddle
8176	1355335.4	625544.8	118.2	HGC10
8177	1355335.9	625544.8	113.8	6"-90
8178	1355333.7	625524.7	113.6	18"header
8179	1355333.7	625524.8	113.6	8"flange
8180	1355366.5	625437.7	121.1	18"header
8181	1355382.4	625382.7	128.8	18"tee
8182	1355382.3	625382.8	128.7	8"flange / 18"-8"reducer
8183	1355394.6	625347.0	133.3	18"header
8184	1355408.6	625294.6	140.8	18"header
8186	1355456.9	625199.8	158.7	HGC9 lateral
8187	1355455.3	625197.6	159.1	HGC9
8189	1355459.9	625198.5	154.5	8" 90
8190	1355460.1	625198.7	159.8	GW074 lateral
8191	1355457.2	625194.2	159.8	GW74
8192	1355457.4	625194.0	155.1	8"x18"tee
8194	1355674.8	625143.0	172.0	GW69 remote wellhead
8195	1355672.8	625135.0	171.7	GW69
8196	1355681.7	625141.2	171.8	8" Cell 6 Remote Wellhead/ riser
8197	1355684.9	625137.0	171.2	8"tee
8201	1355810.5	625160.5	162.6	GW66 lateral
8202	1355809.0	625156.2	162.7	GW66
8203	1355809.5	625156.0	157.7	18-8"tee
8205	1355983.5	625264.8	135.9	GW63 lateral
8206	1355980.1	625261.3	135.6	GW63
8207	1355980.3	625262.4	131.6	8" 90
8208	1356008.4	625190.8	144.9	8"pipe
8209	1356019.4	625143.7	160.7	8"pipe
8211	1356016.4	625107.7	176.6	GW64 lateral
8212	1356020.1	625108.4	176.0	GW64
8213	1356019.8	625095.4	174.9	8"pipe
8214	1356014.4	625050.2	189.9	8"pipe
8215	1356006.7	625002.0	204.6	8"pipe
8216	1355313.4	625346.4	151.0	8"pipe
8217	1355332.8	625363.1	143.3	8"tee
8219	1355326.2	625373.6	150.5	GW122 lateral
8220	1355329.3	625370.7	149.8	GW122
8221	1355330.6	625371.2	143.9	8"-90
8222	1355204.2	625466.7	158.3	8"pipe
8223	1355245.6	625490.2	144.0	8"pipe
8225	1355294.7	625509.5	135.7	GW125 lateral
8226	1355293.7	625512.3	135.1	GW125
8227	1355293.6	625513.2	128.5	8"tee
8229	1355223.5	625659.0	131.9	GW128 lateral
8230	1355226.5	625655.7	131.5	GW128
8231	1355226.5	625655.2	125.8	8"tee
8232	1355162.5	625637.2	141.4	8"pipe
8233	1355115.5	625627.6	151.6	8"pipe
8234	1355074.9	625620.8	166.2	GW129 lateral
8235	1355076.0	625617.7	165.2	GW129
8236	1355075.5	625617.4	159.5	8"tee
8239	1354978.0	625803.1	165.7	GW132 lateral
8240	1354979.5	625800.1	165.4	GW132
8241	1355042.5	625794.1	148.4	8"pipe
8242	1355118.2	625781.6	134.2	8"pipe
8244	1355157.4	625781.5	135.2	GW131 lateral
8245	1355155.1	625777.4	135.1	GW131
8246	1355156.4	625777.3	127.7	8"tee
8247	1355192.1	625775.7	119.8	8"pipe
8248	1355310.4	625667.0	107.9	cell 9 riser
8249	1355307.2	625664.0	107.4	6"saddle cell riser
8252	1356100.4	624804.0	256.4	GW37 lateral
8253	1356097.3	624801.1	255.1	GW37
8254	1356097.9	624801.7	251.4	8" 90
8255	1356055.1	624837.7	248.7	8"pipe
8256	1356016.7	624870.5	243.4	8"pipe
8258	1355982.1	624902.2	241.5	GW65R2 lateral
8259	1355985.5	624902.5	239.5	GW65R2
8260	1355985.0	624901.9	234.6	8"tee
8262	1355151.0	625039.5	241.2	GW121 lateral
8263	1355153.5	625038.5	236.0	8"-90
8264	1355170.2	625083.3	232.6	8"pipe
8265	1355187.0	625131.2	220.2	8"pipe
8266	1355193.2	625178.7	210.9	8"pipe
8267	1355181.8	625217.9	206.0	8"pipe
8268	1355222.9	625236.2	193.3	8"wye
8270	1355269.4	625273.9	181.8	GW123 lateral
8271	1355266.4	625275.7	182.6	GW123
8272	1355265.6	625275.6	179.0	8"tee
8273	1355135.3	625196.2	220.2	8"pipe
8274	1355032.3	625384.1	213.6	8"pipe
8275	1355073.2	625402.9	201.0	8"pipe
8276	1355119.4	625423.7	186.0	8"pipe
8278	1355166.9	625444.1	176.5	GW126 lateral
8279	1355166.5	625446.5	176.4	GW126
8280	1355165.9	625446.2	170.9	8"tee
8281	1355024.8	625597.7	175.5	8"pipe
8283	1354983.3	625575.7	190.2	8"pipe
8284	1354944.4	625552.0	205.3	8"pipe
8286	1354903.2	625531.1	226.9	GW130

POINT NUMBER	NORTHING	EASTING	TOP OF PIPE ELEVATION	DESCRIPTION (Elevations shown represent the top of pipe)
8287	1354905.4	625529.1	226.0	GW130 lateral
8288	1354904.7	625529.2	217.5	8"tee
8289	1354986.3	625361.3	222.6	8"tee
8290	1354986.9	625361.3	232.8	GW127
8291	1354987.5	625358.1	233.8	GW127 lateral
8294	1355091.4	625179.1	239.0	GW124 lateral
8295	1355091.8	625175.9	238.5	GW124
8296	1355092.9	625175.8	232.9	8"-90
8297	1355153.7	625037.9	240.9	GW121
8298	1355502.1	625102.4	181.8	HCG-12 6"lateral
8299	1355503.6	625104.8	180.1	6"saddle & HGC12 riser
8301	1355980.9	625246.4	133.9	18"x8"tee ground elevation
8302	1355971.4	625241.1	134.6	18"x8"tee ground elevation
8303	1355995.0	625246.9	133.8	18"flange ground elevation
8304	1355995.0	625246.9	133.8	18"tee ground elevation & electrofusion coupling
8305	1356004.1	625226.8	137.1	18"header
8306	1356023.0	625195.4	148.4	18"header
8307	1356061.4	625158.9	160.2	18"header

SEE SHEET 2 FOR PIPE TABLE INFORMATION

LEGEND:

NO. NUMBER
ELEV. ELEVATION
x 6516 ASBULT POINT NUMBER
LB LICENSE BUSINESS

MAGNETIC

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

SURVEYOR's NOTES:

1.) North and coordinate basis is the East Zone of the Florida State Plane Coordinate System. The published values used for this survey are NAD 83 2007 adjustment

2.) Vertical information depicted on this report are GPS derived elevations based on the National Geodetic Vertical Datum of 1929 (NGVD29).

3.) All PVC well casings are 8" diameter schedule 80.

4.) All Lateral and Header piping are HDPE SDR17

5.) All elevations shown are top of pipe unless otherwise noted.

NO.	DATE	REVISION

DEBORAH L. PEAVEY LICENSE NUMBER No. 6345 STATE OF FLORIDA PROFESSIONAL SURVEYOR & MAPPER

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND SEAL OF SURVEYOR

Drawn By:	Party Chief:	Field Book:	FILE NAME:
DLP	SP	51	WC Hollpaw gps 2017.dwg

Peavey & Associates
SURVEYING & MAPPING PA
9399 N LAKE BUFFUM RD
FORT MEADE, FL 33841
PHONE 863-738-4960
FLORIDA BUSINESS NO.7779

CLIENT:
Omni Waste of Osceola County, LLC
Waste Services, Inc.
1501 Omni Way
St. Cloud, Fl 34773

ASBUILT SURVEY - GCCS 2017
CELLS 3,4,5,6,9&10 - J.E.D.
SOLID WASTE MANGEMENT FACILITY
1501 OMNI WAY ST. CLOUD, FL

DEBORAH L. PEAVEY, P.S.M.
FLORIDA REGISTRATION NUMBER 6345
FLORIDA BUSINESS NUMBER 7779
3/6/2017
SURVEY DATE

SCALE	DRAWING NO.
1"=60'	343
PROJECT NO.	SHEET
1009	2

APPENDIX D
AS-BUILT WELL SCHEDULE

AS-BUILT WELL SCHEDULE - 2016-2017 GCCS EXPANSION
J.E.D. Solid Waste Management Facility

Well ID	Northing1[1]	Easting[1]	Ground Elevation[2] (ft)	Total Drill Depth (ft)	Slotted Length (ft)	BGS[3] Solid Length (ft)	AGS[4] Solid Length (ft)	Total PVC Pipe Length (ft)
JEDG65R2	1,355,981.59	624,901.36	238.2	128.5	113.0	15.0	5.0	133.0
JEDG68R2	1,355,786.10	624,903.06	232.8	128.5	112.0	16.0	4.0	132.0
JEDG71R1	1,355,593.33	624,905.11	231.7	130.5	114.0	16.0	4.0	134.0
JEDGW082	1,355,521.37	625,099.36	181.0	62.5	46.0	16.0	4.0	66.0
JEDG83R1	1,355,321.26	625,165.04	189.0	88.5	73.0	15.0	5.0	93.0
JEDGW084	1,355,452.32	624,937.80	232.9	130.5	114.0	16.0	4.0	134.0
JEDGW091	1,355,285.82	624,996.17	237.3	134.5	119.0	15.0	5.0	139.0
JEDGW096	1,355,421.81	624,753.98	255.8	141.0	121.0	16.0	4.0	141.0
JEDGW111	1,355,243.10	624,789.69	241.9	121.5	105.0	16.0	4.0	125.0
JEDGW114	1,355,903.02	624,709.55	256.9	143.0	127.0	15.0	5.0	147.0
JEDGW115	1,355,966.85	624,562.30	255.6	142.5	126.0	16.0	4.0	146.0
JEDGW116	1,355,745.23	624,577.12	256.2	149.5	133.0	16.0	4.0	153.0
JEDGW117	1,355,316.33	624,600.65	254.9	142.5	126.0	16.0	4.0	146.0
JEDGW121	1,355,148.60	625,038.91	239.3	136.5	120.0	16.0	4.0	140.0
JEDGW122	1,355,325.33	625,374.11	146.0	40.5	24.0	16.0	4.0	44.0
JEDGW123	1,355,266.85	625,273.51	178.0	75.5	59.0	16.0	4.0	79.0
JEDGW124	1,355,090.56	625,178.25	237.2	132.5	116.0	16.0	4.0	136.0
JEDGW125	1,355,292.83	625,519.80	130.1	30.5	14.0	16.0	4.0	34.0
JEDGW126	1,355,163.08	625,445.33	174.4	73.5	57.0	16.0	4.0	77.0
JEDGW127	1,354,988.94	625,363.50	231.4	105.5	89.0	16.0	4.0	109.0
JEDGW128	1,355,222.17	625,657.76	128.4	30.5	14.0	16.0	4.0	34.0
JEDGW129	1,355,072.84	625,620.60	163.8	63.0	47.0	15.0	5.0	67.0
JEDGW130	1,354,901.62	625,529.85	225.1	122.5	106.0	16.0	4.0	126.0
JEDGW131	1,355,156.08	625,782.93	130.4	30.5	14.0	16.0	4.0	34.0
JEDGW132	1,354,977.00	625,801.41	163.9	61.5	45.0	16.0	4.0	65.0
Totals	---	---	---	**2,546**	**2,134**	**395**	**105**	2,634

Made by: HH
Checked by: DEG
Approved by:

Notes:

[1] Northing and easting taken from 2016 topographic files provided by Omni Waste of Osceola County, LLC or field survey.
2 Ground elevations were provided by JED operations prior to drilling of borehole.
3 BGS - Below ground surface
4 AGS - Above ground surface

Golder Associates

APPENDIX E
WELL BORING LOGS

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDG65R2 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/10/16 0655
Date/Time Complete Drilling: 12/10/16 1350
Northing: 1355981.59

Date/Time Began Well Install: 12/10/16 1355
Date/Time Complete Well Install: 12/10/16 1520
Easting: 624901.36
Ground Elevation: 238.20

		Design	Actual
A	Total Depth:	127'	128.5'
B	Screen Length:	111'	113'
C	Solid Pipe Length:	15' + 3'	15' + 5'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	128'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

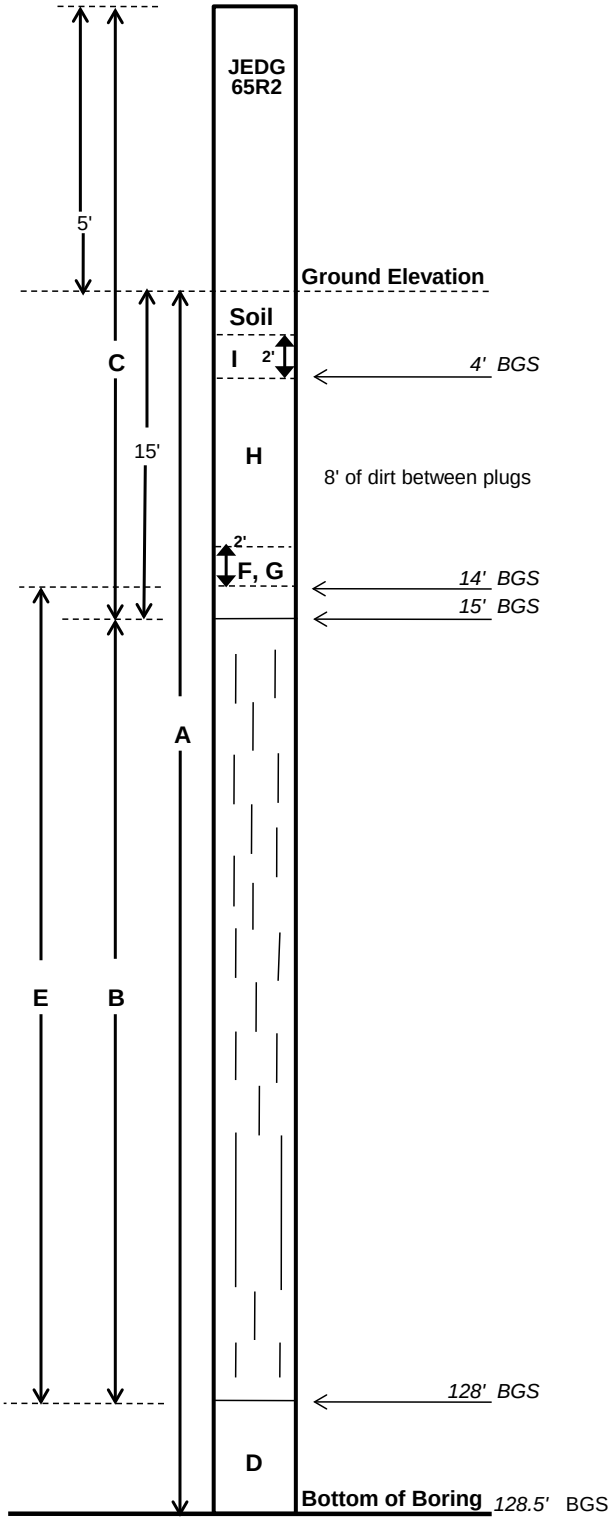
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW + Soil	104	0710
10-20	Moist, D=Min Soil + MSW	112	0723
20-30	Moist, D=Min MSW + Soil	119	0752
30-40	Moist, D=Min Soil	119	0800
40-50	Moist, D=Mod MSW	118	0818
50-60	Moist, D=Mod MSW + Soil	126	0835
60-70	Moist, D=Mod MSW + Soil	128	0854
70-80	Wet, D=Mod Soil + MSW	129	0918
80-90	Saturated, D=Severe Soil + MSW	130	0951
90-100	Saturated, D=Severe Soil + MSW	134	1034
100-110	Muddy, D=Severe Soil + MSW	129	1055
110-120	Muddy, D=Severe Soil + MSW	125	1248
120-128.5	Muddy, D=Severe Soil + MSW	124	1350

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 91 ft. Start using water bucket at 110 ft, 1055.
Consturction change 1 ft deeper plus 1 ft more screen due to elevation survey.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDG68R2 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/09/16 0725
Date/Time Complete Drilling: 12/09/16 1320
Northing: 1355786.10

Date/Time Began Well Install: 12/09/16 1330
Date/Time Complete Well Install: 12/09/16 1545
Easting: 624903.06
Ground Elevation: 232.80

		Design	Actual
A	Total Depth:	133'	128.5'
B	Screen Length:	117'	112'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	128'
E	◉ #57 Stone? ○ #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

Depth to Top Liner: NA

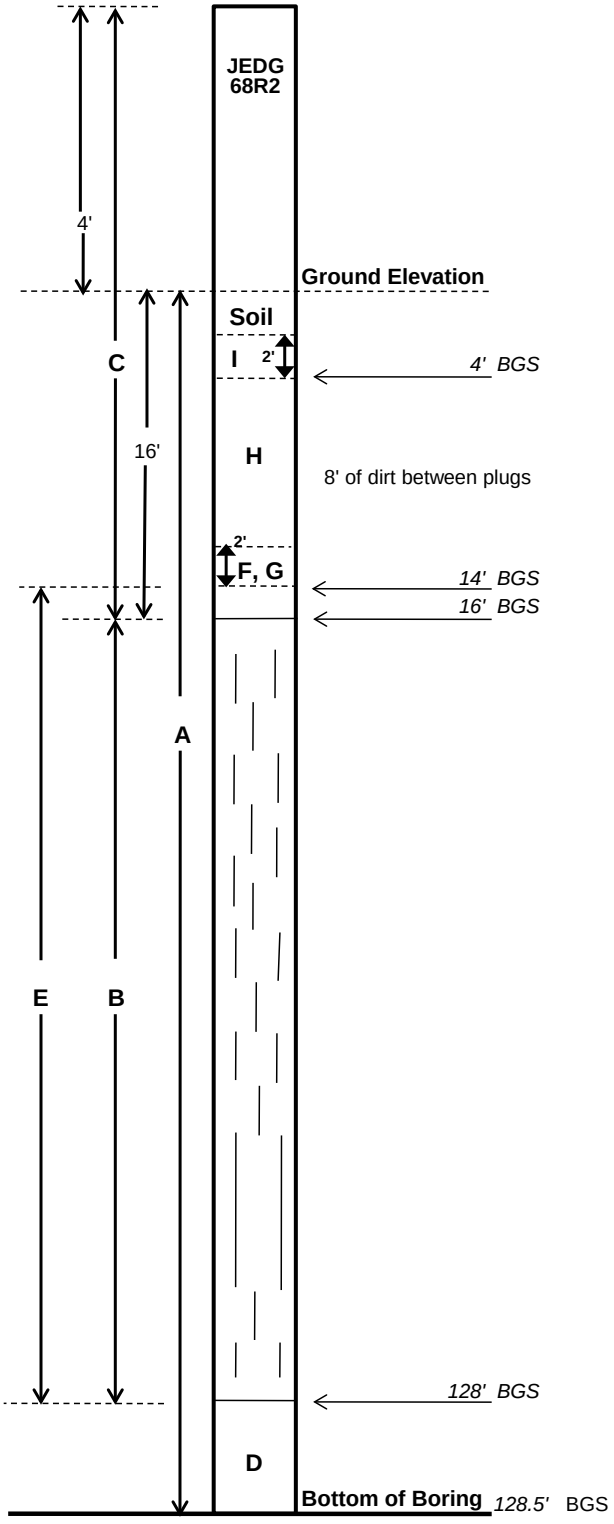
Depth to Waste: 3'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW + Soil	108	0748
10-20	Moist, D=Min MSW + Soil	109	0800
20-30	Moist, D=Min MSW	111	0811
30-40	Moist, D=Min Soil + MSW	111	0824
40-50	Moist, D=Mod MSW	117	0846
50-60	Moist, D=Mod MSW	129	0902
60-70	Moist, D=Mod MSW + Soil	126	0924
70-80	Moist, D=Mod MSW + Soil	125	1003
80-90	Wet, D=Mod MSW + Soil	134	1033
90-100	Wet/Sat, D=Mod MSW + Soil	144	1101
100-110	Sat, D=Severe MSW	143	1134
110-120	Sat, D=Severe MSW	126	1218
120-128.5	Sat/Muddy, D=Severe MSW + Soil	131	1320

*Key: M=Moisture Content, D=Decomposition

Notes: Fuel issue from 0940 - 1000.

Changed well design based on surveyed elevation. Saturated at 97 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDG71R1 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/05/16 0700
Date/Time Complete Drilling: 12/05/16 1445
Northing: 1355593.33

Date/Time Began Well Install: 12/05/16 1455
Date/Time Complete Well Install: 12/05/16 1715
Easting: 624905.11
Ground Elevation: 231.70

		Design	Actual
A	Total Depth:	131'	130.5'
B	Screen Length:	115'	114'
C	Solid Pipe Length:	15' + 5'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	130'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14.5'
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	12.5'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

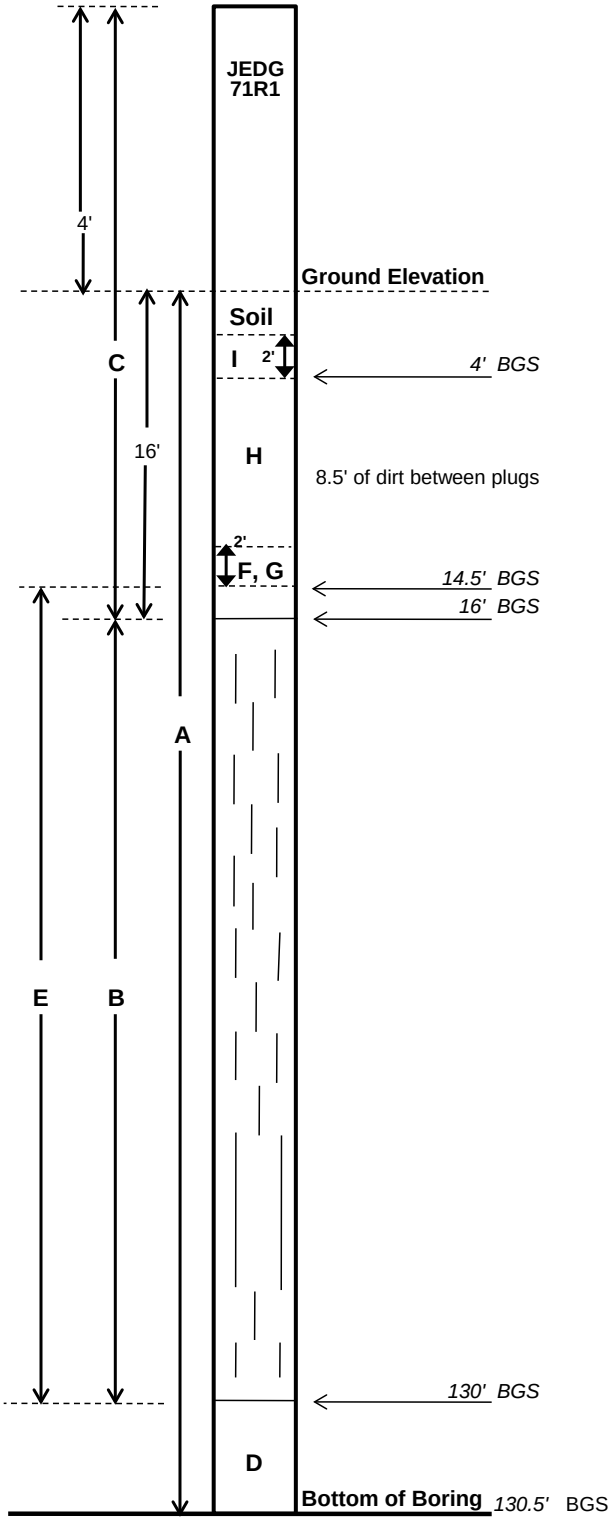
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	105	0720
10-20	Moist, D=Min MSW + Soil	107	0735
20-30	Moist, D=Min MSW + Soil	108	0748
30-40	Moist/Wet, D=Min MSW + Soil	111	0805
40-50	Wet, D=Mod MSW	127	0821
50-60	Wet/Sat, D=Mod MSW + Soil	127	0840
60-70	Sat, D=Mod MSW + Soil	128	0900
70-80	Wet, D=Severe Soil + MSW	127	0930
80-90	Sat/Muddy, D=Severe Soil + MSW	128	1040
90-100	Sat/Muddy, D=Severe MSW + Soil	129	1150
100-110	Sat/Muddy, D=Severe MSW + Soil	127	1230
110-120	Sat/Muddy, D=Severe MSW + Soil	127	1320
120-130.5	Sat/Muddy, D=Severe MSW + Soil	127	1445

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 55 ft. Specs changed for elevation change.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW082 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 11/29/16 0805
Date/Time Complete Drilling: 11/29/16 1340
Northing: 1355521.37

Date/Time Began Well Install: 11/29/16 1350
Date/Time Complete Well Install: 11/29/16 0830
Easting: 625099.36
Ground Elevation: 181.00

		Design	Actual
A	Total Depth:	81'	62.5'
B	Screen Length:	65'	46'
C	Solid Pipe Length:	15' + 5'	16' + 4'
	# of Centralizers:	NA	NA

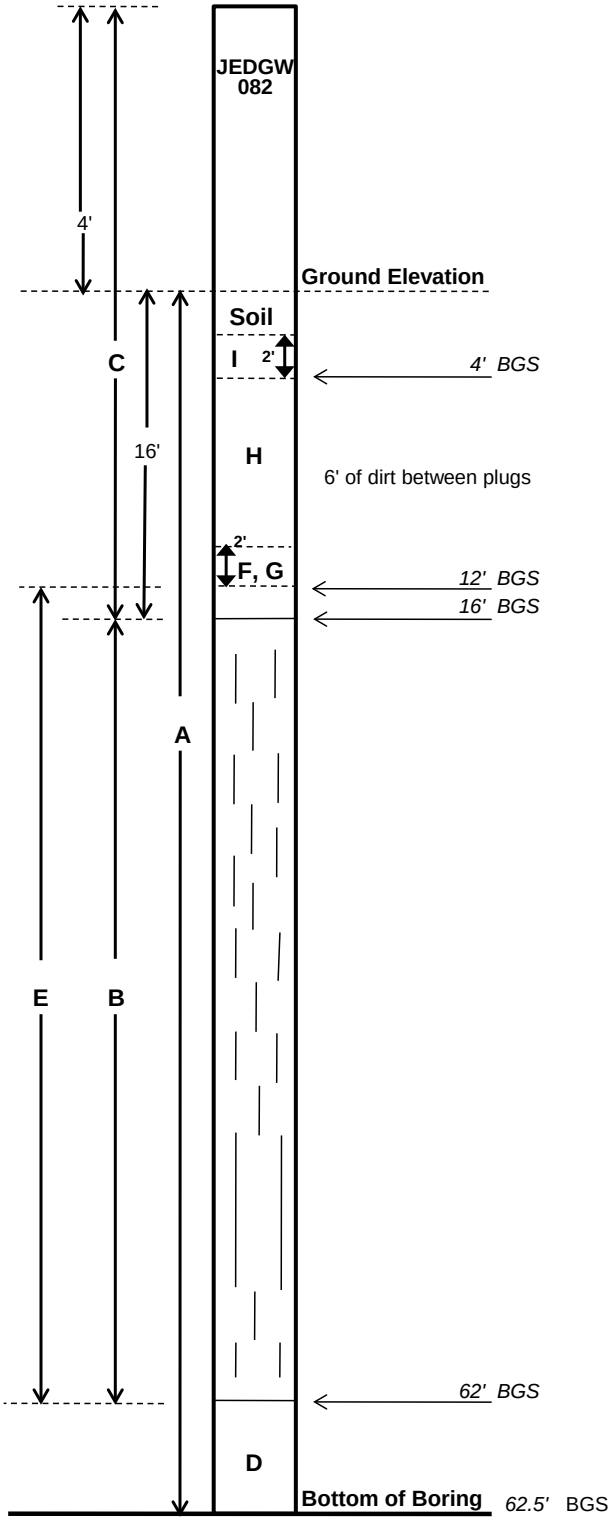
	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	62'
E	◉ #57 Stone? ○ #89 Stone?	☑	12'
F	GeoDisc?	☑	12'
G	1st Bentonite Seal?	☑	10'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

Depth to Top Liner: NA

Depth to Waste: 3'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry/Moist, D=Min MSW + Soil	99	0826
10-20	Moist*, D=Min Soil + MSW	105	0842
20-30	Moist, D=Mod MSW + Soil	109	0859
30-40	Wet, D=Mod MSW + Soil	120	0915
40-50	Sat, D=Severe MSW + Soil	121	0959
50-60	Sat, D=Severe Soil + MSW	121	1140
60-62	Sat/Muddy, D=Severe Soil + MSW	122	1340
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition



Notes: *Bucket coming up wet at about 12 ft, perched layer.
Very muddy from about 57-62 ft. Driller felt void and collapse at 57-62 ft interval.
Changed well specifications.

CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDG83R1 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 11/21/16 1000
Date/Time Complete Drilling: 11/21/16 1410
Northing: 1355321.26

Date/Time Began Well Install: 11/21/16 1425
Date/Time Complete Well Install: 11/22/16 0840
Easting: 625165.04
Ground Elevation: 189.00

		Design	Actual
A	Total Depth:	88'	88.5'
B	Screen Length:	72'	73'
C	Solid Pipe Length:	15' + 3'	15' + 5'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	88'
E	◉ #57 Stone? ○ #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

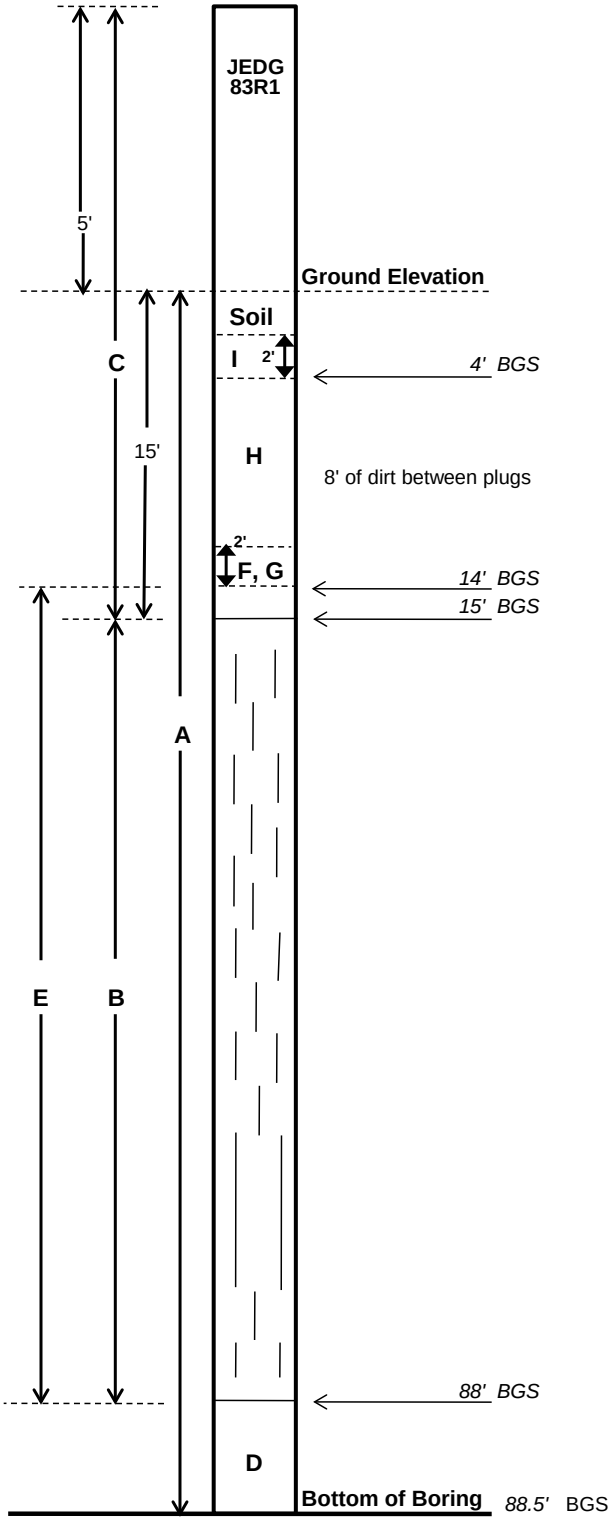
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	90	1015
10-20	Moist, D=Mod MSW	94	1028
20-30	Moist, D=Mod MSW	115	1058
30-40	Wet, D=Mod MSW + Soil	120	1120
40-50	Wet, D=Mod MSW + Soil	120	1148
50-60	Wet/Sat, D=Mod MSW	118	1201
60-70	Sat, D=Severe MSW	114	1235
70-80	Sat, D=Severe MSW	114	1308
80-88	Sat, D=Severe MSW	112	1410
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Had to use excavator to push well from 73 ft to 88 ft - a lot of liquid in well boring. Should have taken 35 tons of stone, but only took about 20 tons on 11/21. Covered boring with liner and grate for night to allow settling of rock in boring. Finished installing well on 11/22. Rock did not settle.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW084 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/02/16 0645
Date/Time Complete Drilling: 12/02/16 1420
Northing: 1355452.32

Date/Time Began Well Install: 12/02/16 1430
Date/Time Complete Well Install: 12/02/16 1630
Easting: 624937.80
Ground Elevation: 232.90

		Design	Actual
A	Total Depth:	130'	130.5'
B	Screen Length:	114'	114'
C	Solid Pipe Length:	15'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	130'
E	(◉) #57 Stone? (○) #89 Stone?	☑	14.5'
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

Depth to Top Liner: NA

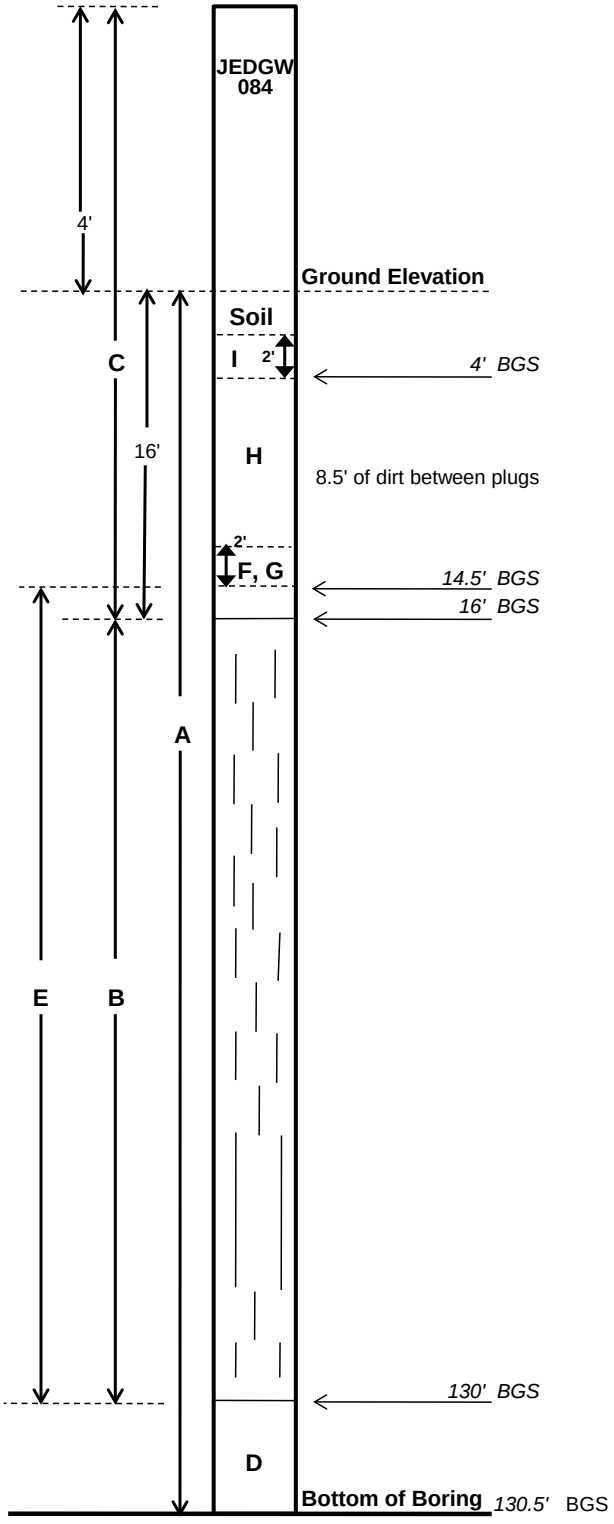
Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min Soil + MSW	90	0700
10-20	Dry, D=Min MSW	91	0714
20-30	Dry, D=Min MSW + Soil	96	0730
30-40	Moist, D=Min MSW + Soil	110	0745
40-50	Moist, D=Mod MSW	114	0804
50-60	Moist/Wet, D=Mod MSW	118	0827
60-70	Wet, D=Mod MSW + Soil	125	0854
70-80	Wet/Sat, D=Mod MSW + Soil	124	0919
80-90	Sat, D=Mod/Severe Soil + MSW	120	0944
90-100	Sat/Muddy, D=Severe Soil + MSW	126	1024
100-110	Sat, D=Severe MSW*	126	1230
110-120	Sat, D=Severe MSW	121	1325
120-130.5	Sat, D=Severe MSW	119	1420

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 75 ft. Muddy at 90 ft. Begin intermittent use of water bucket at 100 ft.

*Bucket fouled with cable at about 101 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW091 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 11/30/16 0730
Date/Time Complete Drilling: 12/01/16 1225
Northing: 1355285.82

Date/Time Began Well Install: 12/01/16 1230
Date/Time Complete Well Install: 12/01/16 1530
Easting: 624996.17
Ground Elevation: 237.30

		Design	Actual
A	Total Depth:	135'	134.5'
B	Screen Length:	119'	119'
C	Solid Pipe Length:	15' + 5'	15' + 5'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	134'
E	◉ #57 Stone? ○ #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

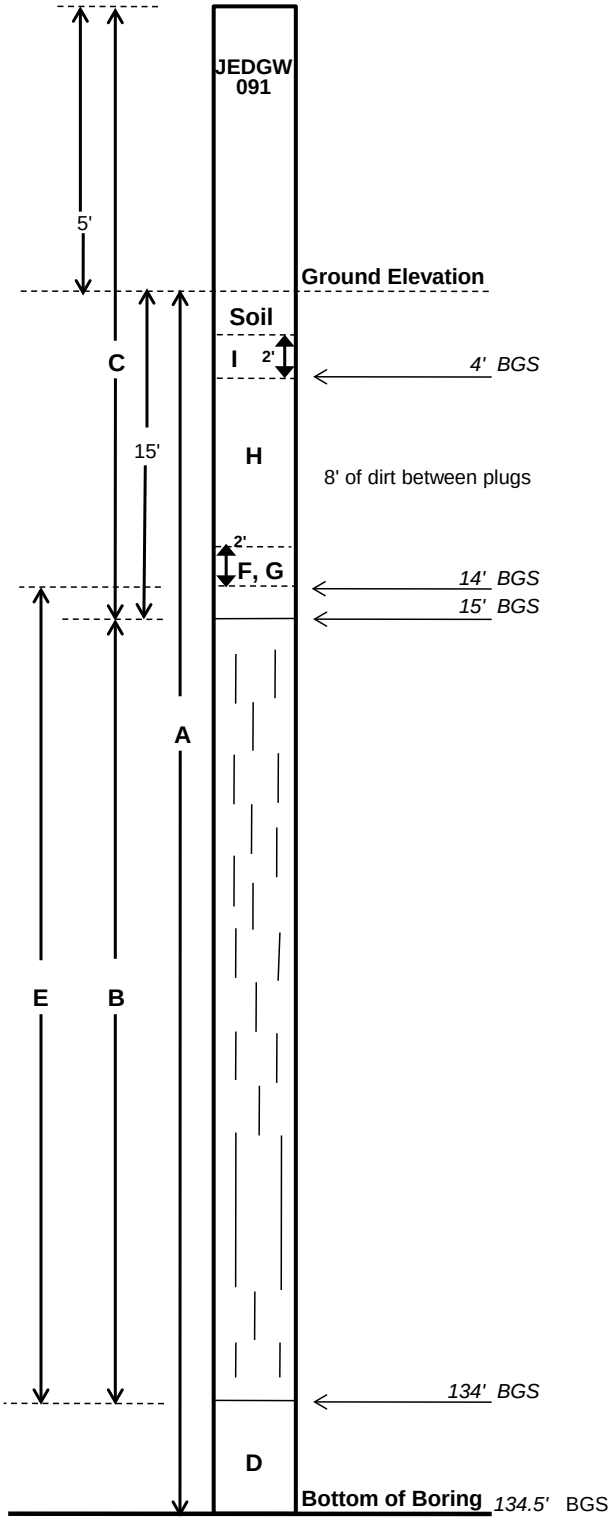
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min Soil + MSW	104	0742
10-20	Dry, D=Min MSW	99	0754
20-30	Dry, D=Min MSW + Soil	106	0812
30-40	Moist, D=Min MSW + Soil	105	0830
40-50	Moist, D=Mod MSW	105	0910
50-60	Moist/Wet, D=Mod MSW	112	0932
60-70	Wet, D=Mod MSW + Soil	118	1051
70-80	Wet/Sat, D=Mod MSW + Soil	123	1155
80-90	Sat, D=Mod/Severe Soil + MSW	124	1250
90-100	Sat/Muddy, D=Severe Soil + MSW	122	1430
100-110	Sat, D=Severe MSW*	117	1522
110-120	Sat, D=Severe MSW	117	1634
120-134	Sat, D=Severe MSW	118	1225 12/01/16

*Key: M=Moisture Content, D=Decomposition

Notes: Surveyed elevation is 1 ft lower than planned. Specs adjusted accordingly. Wet at 45 ft. Covered borehole at 122 ft at 1730 11/30/16. Resumed drilling on 12/01/16.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW096 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/07/16 0730
Date/Time Complete Drilling: 12/07/16 1225
Northing: 1355421.81

Date/Time Began Well Install: 12/07/16 1230
Date/Time Complete Well Install: 12/08/16 1130
Easting: 624753.98
Ground Elevation: 255.80

		Design	Actual
A	Total Depth:	127'	141
B	Screen Length:	111'	121
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	137'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

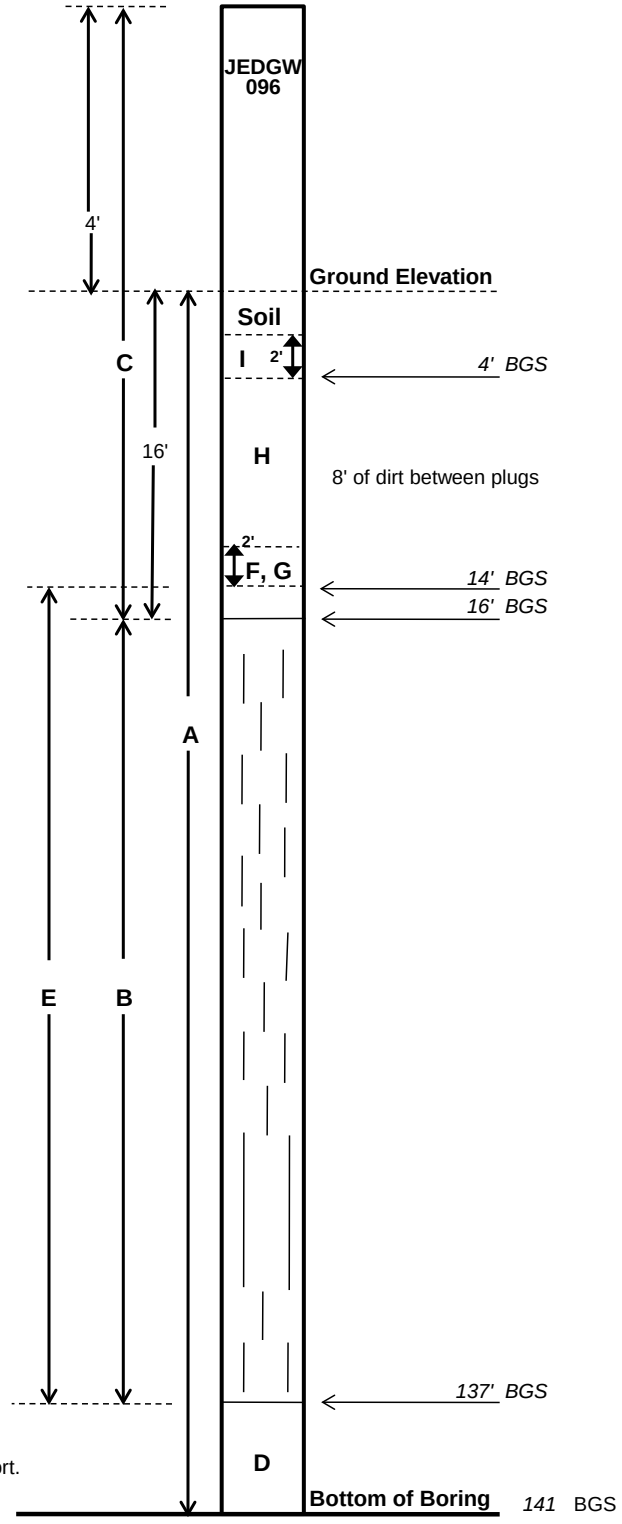
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	99	0735
10-20	Dry, D=Min MSW + Soil	101	0746
20-30	Moist, D=Min MSW + Soil	102	0800
30-40	Moist, D=Min MSW + Soil	113	0813
40-50	Moist, D=Mod MSW	118	0832
50-60	Wet, D=Mod MSW	122	0848
60-70	Wet, D=Mod MSW	124	0905
70-80	Wet, D=Mod MSW	129	0928
80-90	Wet, D=Mod MSW	129	1001
90-100	Wet/Sat, D=Severe MSW + Soil*	141	1025
100-110	Wet/Muddy, D=Severe Soil + MSW	129	1113
110-120	Wet/Muddy, D=Severe Soil + MSW	130	1242
120-130	Wet/Muddy, D=Severe Soil + MSW	130	1334
130-141	Wet/Muddy, D=Severe Soil + MSW	128	1440

*Key: M=Moisture Content, D=Decomposition

Notes: * Muddy at 100 ft. Start using water bucket at about 104 ft at 1050.
Cable twisted in rig at 141 ft at 1440. Rig needs new cable. End borehole 1 ft short.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW111 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 11/28/16 0830
Date/Time Complete Drilling: 11/28/16 1650
Northing: 1355243.10

Date/Time Began Well Install: 11/28/16 1655
Date/Time Complete Well Install: 11/29/16 0910
Easting: 624789.69
Ground Elevation: 241.90

		Design	Actual
A	Total Depth:	121'	121.5'
B	Screen Length:	105'	105'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	121'
E	◉ #57 Stone? ○ #89 Stone?	☑	16'
F	GeoDisc?	☑	16'
G	1st Bentonite Seal?	☑	14'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

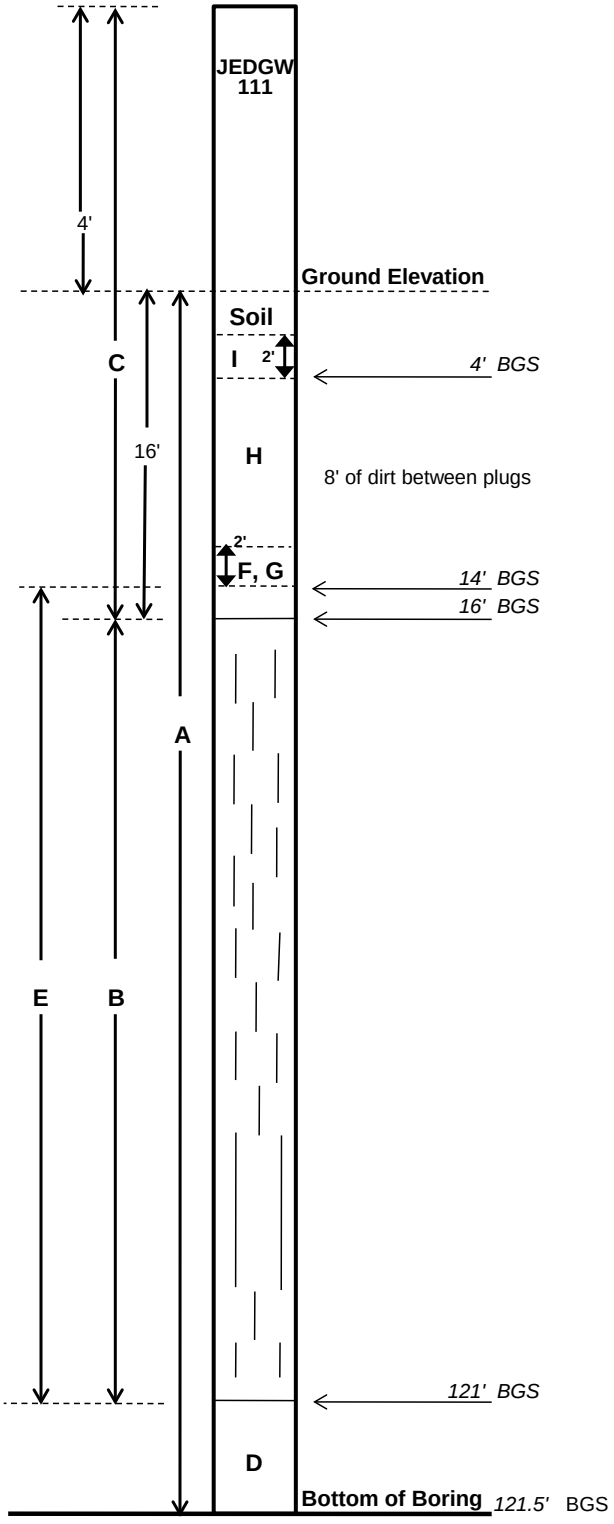
Depth to Top Liner: NA

Depth to Waste: 3'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	84	0845
10-20	Moist, D=Min MSW	109	0900
20-30	Wet, D=Mod MSW + Soil	112	0920
30-40	Wet/Sat, D=Mod/Severe MSW + Soil	109	0935
40-50	Wet, D=Mod MSW	119	0948
50-60	Sat, D=Severe MSW	121	1010
60-70	Wet, D=Severe MSW	125	1038
70-80	Sat, D=Severe MSW	124	1110
80-90	Sat, D=Severe MSW	122	1300
90-100	Sat, D=Mod MSW	115	1420
100-110	Sat, D=Severe MSW	129	1520
110-121.5	Sat, D=Severe MSW	122	1650
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Switched to water bucket at 89 ft at 1150. Switched back to regular bucket at 87 ft at 1245. Switched multiple times after. Rock and visqueen 11/28.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW114 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/13/16 0730
Date/Time Complete Drilling: 12/13/16 1509
Northing: 1355903.02

Date/Time Began Well Install: 12/13/16 1515
Date/Time Complete Well Install: 12/14/16 1015
Easting: 624709.55
Ground Elevation: 256.90

		Design	Actual
A	Total Depth:	143'	143'
B	Screen Length:	127'	127'
C	Solid Pipe Length:	15' + 3'	15' + 5'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	142'
E	◉ #57 Stone? ○ #89 Stone?	☑	8'
F	GeoDisc?	☑	8'
G	1st Bentonite Seal?	☑	6'
H	Soil Fill to 3' BGS?	☑	3'
I	2nd Bentonite Seal?	☑	1'

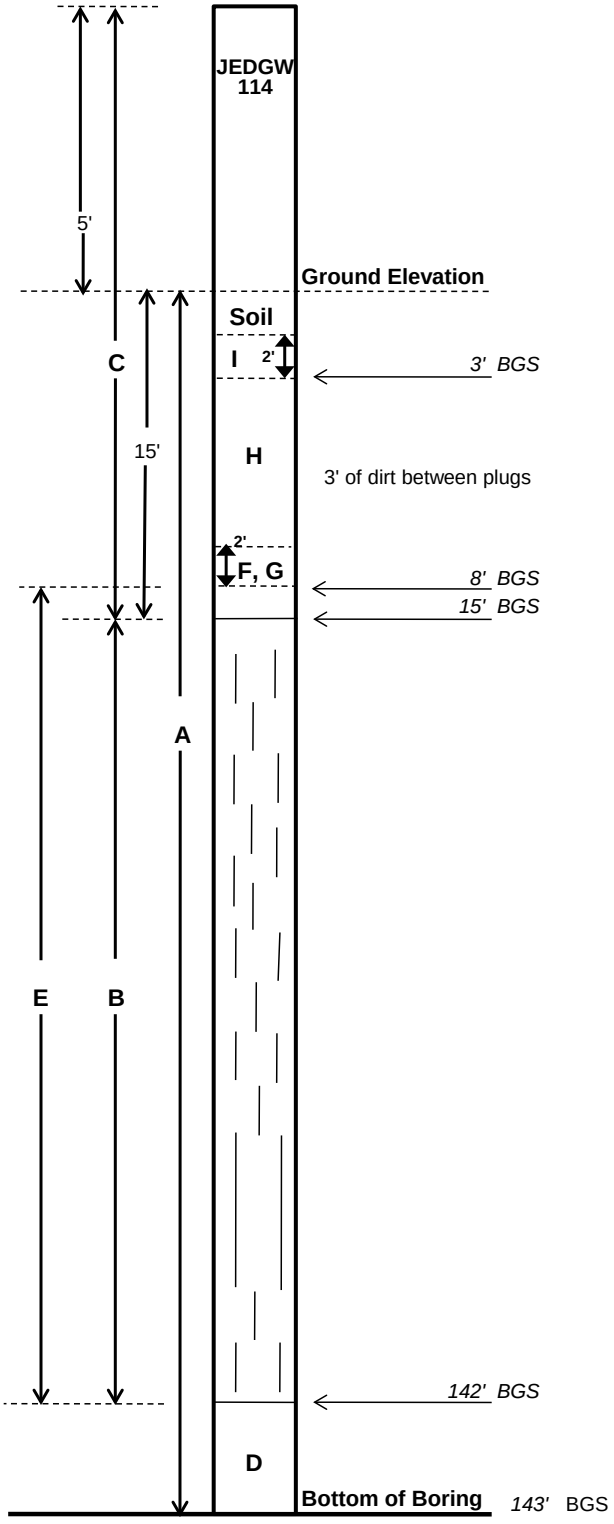
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW + Soil	103	0755
10-20	Dry, D=Min MSW	103	0805
20-30	Dry, D=Min MSW	108	0818
30-40	Sat, D=Mod/Severe MSW + Soil	122	0837
40-50	Wet, D=Mod Soil + MSW	130	0856
50-60	Wet, D=Mod MSW	136	0912
60-70	Moist, D=Mod MSW	131	0933
70-80	Moist, D=Mod Soil	135	0951
80-90	Wet, D=Mod MSW	142	1014
90-100	Wet, D=Mod MSW	139	1039
100-110	Sat/muddy, D=Severe Soil + MSW	142	1105
110-120	Sat/muddy, D=Severe Soil	143	1146
120-130	Sat/muddy, D=Severe Soil + MSW	146	1325
130-142.5	Sat/muddy, D=Severe Soil + MSW	149	1509

*Key: M=Moisture Content, D=Decomposition

Notes: Perched layer, saturated 37 ft. Wet below from water draining in. Saturated at about 105 (muddy, was wet after 37 ft). Start using water bucket at 129 ft at 1310 as needed.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW115 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/12/16 0745
Date/Time Complete Drilling: 12/12/16 1657
Northing: 1355966.85

Date/Time Began Well Install: 12/12/16 1705
Date/Time Complete Well Install: 12/13/16 0830
Easting: 624562.30
Ground Elevation: 255.60

		Design	Actual
A	Total Depth:	143'	142.5
B	Screen Length:	127'	126'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	142'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

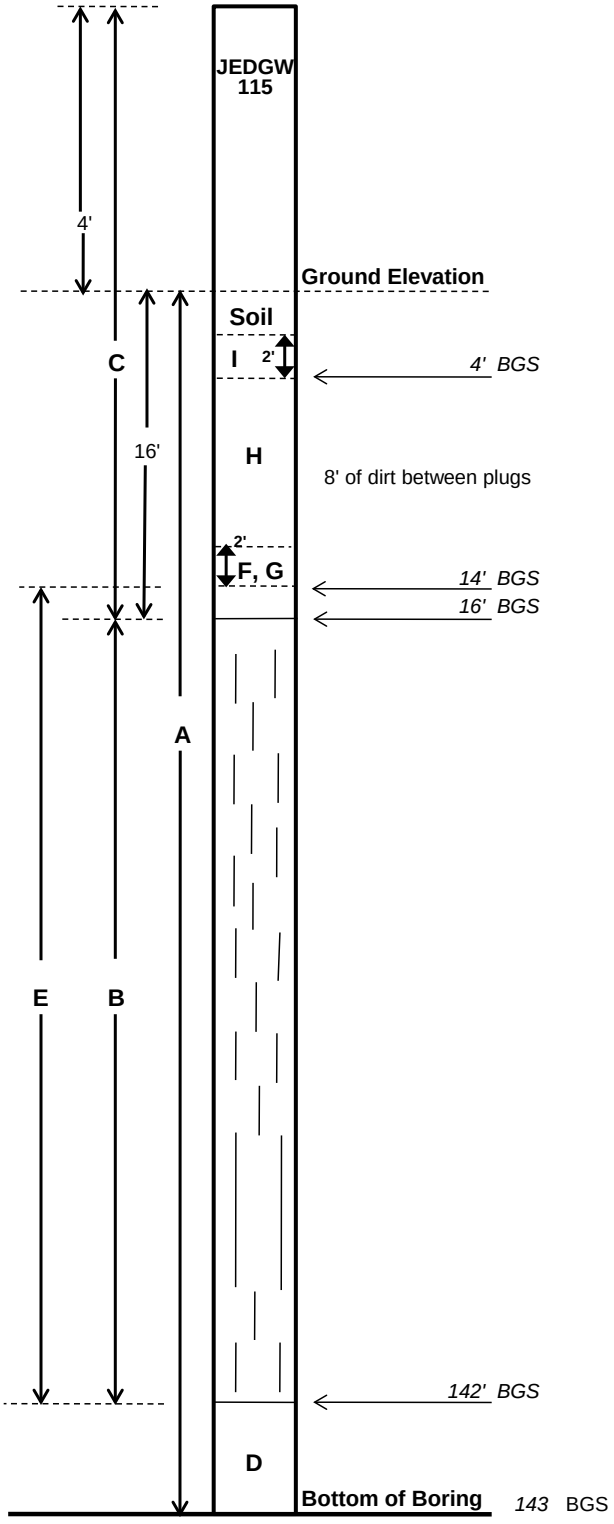
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	107	0754
10-20	Dry, D=Min Soil + MSW	107	0805
20-30	Moist, D=Min MSW	106	0824
30-40	Moist, D=Mod MSW	125	0846
40-50	Moist, D=Mod MSW	140	0906
50-60	Moist, D=Mod Soil + MSW	146	0924
60-70	Moist, D=Mod MSW + Soil	143	0946
70-80	Wet/Sat, D=Mod MSW + Soil	149	1012
80-90	Sat/Muddy, D=Severe Soil + MSW	146	1049
90-100	Sat/Muddy, D=Severe Soil + MSW	145	1136
100-110	Sat, D=Severe Soil + MSW	140	1249
110-120	Sat/Muddy, D=Severe Soil + MSW	142	1336
120-130	Sat/Muddy, D=Severe Soil + MSW	146	1510
130-142.5	Sat/Muddy, D=Severe Soil + MSW	151	1657

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 74 ft. Begin using water bucket as needed at 118 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW116 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/15/16 1110
Date/Time Complete Drilling: 12/16/16 1415
Northing: 1355745.23

Date/Time Began Well Install: 12/16/16 1425
Date/Time Complete Well Install: 12/16/16 1545
Easting: 624577.12
Ground Elevation: 256.20

		Design	Actual
A	Total Depth:	146'	149.5'
B	Screen Length:	130'	133'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	149'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14'
F	GeoDisc?	☑	14'
G	1st Bentonite Seal?	☑	12'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

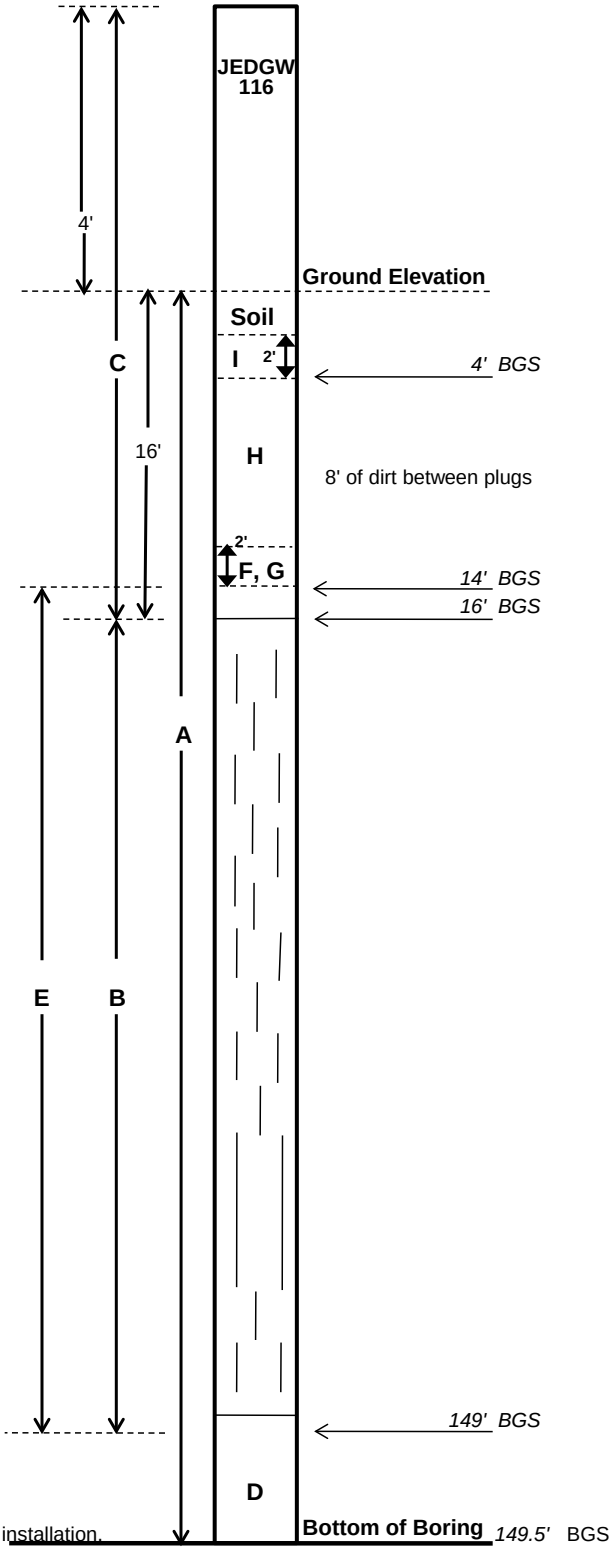
Depth to Top Liner: NA

Depth to Waste: 1.5'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	103	1125 12/15
10-20	Dry, D=Min MSW	106	1138
20-30	Moist, D=Min MSW	112	1149
30-40	Moist, D=Min MSW	114	1348
40-50	Moist, D=Min MSW	123	1406
50-60	Moist, D=Min Soil + MSW	129	1430
60-70	Moist, D=Mod MSW + Soil	140	1452
70-80	Moist/Sat, D=Mod Soil + MSW	135	0748 12/16
80-90	Sat, D=Severe MSW + Soil	139	0815
90-100	Sat, D=Severe MSW + Soil	141	0914
100-110	Sat, D=Severe Soil + MSW	140	0947
110-120	Sat, D=Severe Soil	138	1014
120-130	Sat, D=Severe MSW + Soil	137	1116
130-140	Sat, D=Severe MSW + Soil	141	1231
140-149.5	Sat, D=Severe Soil + MSW	141	1415

*Key: M=Moisture Content, D=Decomposition

Notes: At 1505 12/15, stop drilling for the day while returns are dry.
No cave in overnight. Start using water bucket at 80 ft. Push down last 8 ft during installation.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW117 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 12/14/16 0905
Date/Time Complete Drilling: 12/15/16 1002
Northing: 1355316.33

Date/Time Began Well Install: 12/15/16 1010
Date/Time Complete Well Install: 12/15/16 1120
Easting: 624600.65
Ground Elevation: 254.90

		Design	Actual
A	Total Depth:	127'	142.5'
B	Screen Length:	111'	126'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	142'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

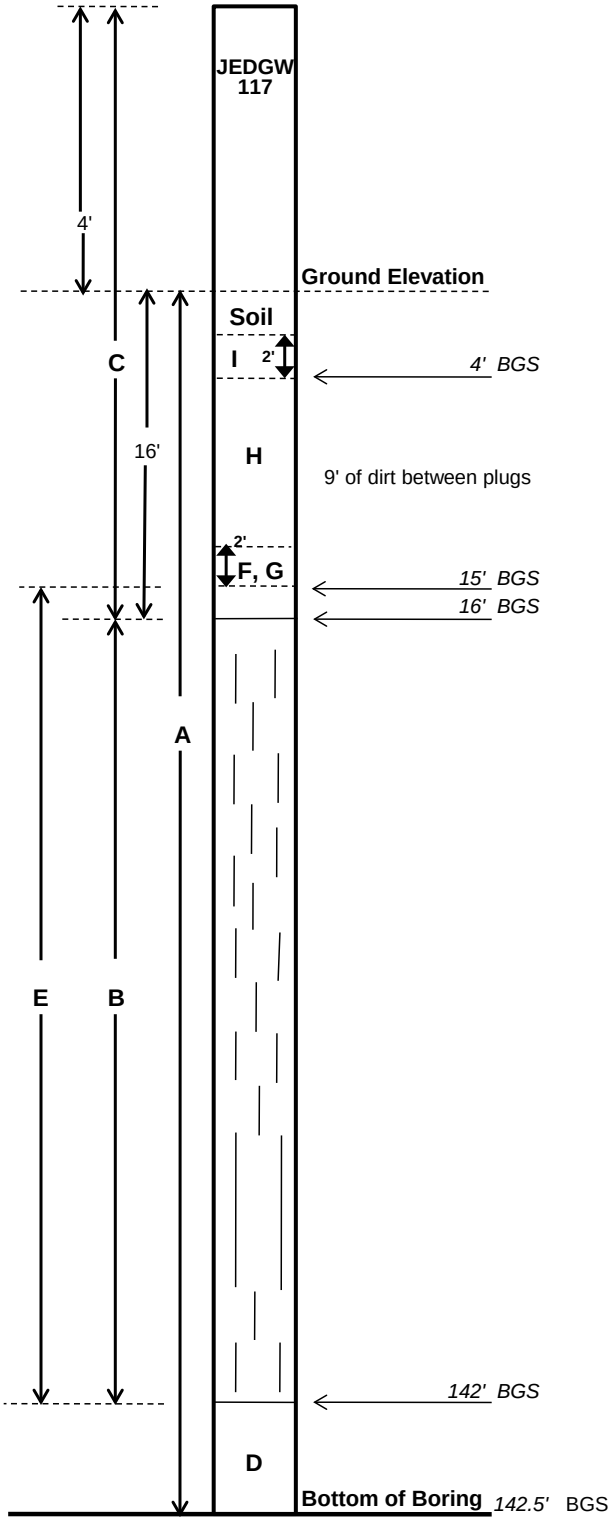
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Dry, D=Min MSW	103	0918 12/14
10-20	Dry, D=Min MSW	105	0933
20-30	Moist, D=Min MSW	115	0950
30-40	Moist, D=Mod MSW + Soil	123	1003
40-50	Moist, D=Mod MSW	125	1015
50-60	Wet/Sat, D=Mod MSW + Soil	123	1028
60-70	Wet/Sat, D=Severe Soil + MSW	135	1122
70-80	Sat, D=Severe MSW + Soil	134	1206
80-90	Sat, D=Severe MSW	135	1250
90-100	Sat, D=Severe MSW + Soil	132	1341
100-110	Sat, D=Severe MSW	133	1433
110-120	Sat, D=Severe MSW	128	1550
120-130	Sat, D=Severe MSW + Soil	130	0758 12/15
130-142.5	Sat, D=Severe MSW + Soil	132	1002

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 55 ft, perched layer that drained into borehole below. At 1647 12/14, drilled to 127 ft. Cover borehole for the night. Caved in to 120 ft overnight.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW121 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/25/17 0725
Date/Time Complete Drilling: 01/25/17 1533
Northing: 1355148.60

Date/Time Began Well Install: 01/25/17 1545
Date/Time Complete Well Install: 01/25/17 1655
Easting: 625038.91
Ground Elevation: 239.34

		Design	Actual
A	Total Depth:	136'	136.5'
B	Screen Length:	120'	120'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	136'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

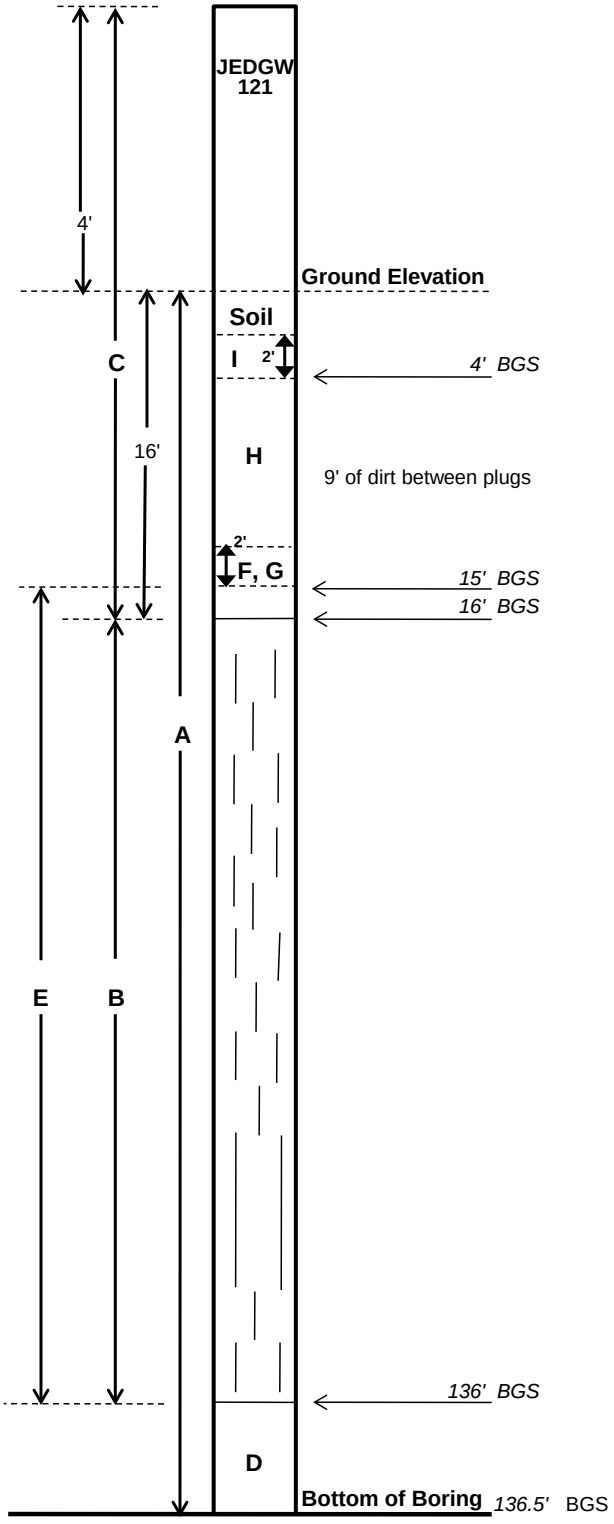
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Min MSW	101	0755
10-20	Moist, D=Min MSW	110	0808
20-30	Moist, D=Min MSW	117	0828
30-40	Moist, D=Min MSW	118	0848
40-50	Moist, D=Mod MSW	118	0906
50-60	Wet, D=Mod Soil + MSW	124	0927
60-70	Moist, D=Mod MSW	126	0949
70-80	Wet, D=Mod MSW + Soil	129	1015
80-90	Sat, D=Severe MSW + Soil	136	1046
90-100	Sat, D=Severe Soil + MSW	140	1115
100-110	Sat, D=Severe Soil + MSW	133	1201
110-120	Sat, D=Severe Soil + MSW	132	1358
120-130	Sat, D=Severe Soil + MSW	135	1502
130-136.5	Sat, D=Severe Soil + MSW	134	1533

*Key: M=Moisture Content, D=Decomposition

Notes: Wet at 58 ft, perched layer. Saturated at about 88 ft. At 1145, changed to water bucket at 109 ft as needed.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW122 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/09/17 1258
Date/Time Complete Drilling: 02/09/17 1402
Northing: 1355325.33

Date/Time Began Well Install: 02/09/17 1425
Date/Time Complete Well Install: 02/09/17 1550
Easting: 625374.11
Ground Elevation: 146.00

		Design	Actual
A	Total Depth:	40'	40.5'
B	Screen Length:	24'	24'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	40'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

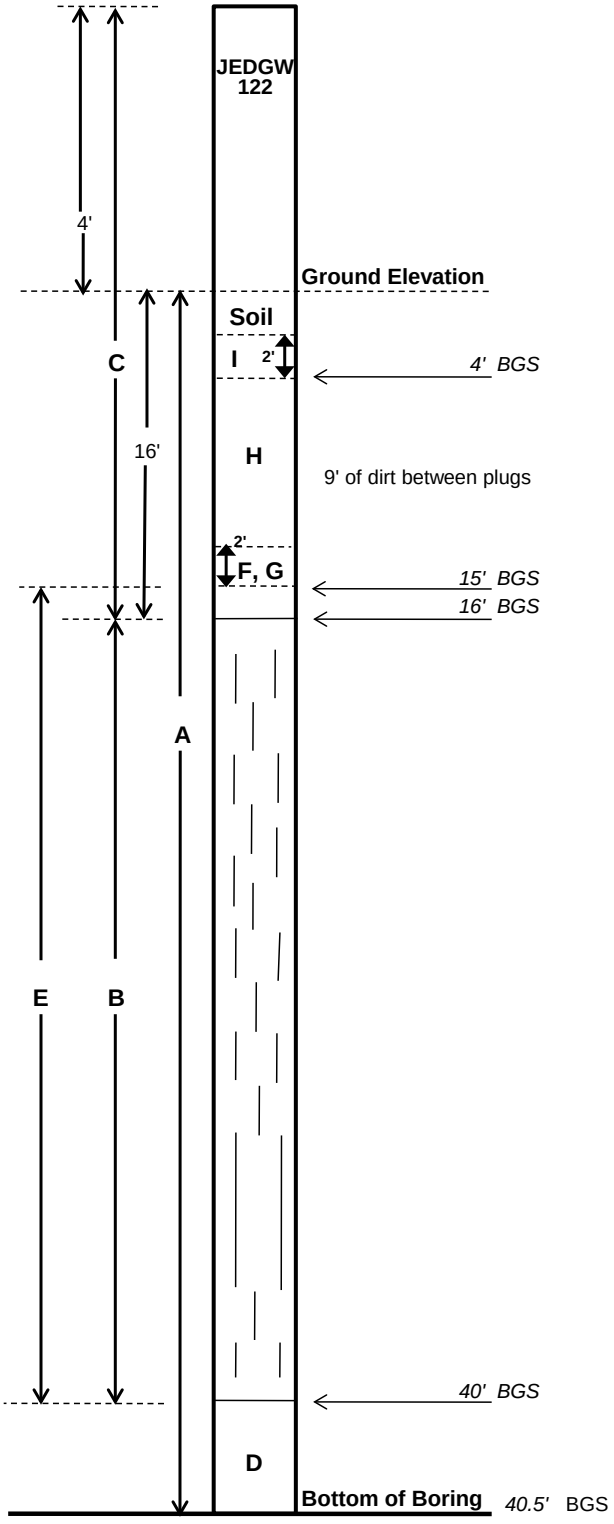
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Wet, D=Mod MSW	100	1312
10-20	Wet, D=Mod MSW + Soil	118	1323
20-30	Sat, D=Severe MSW	128	1348
30-40	Sat, D=Severe MSW + Soil	122	1402
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 26 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW123 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/07/17 0730
Date/Time Complete Drilling: 02/07/17 1145
Northing: 1355266.85

Date/Time Began Well Install: 02/07/17 1150
Date/Time Complete Well Install: 02/07/17 1300
Easting: 625273.51
Ground Elevation: 178.00

		Design	Actual
A	Total Depth:	75'	75.5'
B	Screen Length:	59'	59'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	75'
E	◉ #57 Stone? ○ #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

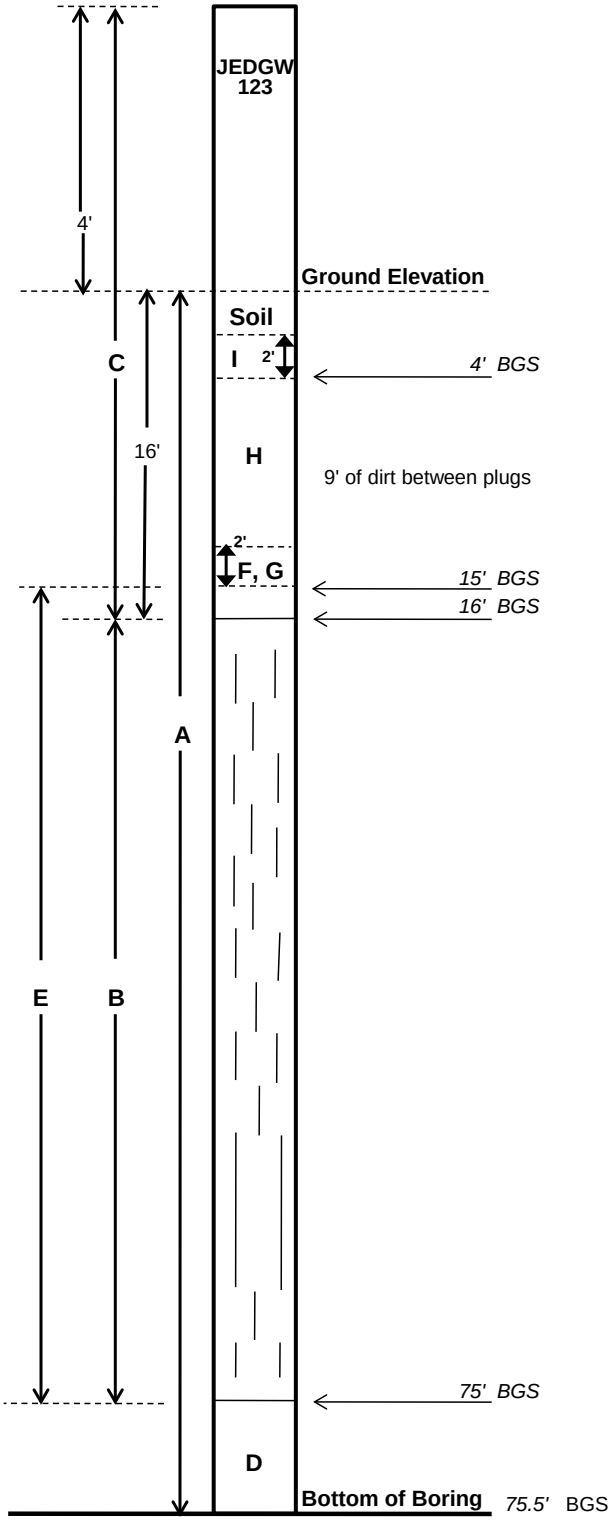
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Wet, D=Mod MSW + Soil	115	0800
10-20	Wet, D=Mod MSW + Soil	123	0820
20-30	Wet, D=Mod MSW	126	0837
30-40	Wet, D=Mod MSW	125	0901
40-50	Sat, D=Mod MSW + Soil	122	0930
50-60	Sat/Muddy, D=Severe Soil + MSW	121	1054
60-70	Sat/Muddy, D=Severe Soil + MSW	126	1125
70-80	Sat/Muddy, D=Severe MSW + Soil	122	1145
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 49 ft. At 1025, use water bucket as needed at 56 ft bgs. Flowing lyer at about 56 ft bgs.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW124 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/26/17 0710
Date/Time Complete Drilling: 01/26/17 1221
Northing: 1355090.56

Date/Time Began Well Install: 01/26/17 1230
Date/Time Complete Well Install: 01/26/17 1350
Easting: 625178.25
Ground Elevation: 237.20

		Design	Actual
A	Total Depth:	132'	132.5'
B	Screen Length:	116'	116'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	132'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

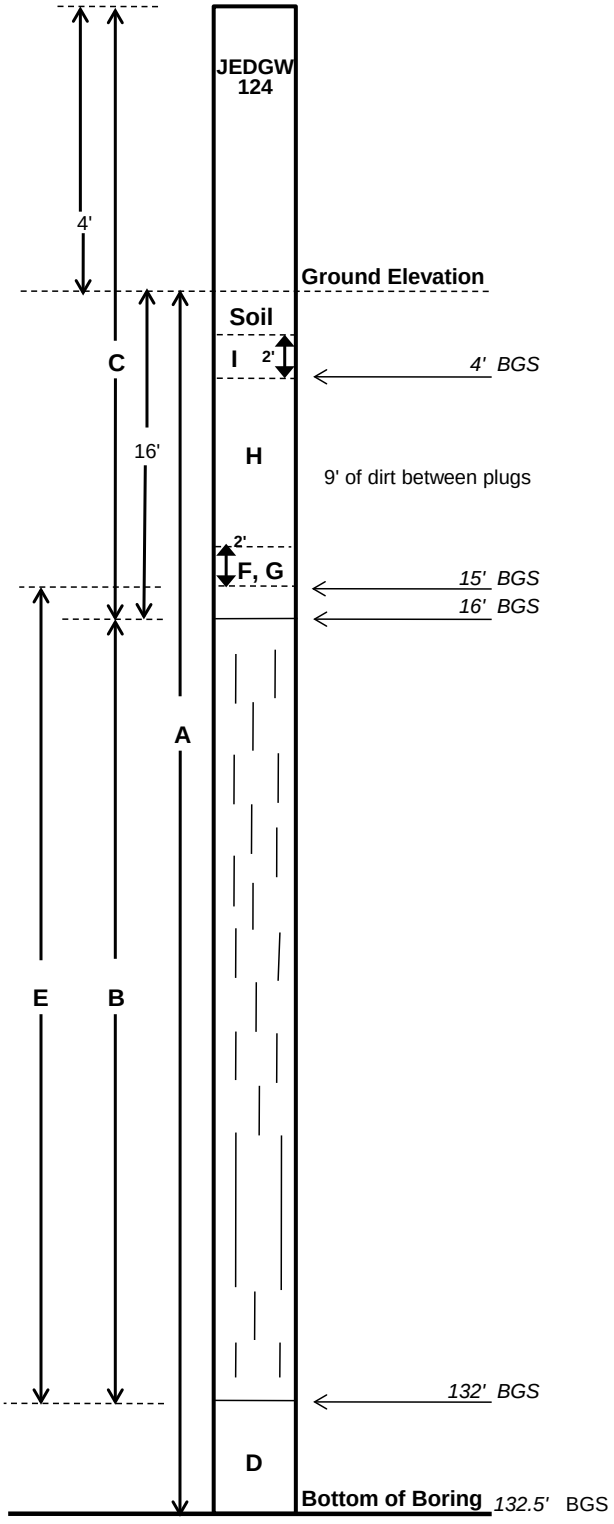
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Min MSW + Soil	104	0722
10-20	Moist, D=Min MSW	111	0743
20-30	Moist, D=Min MSW	116	0758
30-40	Moist, D=Mod MSW	117	0815
40-50	Moist, D=Mod MSW	117	0832
50-60	Moist, D=Mod MSW	124	0848
60-70	Wet, D=Mod MSW	128	0912
70-80	Wet, D=Mod MSW	128	0942
80-90	Wet, D=Mod MSW	117	1007
90-100	Sat, D=Mod MSW	125	1032
100-110	Sat, D=Severe MSW + Soil	129	1056
110-120	Sat, D=Severe Soil + MSW	132	1135
120-132.5	Sat, D=Severe Soil + MSW	132	1221

*Key: M=Moisture Content, D=Decomposition

Notes: Changed to water bucket at 0725. Saturated at 90 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW125 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/06/17 1000
Date/Time Complete Drilling: 02/06/17 1048
Northing: 1355292.83

Date/Time Began Well Install: 02/06/17 1055
Date/Time Complete Well Install: 02/06/17 1110
Easting: 625519.80
Ground Elevation: 130.10

		Design	Actual
A	Total Depth:	30'	30.5'
B	Screen Length:	14'	14'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	30'
E	◉ #57 Stone? ○ #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

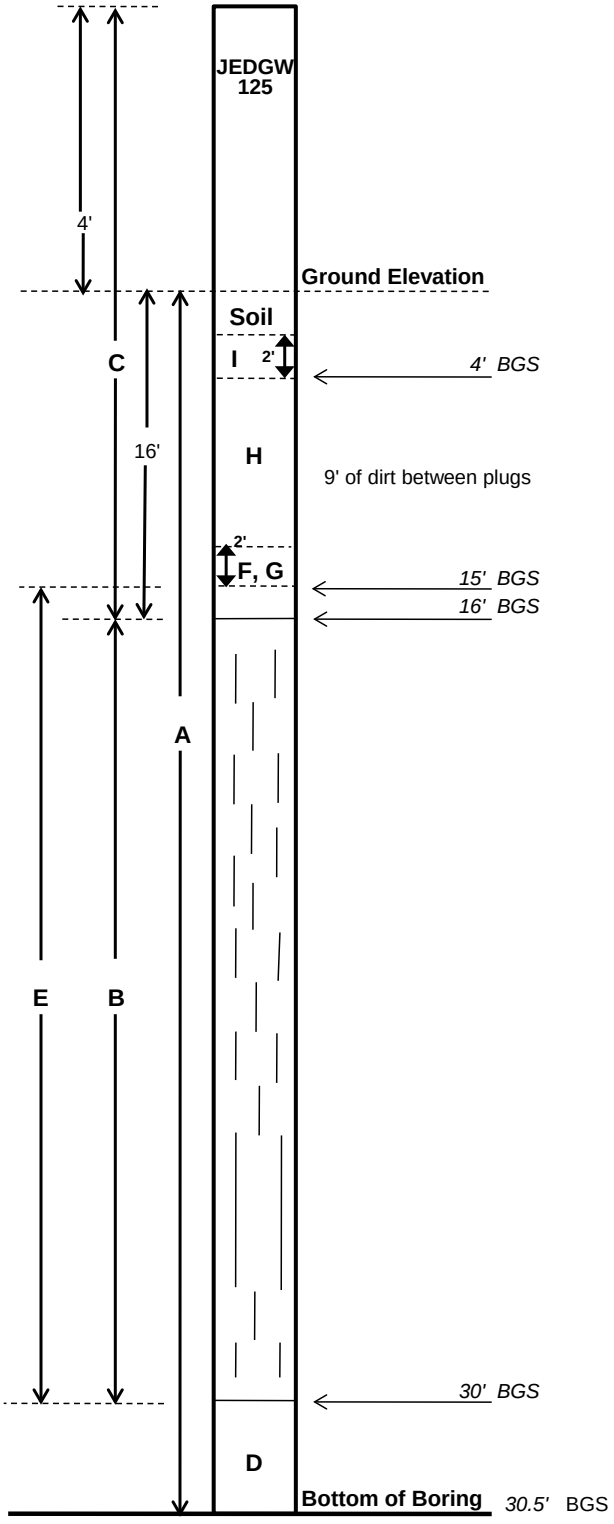
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Wet, D=Mod Soil + MSW	100	1013
10-20	Sat, D=Mod MSW + Soil	120	1027
20-30	Sat, D=Mod MSW	121	1048
30-40			
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 17 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW126 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/06/17 1118
Date/Time Complete Drilling: 02/06/17 1409
Northing: 1355163.08

Date/Time Began Well Install: 02/06/17 1415
Date/Time Complete Well Install: 02/06/17 1530
Easting: 625445.33
Ground Elevation: 174.40

		Design	Actual
A	Total Depth:	73'	73.5'
B	Screen Length:	57'	57'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	73'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

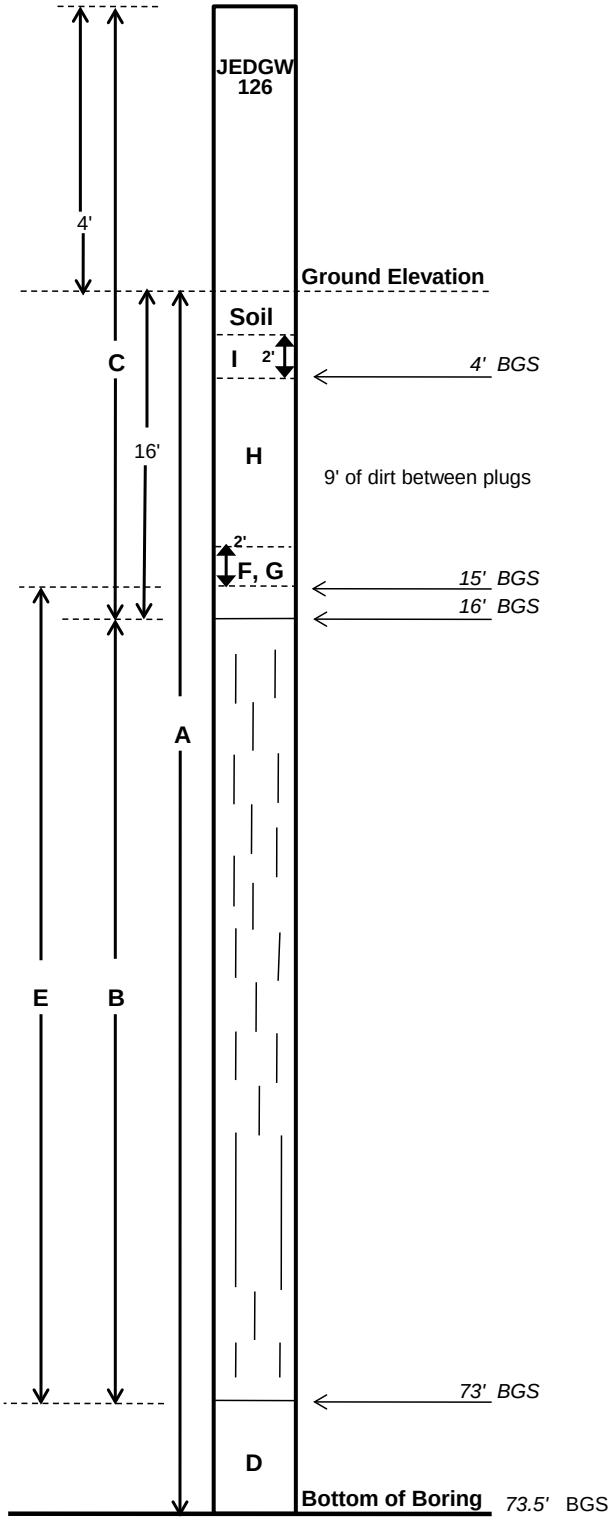
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Wet, D=Min MSW + Soil	102	1130
10-20	Wet, D=Mod MSW + Soil	118	1143
20-30	Wet, D=Mod MSW + Soil	119	1202
30-40	Sat, D=Severe MSW	123	1225
40-50	Sat, D=Severe MSW	134	1320
50-60	Sat, D=Severe MSW	138	1345
60-73.5	Sat, D=Severe MSW	135	1409
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes:



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW127 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/27/17 0830
Date/Time Complete Drilling: 01/28/17 1030
Northing: 1354988.94

Date/Time Began Well Install: 01/28/17 1035
Date/Time Complete Well Install: 01/28/17 1230
Easting: 625363.50
Ground Elevation: 231.37

		Design	Actual
A	Total Depth:	128'	105.5'
B	Screen Length:	112'	89'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	105'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

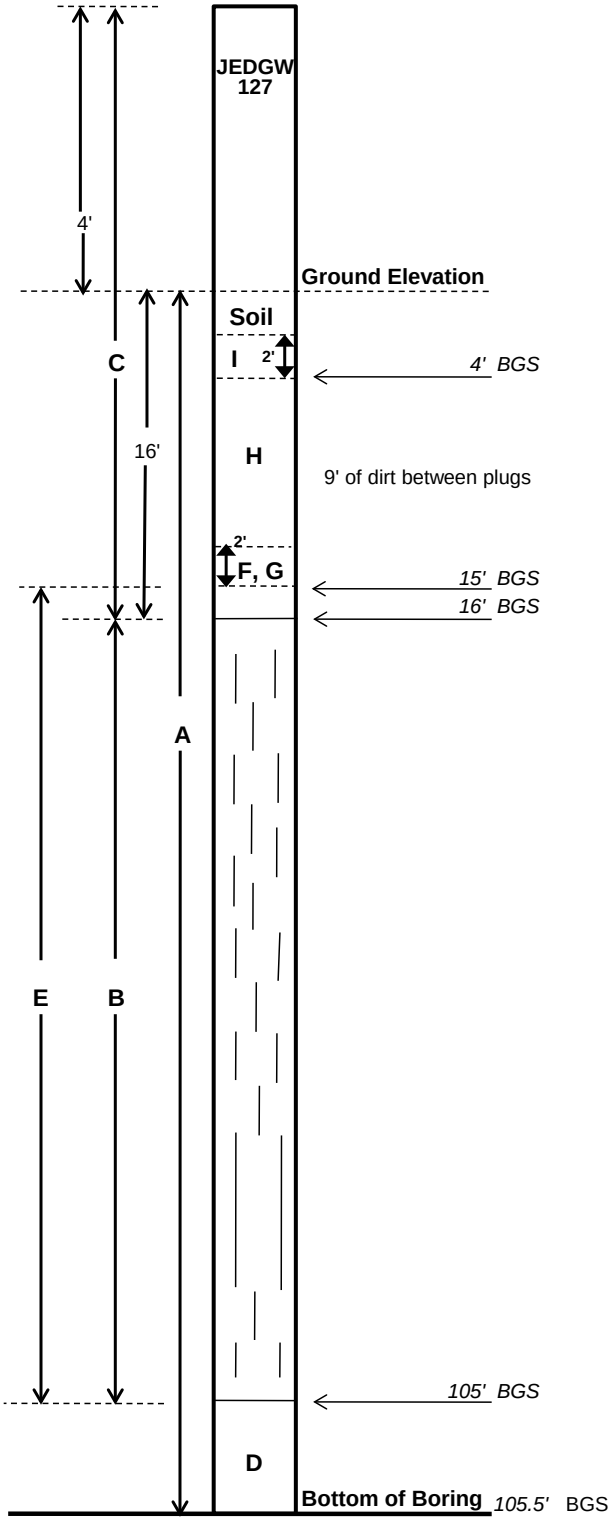
Depth to Top Liner: NA

Depth to Waste: 1'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Min MSW + Soil	99	0846 01/27
10-20	Moist, D=Min MSW	107	0903
20-30	Moist, D=Min MSW	113	0924
30-40	Moist, D=Mod Soil + MSW	120	0955
40-50	Moist, D=Mod MSW + Soil	119	1020
50-60	Moist, D=Mod MSW	120	1045
60-70	Sat, D=Mod MSW + Soil	122	1119
70-80	Sat, D=Severe MSW + Soil	120	1333
80-90	Sat, D=Severe Soil + MSW	120	1442
90-100	Sat, D=Severe Soil + MSW	122	1516
100-105	Sat, D=Severe Soil + MSW	123	1030 01/28
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at about 65 ft. Water bucket used as needed beginning at 1410. Drilled to 103 ft at 1600 01/27. Cover borehole for overnight. Caved in to 97 ft overnight. Drilled for 3 hours at 103 - 105 ft. Sloughing at bottom of well. Set well at 105' at approval of Ben and Brad.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW128 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/06/17 0805
Date/Time Complete Drilling: 02/06/17 0913
Northing: 1355222.17

Date/Time Began Well Install: 02/06/17 0920
Date/Time Complete Well Install: 02/06/17 1030
Easting: 625657.76
Ground Elevation: 128.40

		Design	Actual
A	Total Depth:	30'	30.5'
B	Screen Length:	14'	14'
C	Solid Pipe Length:	15'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	30'
E	◉ #57 Stone? ○ #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

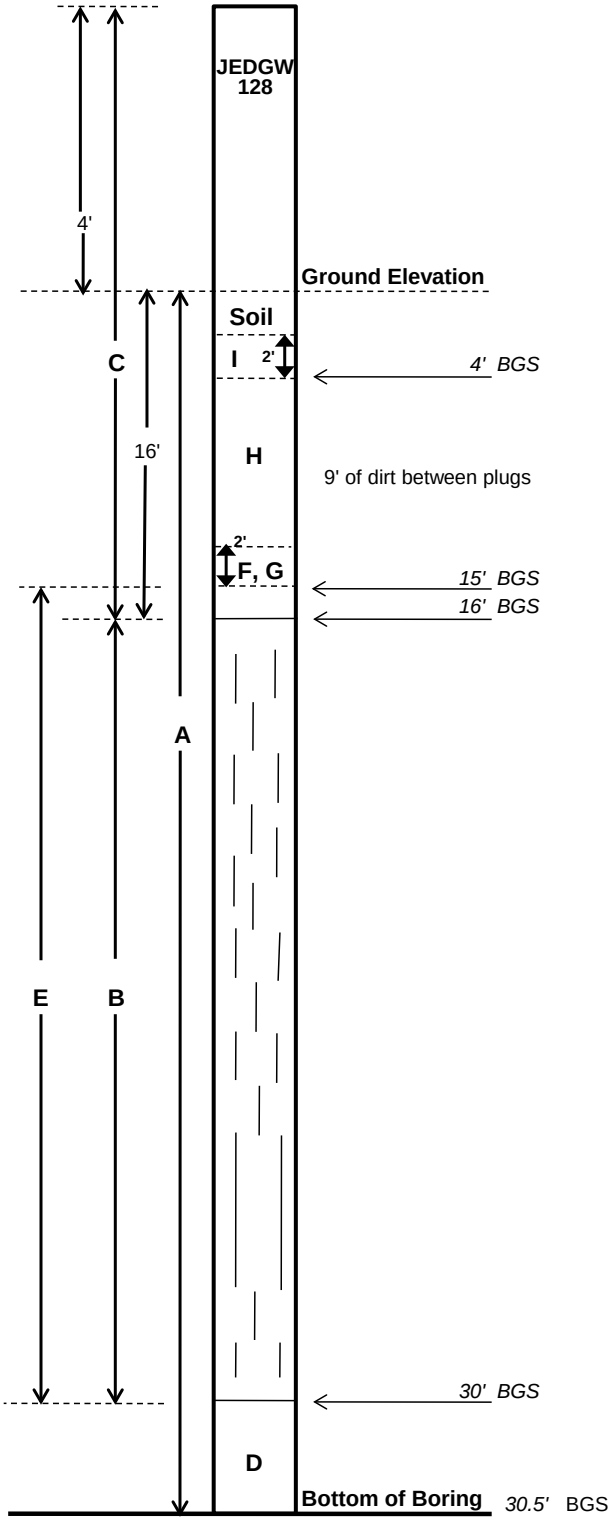
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Wet, D=Mod Soil + MSW	97	0821
10-20	Sat, D=Mod Soil + MSW	125	0848
20-30	Sat, D=Mod MSW + Soil	124	0913
30-40			
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 19 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW129 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/31/17 0700
Date/Time Complete Drilling: 01/31/17 0910
Northing: 1355072.84

Date/Time Began Well Install: 01/31/17 095
Date/Time Complete Well Install: 01/31/17 1140
Easting: 625620.60
Ground Elevation: 163.80

		Design	Actual
A	Total Depth:	63'	63'
B	Screen Length:	47'	47'
C	Solid Pipe Length:	15' + 3'	15' + 5'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	62'
E	◉ #57 Stone? ○ #89 Stone?	☑	13'
F	GeoDisc?	☑	13'
G	1st Bentonite Seal?	☑	11'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

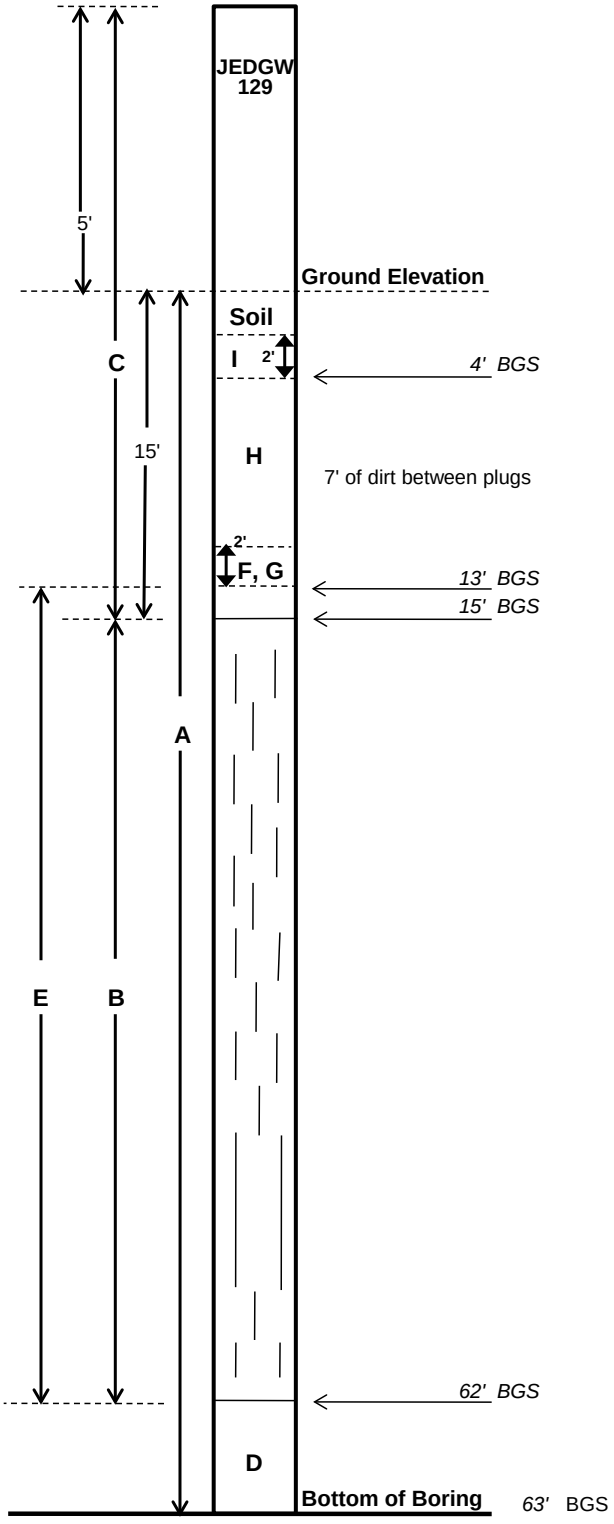
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Min MSW + Soil	102	0712
10-20	Moist, D=Mod MSW	116	0725
20-30	Wet, D=Mod MSW	121	0735
30-40	Wet, D=Mod MSW	129	0756
40-50	Sat, D=Severe MSW + Soil	129	0827
50-63	Sat, D=Severe Soil + MSW	124	0910
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes:



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW130 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/30/17 0720
Date/Time Complete Drilling: 01/30/17 1410
Northing: 1354901.62

Date/Time Began Well Install: 01/30/17 1420
Date/Time Complete Well Install: 01/30/17 1548
Easting: 625529.85
Ground Elevation: 225.10

		Design	Actual
A	Total Depth:	122'	122.5'
B	Screen Length:	106'	106'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	122'
E	(◉) #57 Stone? (○) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

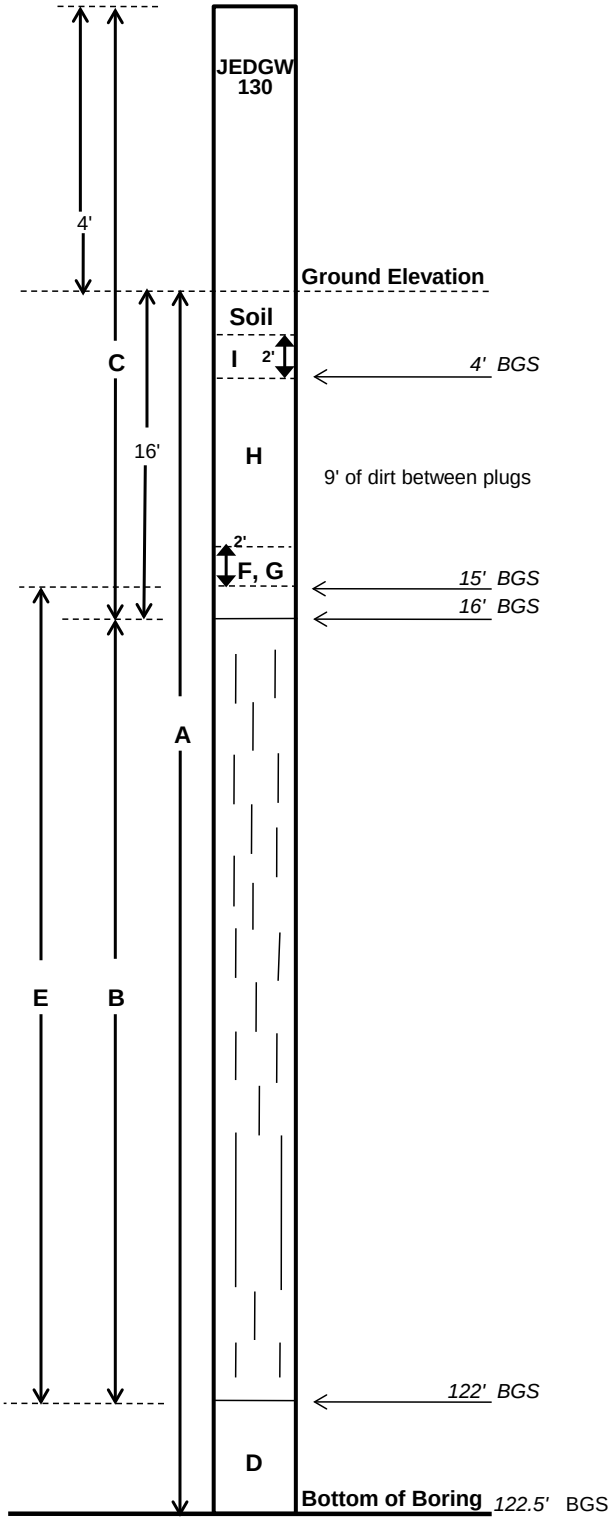
Depth to Top Liner: NA

Depth to Waste: 2'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Min MSW	98	0741
10-20	Moist, D=Min MSW	105	0753
20-30	Moist, D=Min MSW + Soil + Wood	109	0807
30-40	Moist, D=Mod MSW + Soil	114	0830
40-50	Moist, D=Mod MSW	104	0859
50-60	Moist, D=Mod MSW	123	0932
60-70	Moist, D=Mod MSW	130	0959
70-80	Wet, D=Severe MSW + Soil	124	1024
80-90	Wet, D=Severe MSW + Soil	122	1053
90-100	Sat, D=Severe MSW	119	1122
100-110	Sat/Muddy, D=Severe Soil + MSW	125	1240
110-122.5	Sat/Muddy, D=Severe Soil + MSW	123	1410
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: At 1215, use water bucket as needed. Saturated at 94 ft.



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW131 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 02/01/17 0900
Date/Time Complete Drilling: 02/01/17 0945
Northing: 1355156.08

Date/Time Began Well Install: 02/01/17 1240
Date/Time Complete Well Install: 02/01/17 1425
Easting: 625782.93
Ground Elevation: 130.40

		Design	Actual
A	Total Depth:	30'	30.5'
B	Screen Length:	14'	14'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	30'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	14.5'
F	GeoDisc?	☑	14.5'
G	1st Bentonite Seal?	☑	12.5'
H	Soil Fill to 3' BGS?	☑	3'
I	2nd Bentonite Seal?	☑	1'

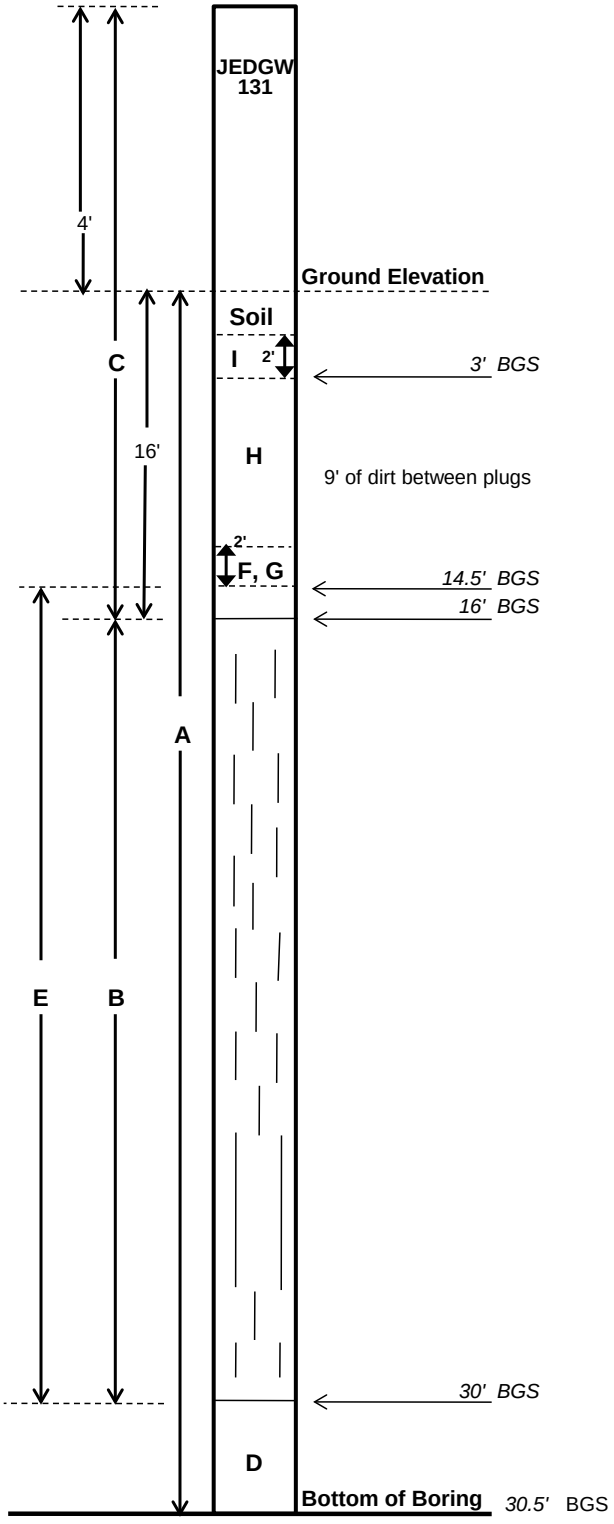
Depth to Top Liner: NA

Depth to Waste: 1.5'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Mod Soil + MSW	103	0909
10-20	Wet, D=Mod MSW	111	0924
20-30	Wet, D=Mod MSW + Soil	122	0945
30-40			
40-50			
50-60			
60-70			
70-80			
80-90			
90-100			
100-110			
110-122.5			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes:



CQA Tech Signature: Date:

Landfill Gas Extraction Well Boring and Construction Log

Well ID: JEDGW132 **Site:** JED Landfill

Project #: 083-82734.51
Onsite Rep: S. Neal

Date/Time Began Drilling: 01/31/17 0949
Date/Time Complete Drilling: 01/31/17 1222
Northing: 1354977.00

Date/Time Began Well Install: 01/31/17 1300
Date/Time Complete Well Install: 01/31/17 1430
Easting: 625801.41
Ground Elevation: 163.90

		Design	Actual
A	Total Depth:	61'	61.5'
B	Screen Length:	45'	45'
C	Solid Pipe Length:	15' + 3'	16' + 4'
	# of Centralizers:	NA	NA

	Checklist		BGS *(to top of layer)*
D	0.5' of #57 Stone?	☑	61'
E	(◉) #57 Stone? ( ) #89 Stone?	☑	15'
F	GeoDisc?	☑	15'
G	1st Bentonite Seal?	☑	13'
H	Soil Fill to 3' BGS?	☑	4'
I	2nd Bentonite Seal?	☑	2'

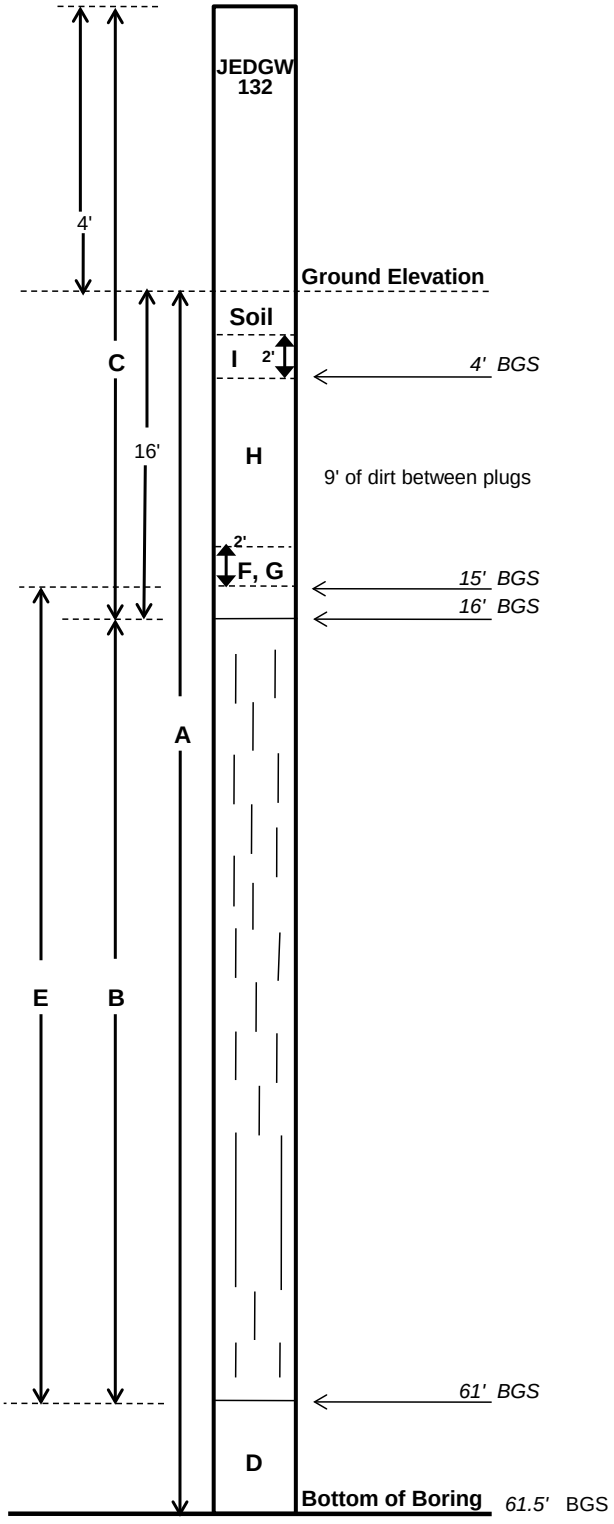
Depth to Top Liner: NA

Depth to Waste: 1.5'

Depth (bgs)	Description*	Temp (F)	Time
0-10	Moist, D=Mod Soil + MSW	113	0959
10-20	Moist, D=Mod MSW + Soil	123	1018
20-30	Wet, D=Mod Soil + MSW	119	1031
30-40	Sat, D=Severe Soil + MSW	124	1053
40-50	Sat, D=Severe MSW + Soil	125	1140
50-60	Sat, D=Severe MSW + Soil	123	1222
60-70			
70-80			
80-90			
90-100			
100-110			
110-122.5			
120-130			

*Key: M=Moisture Content, D=Decomposition

Notes: Saturated at 39 ft. No water bucket.



CQA Tech Signature: Date:

APPENDIX F

AGGREGATE BACKFILL LABORATORY TEST RESULTS

OMNI WASTE/OSCEOLA CO GCCS EXP/FL
SUMMARY OF DATA

Sample Identification	Sample Type	Sample Depth	Soil Classification	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Carbonate Content	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
					L.L.	P.L.	P.I.	L.I.	% Finer 3/4" Sieve	% Finer No. 4 Sieve	% Finer No. 200 Sieve	Maximum Dry Density (lb/cuft)	Optimum Moisture %	%	Moisture %	Dry (lb/cuft)		
JED-ROCKS-1	Bulk	-	GP	-	-	-	-	-	0.2	0.2	0.1	-	-	0.0	-	-	-	-

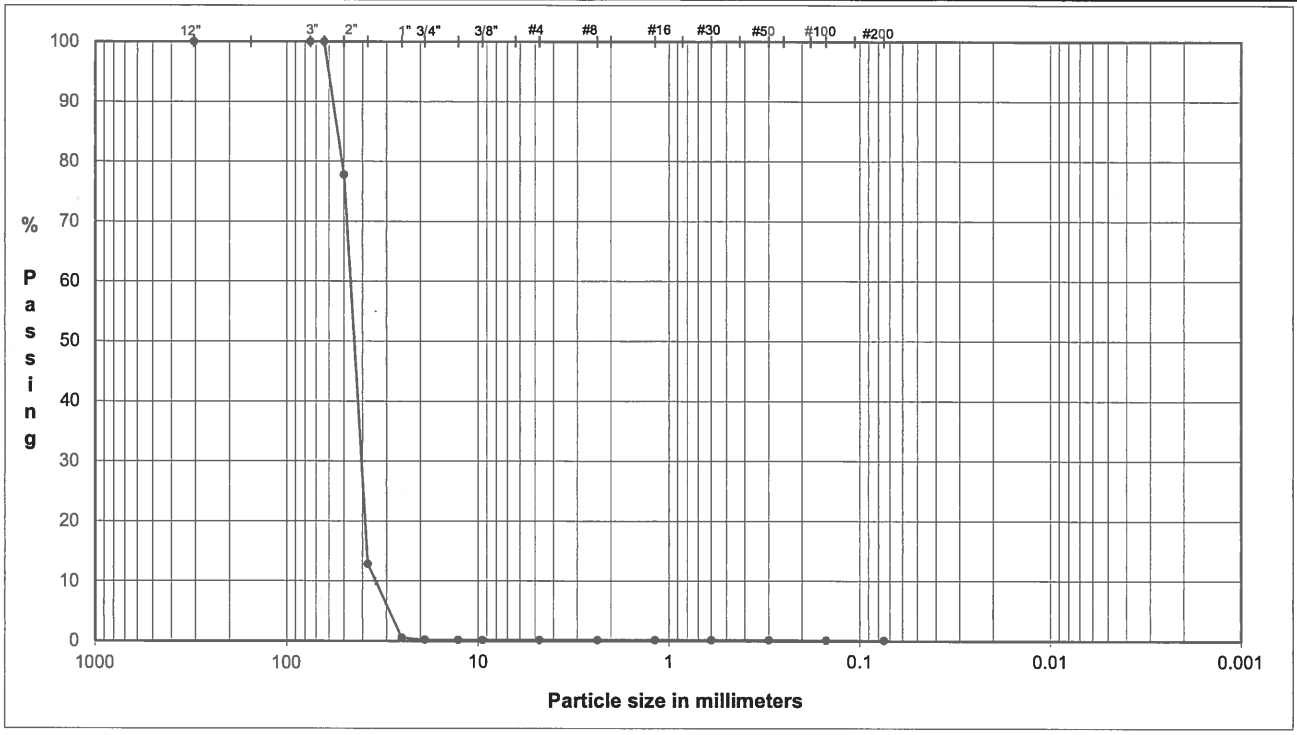
ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH

PARTICLE SIZE DISTRIBUTION

ASTM C117, C136

PROJECT NAME: **OMNI WASTE/OSCEOLA CO GCCS EXP/FL**
SAMPLE ID: **JED-ROCKS-1** - Depth: -
TYPE: **Bulk**



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
3.0"	75	**100.0**	Cobbles	**0.0**
2.5"	63.5	**100.0**		
2.0"	50	**77.8**		
1.5"	37.5	**12.8**		
1.0"	25	**0.5**		
0.75"	19	**0.2**	Coarse Gravel	**99.8**
0.50"	12.7	**0.2**		
0.375"	9.5	**0.2**		
#4	4.75	**0.2**	Fine Gravel	**0.0**
#8	2.36	**0.2**	Coarse Sand	**0.0**
#16	1.18	**0.2**		
#30	0.60	**0.2**	Medium Sand	**0.0**
#50	0.30	**0.2**		
#100	0.15	**0.1**		
#200	0.075	**0.1**	Fine Sand	**0.0**
			Fines	**0.1**

D_{60}= 46.21	D_{30}= 40.46	D_{10}= 34.16
Cu = D60/D10 =	**1.4**	< 4
Cc = D30^2/(D10*D60) =	**1.0**	> 1

DESCRIPTION: GRAVEL, coarse, trace fines; gray.

USCS: GP

M_c -

TECH	JS
DATE	11/22/16
CHECK	
REVIEW	
APPROVE	

CARBONATE CONTENT
ASTM D 3042 - MODIFIED

PROJECT TITLE	**OMNI WASTE/OSCEOLA CO GCCS EXP/FL**
PROJECT NUMBER	**083-82734-51**
SAMPLE ID	**JED-ROCKS-1**

Residue +Tare weight (g)	613.94	603.79	617.98
Tare Weight (g)	82.08	81.25	81.53
Residue weight (g)	531.86	522.54	536.45

After Acid Application and Wash

Residue + Tare weight (g)	613.90	603.72	617.97
Residue weight (g)	531.82	522.47	536.44
Carbonate Content (%)	0.0	0.0	0.0

Average Carbonate Content (%) **0.0**

REMARKS used pH 4 acid.

SAMPLE DESCRIPTION GRAVEL, coarse, trace fines; gray.

USCS GP

MODIFIED: Only the Plus No.200 Size material used in the test.

TECH	**JS**
DATE	**11/22/16**
CHECK	
REVIEW	PWM
APPROVE	

APPENDIX G

PHOTOGRAPHIC DOCUMENTATION OF CONSTRUCTION ACTIVITIES

PHOTOGRAPHS

Photograph 1: 8” SCH 80 slotted and solid PVC pipes.

Photograph 2: Drilling operations.

Photograph 3: Saturated waste at bottom of boreholes.

Photograph 4: Setting gas well screen (typical).

Photograph 5: Gluing slotted PVC pipes (typical).

Photograph 6: Lag bolted joints to provide additional support (typical).

Photograph 7: Backfilling extraction well with approved stone (typical).

Photograph 8: Installing georing (typical).

Photograph 9: Hydrating bentonite plug at extraction well (typical).

Photograph 10: Hydrating bentonite plug in encasement at JEDGW114.

Photograph 11: Completed well (typical).

Photograph 12: Installing new wellhead (typical).

Photograph 13: Trench excavated (typical).

Photograph 14: Checking trench slope while excavating.

Photograph 15: Welding 18” header pipe.

Photograph 16: 18” header pipe in trench.

Photograph 17: Welding electrofusion coupling (typical).

Photograph 18: Welding 8” lateral.

Photograph 19: Welding 2” air and 2” forcemain.

Photograph 20: Installing lateral pipe in trench with air supply line and forcemain.

Photograph 21: Flange bolts wrapped with 10 mil plastic and taped to pipe.

Photograph 22: Installing valves on header pipe.

Photograph 23: Backfilling trench. Caution tape applied and survey posts every 50’ and at points of interest (typical).

Photograph 24: Regrading slopes with dozer (typical).

Photograph 1: 8” SCH 80 slotted and solid PVC pipes.

Photograph 2: Drilling operations.

Photograph 3: Saturated waste at bottom of boreholes.

Photograph 4: Setting gas well screen (typical).

Photograph 5: Gluing slotted PVC pipes (typical).

Photograph 6: Lag bolted joints to provide additional support (typical).

Photograph 7: Backfilling extraction well with approved stone (typical).

Photograph 8: Installing georing (typical).

Photograph 9: Hydrating bentonite plug at extraction well (typical).

Photograph 10: Hydrating bentonite plug in encasement at JEDGW114.

Photograph 11: Completed well (typical).

Photograph 12: Installing new wellhead (typical).

Photograph 13: Trench excavated (typical).

Photograph 14: Checking trench slope while excavating.

Photograph 15: Welding 18” header pipe.

Photograph 16: 18” header pipe in trench.

Photograph 17: Welding electrofusion coupling (typical).

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Photograph 21: Flange bolts wrapped with 10 mil plastic and taped to pipe.

Photograph 22: Installing valves on header pipe.

Photograph 23: Backfilling trench. Caution tape applied and survey posts every 50’ and at points of interest (typical).

Photograph 24: Regrading slopes with dozer (typical).

APPENDIX H

CONSTRUCTION QUALITY ASSURANCE ENGINEER FIELD MONITORING REPORTS AND FORMS

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
82°, Sunny, 10 mph

DATE 11-16-16
S M T W T F S
~~80°, sunny~~

THE FOLLOWING WAS NOTED:
1300- Pre-Construction meeting with CB+I Gas Plant Representatives, CB+I construction representatives, J.E.D. Representatives, Golder Assoc. (S. Neal, D. Grigg)

1420- Investigate watered in pipe header in Cell 9 / Cell 10 Area. 18" header exposed and an approximately 30 ft belly found just NW of HGC-14. Smaller, ~5 ft belly found just SE of HCW-14.

1630~ off site, All

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal, Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 11-17-16
S M T W (T) F S

70°, sunny

THE FOLLOWING WAS NOTED:

0605 - On site
0715 - Trench immediately upslope of 18" header next to HGC-14
0725 - Flange at end of future expansion wye next to HGC-14 was hit; small air leak. Gas plant called. Brad & Andy on site.
0750 - Wye cut just behind flange. 8" schedule 80 pvc cap placed on wye then bagged. Air leak stopped. Plant notified.
0800 - Trench NW from HGC-14 ~100 ft
0920 - Strap attached to header & ~~adjusted~~ (N) header adjusted. Adjustments only move belly ~~up~~slope. Brady/Andy off site
1000 - Continue trenching SE of HGC-14. Don Grigg on site; discuss plan.
1200-1300 - Lunch. Don Grigg off site
1310 - Resume trenching
1400 - Wye next to Cell 10 Riser hit. Air leak into system. Plant notified. Wye was not on as-builts. Wye was a future expansion wye.
1420 - Brad & Andy on site. Wye was completely removed. 8" Schedule-80 PVC cap placed on line then bagged. Air leak stopped.
1500 - Trench ~~past~~ (N) just past HGC-15 where header reduces to end of line.
1520 - Regraded header along stormwater pond retaining wall at 18"-28" connection. Water was seen at connection previous day
1550 - off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal / Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
~~78°~~ Sunny Smph

DATE 11/18/16 S M T W T F S

THE FOLLOWING WAS NOTED:

0630 - On site, safety meeting. CB+I loads truck
0710 - To Cell 10. Excavator refueled.
0730 - To exposed header. HGC-14 is above header at header belly + needs to be cut + refused below header. HGC-14 is surging liquid + there are no pipe pinchers / squeeze-off tools on site. Kevin (CB+I) will have proper tool on site 11/19/16
0830 - CB+I preps + lubricates drill rig
1000 - Attach bucket to rig then move rig to top of cell 6 / Cell 9
1130-1230 - Lunch
1300 - Find area to stage rock for wells
1330 - Rock delivered
1415 - "JED ROCK SAMLE 1" collected in 5-gallon bucket
1520 - All equipment moved
1530 - Golder off site
1615 - Relenquish "JED ROCK SAMPLE 1" to FedEx
1700 - hotel

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal, Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
78, sunny 15mph

DATE 11/21/16

S (M) T W T F S

THE FOLLOWING WAS NOTED: 0630 - On site Safety meeting
0700 - Move to JEDG83R1 area
0815 - Hertz delivers excavator
0900 - Excavator to JEDG83R1 & Builds bench for drill rig
1000 - Begin drilling JEDG83R1, liner at 4 ft
1100 - 30 ft bls
1120 - Wet at ~40 ft bls, soil & MSW
1235 - 70 ft bls
1410 - 88 ft bls, Bucket clear borehole w/ little/no resistance
1425 - Begin installing well; 72 ft screen, 15 ft riser
1505 - Well should take ~35 tons of stone. Only ~20 tons brought stone above screen. Also had to push well last 15 feet due to liquid or collapse in borehole.
1600 - Equipment staged. Crate & liner placed over well for the night.
1630 - off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL

PROJECT TITLE: 2016 4th Qtr GCCS Expansion
68°, clouds 15 mph
CONTRACTOR: CB&I

DATE 11/22/16

S M T W T F S

THE FOLLOWING WAS NOTED:

0700 - Chance (CB+I) on site. Golder on site. Chip + Glen (CB+I) to Orlando to pick up pinching tool from FedEx
0715 - Inspect well JEDG83R1. Rock has not ~~settled~~ settled; is still one foot above screen. Continue constructing well
0745 - Chip + Glen on site
0900 - Well constructed
0930 - Rock delivered (3 loads total for day)
0930 - Begin regrading of Cell 9-10 Riser. 6" HDPE 14 cut + re-fused under 18" riser
1240 - 1340 - Lunch
1400 - Begin covering regraded header, Expose Cell 10 Riser lateral (6") that has unfused coupling
1500 - Fuse coupling
1530 - Cell 10 Riser lateral repaired + covered
1600 - 18" header covered except at 2 wyes that need new flanges
1630 - Area secure, equipment at staging area
1640 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 11/28/16
S (M) T W T F S
15+ mph wind, 75°, clouds

THE FOLLOWING WAS NOTED: 0700 - On site. CB+I on site. Safety meeting.
0730 - Prep near JED GW-111 gas extraction well
0830 - Begin drilling JED GW-111 (see well Log)
0845 - Juan and Johnny (CB+I) Building benches at proposed well locations along slopes
0845 - Chip & Tulo connecting header pipe at staging area
- Approximately 800 feet of 18" header fused at staging area throughout day
0925 - Wet at 33 ft bls
1110 - 80 ft bls
1150 - Started rotating between regular bucket and water bucket
1650 - 121.5 ft bls
1655 - Grate placed over borehole & well construction initiated (see log)
1755 - Rock in well above screen. visqueen over grate for night
1805 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
80°, sunny
CONTRACTOR: CB&I

DATE 11/29/16

S M (T) W T F S

THE FOLLOWING WAS NOTED:

0645 - CB+I & Golder on site at staging area. Prep/housekeeping
0715 - Safety meeting
0730 - Pipe crew continues fusing 18" hdpe header. Gene moves rig to JEDGW082. Others to JEDGW111 to complete well install (see log).
0750 - Surveyed elevation of GW082 is 181.0 compared to previous 182.0. Screen and well specifications adjusted accordingly (see well log)
0805 - Begin Drilling to 80 ft BLS at JEDGW082 (see well log for details)
0832 - Wet at ~13 ft, perched
0859 - 30 ft
0915 - Wet at 40 ft
1140 - 60 ft
1315 - Very muddy and refusal at 62 ft. Driller says he feels void from 57 - 62 ft
1340 - End drilling at 62.5 ft
1350 - Begin JEDGW082 construction
1500 - too much rock in well. At 12 ft BLS instead of 15 ft BLS. Cover with visqueen and allow to settle ~~for~~ over night
1600 - 400 ft of 18" header fused. 600 ft 12" header fused. Header brought to top of landfill.
1630 - off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
80°, Sunny, Afternoon- light Rain
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 11/30/16
S M T (W) T F S

THE FOLLOWING WAS NOTED: 0645- Safety meeting
0700 - Drill crew to JEDGW091, set up materials
0730 - Begin drilling JEDGW091. Surveyed ~~depths is 1 ft~~ (1) elev. is 1 ft lower than planned; adjust well specs. Pipe crew fusing 100 ft sections of 12" header/pipe
0745 ~~0800~~ Continue JEDGW082 construction. Rock still at 12 ft
0830 - Complete JEDGW082 construction
0845 - 45 ft. Wet.
1051 - ~~Muddy~~ (5) 70 ft
1250 - muddy 90 ft
1430 - 100 ft
1600 - 1400 ft (100 ft sections) of 12" pipe fused & brought to top of landfill
1634 - 120 ft
1700 - 122 ft, Call to see if we should set well or resume in morning (getting dark)
1730 - cover & grate well, to resume in morning
1800 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
80°, fog → sun
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 12/1/16

S M T W (T) F S

THE FOLLOWING WAS NOTED: 0645 - On site; Safety
0700 - Drill crew to JEDGW091. Pipe crew begins fusing 8" pipe into 100' sections
0730 - ~~Bo~~ (S) Resume drilling on JEDGW091. Not much liquid or sloughing off from walls.
0800 - 123'; progress from 11/31
1135 - 130'
1225 - 134'
1230 - Begin JEDGW091 construction - see well Log
1530 - Complete well construction
1545 - Set up on Well JEDGW084 for 12/2
1608 - off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
72, 10 mph, clouds

DATE 12/2/16 S M T W T F S

THE FOLLOWING WAS NOTED: 0630- On site Safety meeting
0645- Begin drilling to 130 ft BLS on JEDGW084. See well log
0745- 40 ft
0919- 80 ft. Saturated at 75 feet BLS
1035- fouled cable in bucket had to be cleared. Slight delay.
1100- Started using water bucket - muddy returns
1420- 130.5 feet
1430- Grate on borehole, begin well install (see Well Log)
1630- Well installed; move equipment to top of landfill staging ared
1700- off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
78°, cloudy, 10 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 12/3/16

S M T W T F (S)

THE FOLLOWING WAS NOTED: 0650 - On site. Discuss SOW + safety
0720 - Drill crew to top of landfill; staging materials + performing maintenance + safety checks on equipment
0720 - Pipe crew cleaning staging area + organizing trailers
0800 - Check ~~sa~~ flagged locations of proposed header low points in cells 3 + 9 and proposed high point in Cell 6.
0845 - Check location of jumper (18 inch) to be relocated in Cell 3
1050 - Talk to Dan Grigg
1115 - off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

~~12/5/16~~ 82°, sunny, 10 mph

DATE 12/5/16

S M T W T F S

THE FOLLOWING WAS NOTED: 0640 - On site; safety. Move to JEDGW-71R1
0700 - Begin drilling on JEDGW-71R1. Chip is drilling; Gene is off site for the day for OSHA HAZWOPER physical. See Well Log for well info
0735 - 20 ft
*0700 - Pipe crew is fabricating header fittings at staging area
0830 - saturated at 55 feet. Well to be installed to 130 ft. Changed from 131 feet because surveyed elevation was 1 foot lower. Use water bucket as needed.
1150 - 100 ft
1445 - 130 ft. Place grate over borehole
1455 - Begin well construction. See Well Log.
1715 - End Well construction - to specs.
1720 - off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
84°, cloudy, 15+mph (Rain)

DATE 12/6/16

S M (T) W T F S

THE FOLLOWING WAS NOTED: 0640 - On site; safety. S.O.W. for day includes cleanup and slope restoration around GW-89, GW-84, GW-71R1, GW-111. Some MSW & leachate exposed at surface. Rain & lightning in morning forecast and crew does not want to be exposed with rig in the ground.
0710 - Pipe crew continues fabricating fittings. Move to well locations to restore slopes.
0920 - Finished resurfacing slope
0930 - All crew fusing fittings - tees, flanges, reducers, etc. Chip & Johnny off site for supplies
~~1140~~ (EW)
1140 - Chip & Johnny on site. All off site for lunch
1300 - Back on site! Continue fusing fittings
1330 - Steady rain
1345 - CB&I covers equipment & packs trailers.
1350 - Radar shows more rain. CB&I makes call to end day due to weather.
1405 - All off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
~~70°~~ 60° – 80°, sunny, 5 mph

DATE 12/7/16

S M T (W) T F S

THE FOLLOWING WAS NOTED: 0640 - on site; Safety. Trino at OSHA physical for the day.
0650 - Drill crew to top of landfill at JEDGW 096 (GW-96) location. Elevation was surveyed at 255.8 ft vs. 241.0 on Well schedule. Chip + Johnny off site for supplies.
0710 - Start drilling (See Well Log)
0730 - Confirm change in total well depth and screen length with Don Rigg. Changed total from 127' to 142' and screened from 111' to 126'.
0800 - 30 ft
0928 - 80 ft
1025 - 100 ft - saturated
1050 - ~104', begin using water bucket as needed
1140 - Trino on site from physical
1242 - 120ft
1300 - 1325 - Weekly Construction conference Call
1440 - Cable twisted in drill rig. At 141 ft. Rig need new cable. End boring at 141 ft bls (1 foot short)
1505 - Begin well install - see Well Log
1535 - While installing well, realize last water bucket load had no returns, so borehole was only to ~137 ft. Cut 4 feet out of screen length + add coupling (net -4 ft from screen + total well depth). Well set at 137 ft bls.
1620 - Well should have taken approx. 2.5 truck loads of gravel, but filled to 14 ft with 1.5 loads. Cover well with visqueen and allow settling overnight.
1655 - off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Mc
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
57° → , Sunny
CONTRACTOR: CB&I

DATE 12/8/16

S M T W (T) F S

THE FOLLOWING WAS NOTED: 0635 - On site, safety, Review S.O.W.
0650 - Drill crew to top of landfill to repair cable on drill rig
0700 - Johnny & Chip to investigate tie in between JEDGW078 & JEDGT104. Trench between GW-078 & GT-104.
0900 - Done trenching. Pipe crew joins drill crew to repair drill rig. Electrical wire(s) also need replacing.
1015 - Rig fixed. Finish constructing ~~JEDAW~~ JEDGW-096 (See well Log). Rock did not settle overnight.
1045 - ~~JEDAW~~ JEDGW-096 complete
1130 - Area around GW-096 cleared
1145 - 1300 - Lunch
1305 - Gene & Chance change oil + other Drill Rig maintenance
1305 - Rest of CB+I to JEDGT104. Connect 8-inch pipe trenched from GW-078 with Tee Electrofused to existing & 90° butt fused to new 8" pipe and Tee.
1545 - Attach new 8" pipe to GW-078. Remove lateral stick up which is with 90°, and replace with ~~new~~ (2) new lateral stick up with tee to attach old lateral with new. Re-attach GW-078 well head.
1615 - Survey stakes placed every 50 ft and at fittings at GW-078 and GT-104. "Buried Gas Line" tape buried ~1 ft deep in trench.
1700 - All off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
50s, 15 mph, cloudy/light rain
CONTRACTOR: CB&I

DATE 12/9/16

S M T W T (F) S

THE FOLLOWING WAS NOTED: 0640 - on site, safety; review S.O.W.

0700 - Drill crew to JEDG68R2. Pipe crew fusing 2" air lines + fittings in trailer due to liklihood of rain throughout day

0725 - Begin drilling on JEDG68R2 (SEE WELL LOG). Surveyed elevation is 232.8; Correct well specifications to new surface elevation (128' total depth vs. 133' planned total).

0846 - 50 ft

0940 - fuel issue

1000 - issue fixed

1101 - 100 ft, saturated at 97 ft

1320 - 128 ft total depth. Begin well install (see well log)

1420 - Johnny excavates ~10 ft at JEDGW083 to locate tie in to existing 8" lateral. Stopped at 10 feet b/c of danger of losing new JEDGW83R1. Connection not found + gas heard leaking from damaged well. Brad contacted. Well and wellhead cut + capped.

1500 - Well took 2 ~~tons~~ (SW) dump truck loads of Rock

1545 - Well complete, clean/secure work areas. Set up on next well

1600 - All of site

SUBMITTED BY GOLDER ASSOCIATES

Matt Hall
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

3.75

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
55° → 65°, cloudy, 20 mph
CONTRACTOR: CB&I

DATE 12/10/16 S M T W T F S

THE FOLLOWING WAS NOTED: 0640 - On site, Safety, move to ~~JED665R2~~ JEDG65R2

0655 - Begin drilling on ~~JED665R2~~ JEDG65R2. Surveyed elevation (238.2) 1 foot higher than what's on well schedule. Adjust depth + screen length accordingly

0655 - Pipe crew fabricates valve with flange + blind flange

0800 - 40 ft

0918 - 80 ft

0925 - Saturated at 81 ft

1034 - 100 ft, begin using water bucket when needed (@ 1055)

1245 - Trino to JED65R2; Johnny + Chip off site

1350 - 128.5 ft; total depth

1355 - Begin JEDG65R2 construction - See Well Log

1520 - Finish JEDG65R2 to specs

1530 - Clean work area, Stage equipment

1550 - off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 60°-80°, fog → cloudy, 10 mph
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 12/12/16 S (M) T W T F S

THE FOLLOWING WAS NOTED: 0650 - On site, safety. New CB+I personnel. Josh on site to join Gene and Chance on drill crew. Jaun to join pipe crew with Chip, Johnny, Trino.
0710 - Drill crew to JEDGW115 and set up rig. Elevation ~~meas~~ surveyed at 254.5 ft. Adjust well design accordingly; 1 ft shorter screen and total well depth.
0710 - Pipe crew to JEDGW111 to trench to JEDGW091. Plan to trench from GW111 towards GW091 at 5° grade
0745 - Begin drilling on JEDGW115 - See Well Log
0800 - Trenching started at 1 ~~ft~~ bls at GW111. Will be ~12 ft at edge of flat road area before reaching landfill slope. Talked to Don G. + Brad and will add extra fill on top of piping near GW111 for protection.
0824 - 30 ft
0946 - 70 ft
0955 - Saturated at 74'
1100 - Trenched to edge of landfill slope next to GW091; ~12 ft deep
1136 - 100 ft
1336 - 120
~~1400~~ 1510 - 130 ft
1600 - 8" lateral pipe in trench between JEDGW111 and JEDGW091 with stubouts. Brad on site + surveys gradient, overall 5.6% grade between wells. Soil cover for ≥12" above pipe then 2' compacted cover
1657 - 142.5'
1705 - Begin installing JEDGW111 to 142 ft. Install slotted, riser, and rock to 14 ft b/s
1800 - Dark so cover well with visqueen for the night.
1815 - All off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Jue
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
55° → 77°, sunny
CONTRACTOR: CB&I

DATE 12/16/16

S M T W T F S

THE FOLLOWING WAS NOTED: 0640 - on site, safety. Chance (CB&I) off site for training
0705 - Move to top of landfill. Refuel equipment.
0720 - Pipe crew continues work on GW36R1 → GW114 cross over
0730 - Continue drilling on JEDGW116.
0930 - Stubouts & riser tees connected to 8" line at GW114 and GW115. Pipe laid into trench
0947 - 106 ft
- Trench & pipe ~ 9.5 ft b/s at GW115
1100 - Air lines laid out by trench
1145 - 8" line run & fused length from JED 68R2 to JEDGW36R1 with all 4 8" stickups fused. Start pressure test at 10 psi
1231 - 140 feet
1245 - No drop in PSI in pipe
1150 - 1300 - CB & I except Gene to lunch
1346 - 149 ft
1315 - Brad okays tie in at GW36R1, Pipe crew preps. Plant already down for other reasons
1400 - lateral connected to 6 inch riser at GW36R1 via a tee at 4 ft b/s. Tee is 8" to 6"
1415 - 149 ft at GW116
1425 - Begin GW116 construction; See Well Log
1425 - Pipe crew fusing force main air & condensate pipe (2 inch) with tees at wells
1600 - Pipe crew placing air & condensate lines in trench next to new header
1610 - Well install complete
1630 - Stage equipment, pack tools
1645 - Off site, CB&I to staging area at base of landfill

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65°-83°, fog-sun, 5mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 12/13/16 **S M (T) W T F S**

THE FOLLOWING WAS NOTED: 0645 - All on site, Safety Review SOW

0710 - Drill crew to JEDGW114 & get ready to drill

0710 - Pipe crew to JEDG83 to try to find existing tie in downslope of well. It is too deep at well; Danger of undercutting JEDG83R1

0730 - Begin drilling JEDGW114

0738 - Josh & Chance finish JEDGW115 construction (gravel, bentonite, & soil) - see Well Log

0830 - JEDGW115 construction complete

0837 - 40 ft bls at JEDGW114, Saturated & muddy at 37 ft

0920 - Found tie in at JEDG83 (S) ~~WYE~~ 90° located ~15 ft bgs. Trench to expose 8" line downslope of (S) ~~Wye~~ 90°.

~~1100~~ 1039 - 100 ft

1100 - JEDG83 capped with screws at ~ 11 ft bls. 8" existing lateral exposed 50 ft downslope then pulled up to level with trench at JEDG83R1. Okayed by JED to keep people out of deep trench.

~~1130 Chip, Johnny, Juan, Trino~~

1155 - Begin pressure test on 8" lateral pipe from JEDGW111 to JEDG83R1. 10 PSI

1200 - Pipe crew to lunch, back at 1320

1255 - Check pressure test - no drop in pressure

1315 - Johnny calls Brad to schedule shutdown for tie ins. 391 feet of pipe from GW111 stubout to G83R1 stubout

1509 - GW114 to final depth of 142.5

1515 - Begin constructing GW114 to 142 ft bls - See Well Log

1515 - Pipe crew waiting for plant shut down & okay to cut 8" lateral. A downflow valve was closed at 1630 & line cut, but there was still suction on line, ~~line~~ (S) cut patched & Brad notified.

1530 - 8" existing header electrofused to new 8" header at JEDG83R1

1600 - Backfilling lateral pipe & trench with soil then backfill (trash) with survey stakes every 50 ft

1640 - Pipe crew off site. Too much rock in well; excess rock excavated.

1700 - Block/barricade well for night

1720 - All off site

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Scott Mc
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1 ★

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 12/14/16 S M T (W) T F S

THE FOLLOWING WAS NOTED: 0635- On site, safety
0655- Drill crew to JEDGW114, discuss plan to set bentonite plugs & complete well. Greg Cooper (CB&I) on site
0710- Discuss above with Don Grigg & Brad
0715- Pipe crew digs to find JEDGTIR1 → Cell 5 12" header crossover tie in points
0905- Begin drilling JEDGW117 to depth of 142 ft. Adjusted to 142' from 127' based on 15' elevation change from well schedule
0915- Tie in points found. ~4.5' deep in Cell 5. ~150' downslope of tie in point on figure in Cell 6; Unknown depth, but much deeper at point on figure.
1015- JEDGW114 complete. Rock excavated to 8 ft bls, geo ring on well on top of rock. 2 ft section of 30" pipe on top of georing & bentonite hydrated in pipe. bentonite around outside of pipe at base (S) also. soil from ~6 to 3 ft. Second 2ft 30" pipe from 3'→1' bls with hydrated bentonite in annulus between well & pipe. Soil to surface. Trash (S) backfilled around well area as constructed.
★see Rear of this page for sketch
1015- 50'
1026- saturated at 55' ~~perched layer~~
1206- 80'
1240- Pipe crew to lunch, Return at 1350
1200- Kevin (CB&I) on site
~~1245- Kevin~~ 1250- 90 ft
1250- Brad & ~~Jeremy~~ Andy connecting well heads to GW111, GW91, & GB3R1; good positive pressure
1400- Hertz on site
1520- Excavator fixed
1550- 120 ft
1647- 127 ft; cover for night. No way to finish well. ~~Okayed (S)~~. Covered & blocked by equipment
1705- off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

★- Sketch of JEDGW114 on rear of this sheet

FIELD MONITORING REPORT

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PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
78-82°, fog
CONTRACTOR: CB&I

DATE 12/15/16
S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700 - On site, CB+I already on site
0720 - Resume drilling on JEDGW117 - caved in from 127 to 120 ft over night
0730 - Drill crew to Cell 4,3,6 crossover. Waiting for 12"-8" reducers so can't work on G71R1 Cell 5 - Cell 6 crossover. Plan to connect GW115, GW114 & G68R2 in at ~~subsurf~~ GW36R1 to have 3 more wells pulling ~~to fo~~ before breaking for Holidays.
1002 - 142 ft at JEDGW117, end of drilling
1010 - Begin JEDGW117 construction - See Well Log. Well sunk ~2 ft during installation.
1045 - Move drill rig to JEDGW116
1110 - Begin drilling on JEDGW116. Desired total depth changed to 149.0 ft based on surveyed elevation
* 0830 - Pipe crew trenching outwards from high point ~~just SW of~~ at (SW) GW114
1149 - 30 ft
1215 - 1330 - lunch off site for all
1348 - 40 ft
1350 - Trenched to GW36R1, 15 ft deep at well & tie in not visible. Brad okays ~~tying~~ tie in (SW) tying into riser pipe (6")
1430 - 60 ft
1450 - Excavated ~60 ft East of GW114. All trench bedded with soil. ~~3 6" tees w. to~~ 3 6" tees with (SW) stubouts fused for connecting wells. okay
1505 - Stop drilling for day. Cover & block well. Drill crew assists pipe crew
1700 - All off site.

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

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PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
80°, 15 mph, clouds
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 12/17/16 S M T W T F (S)

THE FOLLOWING WAS NOTED: 0645 - ~~CB+I on site~~ (a) CB+I on site
0730 - On site. Had to patch tire at hotel - screw in tire. CB+I covering JED68R2 - JED6W36R1 pipes with soil
0930 - Backfilling with excavated trash. Survey stakes every 50 ft along trench and at fittings
1110 - Hauling excess trenched trash to disposal area of landfill
1220 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

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PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
70° → 83°, foggy, 5 mph
CONTRACTOR: CB&I

DATE 12/19/16

S (M) T W T F S

THE FOLLOWING WAS NOTED: 0640 - All on site, safety, Review S.O.W.

0720 - All to top of landfill. ~~Haul~~ Haul off remaining trash from trenching & restore surface conditions. Mechanical compacting of soil at surface.

1010 - Attach & cover 2" tee stick ups at GW68R2. Cover & compact soil

1140 - Surface restored for entire length of trench (GW36R1 - GW68R2)

1200-1320 - All off site for lunch

1320 - Brad & Johnny connecting well heads. GW115, GW114, & 36R1 all connected

1330 - Johnny okays with Brad change to construction plan; instead of GW117 connecting to GW096, GW117 will go west downslope to the 8" line at GW095.

1330 - Dig at GW095 to find line

1400 - found, 8" butt cap at well; excavate to GW117

1405 - GW068R2 connected & gas flowing to plant

1520 - Place pipe in trench. Trench bedded with soil, ≥5°, and ≥2' deep

1550 - Begin backfilling trench with soil & place survey markers every 50' from GW117. Trench is 168' from GW117 to GW096

1655 - Off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

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PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65° – 75, foggy 10mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 12/20/16 S M (T) W T F S

THE FOLLOWING WAS NOTED: 0700 - On site, CB+I on site - Review S.O.W.
0720 - To ~~top~~ GW117
0730 Begin pressure test of GW117 - GW095 8" pipe at 10 psi
0830 - No pressure drop - test passed
0745 - 930 - load excavated trash into trucks for disposal into active landfill
0940 - Connect new 8" pipe into existing 8" at ~~60~~ GW095 via electrofusion coupler
0945 - Brad + ~~Jeremy~~ Andy (2) connect well head (QED). Plant has been notified + shut down
1010 - Plant back on. Begin backfilling trench with soil +
1045 - Return to staging area. CB+I safety call (Chip + Johnny only). Trino + Chance continue to resurface trench area
1140 - 1240 - lunch
1245 - ~~Fuse~~ (5) haul larger diameter pipe stringers to top of landfill for staging
1500 - Fuse 4" stringers
1610 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
70° - 83°, foggy then cloudy
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 1/3/17 S M (T) W T F S

THE FOLLOWING WAS NOTED: 0610 - Hotel, gas, water
0700 - On site, CB & I (Johnny, Chip, Chance, Juan) on site. Safety. Review SOW
0730 - Begin exposing tie-in point ~30 ft NW of ~~HC~~ JED HGC II Riser in CELL 9
0810 - Hauling waste while trenching NW. Find 18" - 16" reducer. Caution tape area
0915 - Move to JED GW062 to expose liner. Liner ~4 ft bgs. Sound depth to 12" header at GW062; 9 ft bgs
1135 - 1250 - Lunch
1300 - Continue exposing liner between highpoint & GW062 (~25' x 12' area)
1450 - Cut & peel back liner between highpoint riser & GW062
1520 - Excavate beneath liner to existing header - another ~4 ft
1550 - Set caution tape around perimeter of exposed areas
1600 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
70° cloudy
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 1/4/17
S M T (W) T F S

THE FOLLOWING WAS NOTED: 0645 - on site

0700 - Inventory parts and materials (~150 bags of bentonite) for new wells + lateral connections
0815 - Begin ~~stockpiling~~ soil atop top of landfill. Continue exposing liner in Cell 3
1030 - Talk to Brad - no sump will be installed at Cell 3 tie-in
1145 - 1245 - Lunch
1245 - Continue exposing liner south of JEDGW062. ~~Highpoint~~ (S) Suspected highpoint at level area in pipe ~15 ft south of GW062. Contine stockpiling soil.
1430 - Cell 3 tie-in area open with pipe exposed for ~30 ft. Left open for JED to inspect. Area of excavation surrounded with caution tape
1445 - Move to bone yard & move one 18" to 8" tee and one 18" to 8" tee with 8" wye moved to staging area at top of landfill
1545 - Fuse 18" to 6" connection for future pressure testing
1615 - End stockpiling soil
1635 - ~~Move~~ Pressure test fitting fusion complete
1645 - ~~off~~ site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
55° - 75°, sunny
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 1/5/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700 - On site. CB+I on site. New operator Kenny on site.
0730 - Move track-mounted heat welder & other equipment to top of landfill
0815 - Fuse two 200 foot sections of 18" header
0925 - Clear out & haul away trash immediately next to cell 9 tie-in header
0950 - Clear out & haul soil immediately next to CELL 3 header tie-in area
0845 - Move 800' section of 18" header to eastern edge of top of landfill
1030 - Move Heat welder to CELL 3 tie in
1110 - 1225 - Lunch & refuel fuel canisters
1235 - Start trenching & benching at 6:75° towards high point
1500 - Trenched to GW68R2, trench ~6'-8' deep. Lay 18" header and forcemain lines into trench. Some leachate seeping into trench
1600 - Cover lines with sandy soil (≥ 12")
1645 - Backfill & compact to surface. Tie-in excavation left open with pipe ends covered (left open for future pressure test). Back filled to ~ 15' west of GW68R2;
1720 - Tape off open areas
1730 - off site

SW

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 55° - 80°, foggy → Sunny 5 mph
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 01/06/17 **S M T W T (F) S**

THE FOLLOWING WAS NOTED: 0700 - On site, CB+I on site. Safety Review SOW. ReCal Air Meters
0800 - To CELL 3 - Heavy Rain expected ~~and leachate~~ 01/07 AM. Leachate pumps have been down for 2 days and leachate ditches are full. CB+I wants to wait until after rain and pump system operational again due to leachate in ground.
0815-1040 - Weld 18" tee with flange for jumper connection, 18"-6" tee for GW063, and 18"-8" tee for connection to 68R2 lateral. All fused together for connection at 18" header ~12 ft west of GW063.
~~1200-1300~~ (LW)
0840 - 1.5 & 4" ~~forcemain~~ (FM) forcemain lines running ~~from portable pump~~ at base of cell 3 due east of GW062 cut on 01/05. Both lines rewelded so pump can be turned on.
1100 - Move backfill upslope of Cell 3 tie-in excavation in hopes to divert rain around excavation via a berm
1100 - 2 crew at Staging area at Landfill base fusing air line fittings
1130 - CB+I to lunch. I locked Keys in truck & have to wait on locksmith
1145 - Truck unlocked
1200 - 1300 - GAI lunch
1300 - CB+I fusing ~~440~~ 140 ft long 8" stringers & moving to top staging area. Continue fusing forcemain fittings. 6 stringers total made
1640 - CB+I off site.
1645 - Talk to Brad (JED); he surveyed proposed GW132, GW129, GW126, & GW122 locations.
1700 - off site

** Front to come in Saturday with rain. CB+I will do NO trenching or piping. They will fuse pipe if possible **

1/9 *** Rain on 1/7. Safety + equipment maintenance in AM only. No GAI on site

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MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
40° - 65° Sunny
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 1/9/17 S (M) T W T F S

THE FOLLOWING WAS NOTED: 0645- On site. CB&I on site. Review SOW
0710- Move to top of landfill and set up equipment & clear work area for 12" crossover header located between GW079 & GW081
0800- Begin trenching from highpoint; ~145 ft from GW081 & ~116 ft from GW079 to. Trenched at 5° grade to west. Unwind 2" hdpe piping spools
1115- trenched to edge of top of landfill. ~8 ft at edge. Secure site
1125-1240- lunch, fuel
1245- Begin trenching east from high point at 5° grade
1540- Secure trench with equipment and barricades
1605- off site

1605

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
50° - 70°, Sunny, 5 mph. Rain in PM

DATE 1/10/17

S M (T) W T F S

THE FOLLOWING WAS NOTED: 0655 - on site; CB+I on site. Chance (CB+I) off site. Chip + Dan (CB+I; new to site) to come on site later.
0700 - Move pipe welder & pipe fittings to top of landfill.
0740 - Fuse 2 12" stringers together
0820 - Chip + Dan (CB&I) on site
0830 - Fuse in 12"-8" tee due north of GW079
0915 - Excavate 59' from 12" header to GW079. Haul away trash.
1100 - Fuse 90 with ~ stick up for GW079 to 59' of 8" pipe
1130 - lunch
1245 - Return to site
1250 - Fuse 8" pipe to 12" crossover then put header in trench
1330 - Run 2" forcemain lines. Tees fused 59 feet north of GW079 at crossover trench.
~~15~~ (5) ~~15~~ 90°s with ~~capped~~ fused butt caps on 6' risers fused at GW079 on forcemain lines
1530 - Forcemain lines in trenches. Soil on top of piping then backfill to surface. Compacted in lifts with excavator bucket
1630 - Block trenches with equipment
1650 - All off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
55° - 72°, sunny 5mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/11/17 **S M T (W) T F S**

THE FOLLOWING WAS NOTED: 0650 - On site. CB+I on site. Juan (CB+I) sick - off site
0710 - Move to top of landfill
0720 - Use survey equipment to find JED GW081 tie in point with ≥5% grade. Will tie in with ~~45~~ 30, 121 feet east of high point
0750 - Begin digging from tie in towards GW081. Haul away trash while trenching
0845 - Go check new proposed well locations
1050 - Finish trenching to GW081. Uses 90° & sweeps up to well
1100 - Move 12"-8" tee to GW081 → crossover header tie in
1110 - 1220 - Lunch
1230 - Fuse 12"-8" ~~reduc~~ tee at GW081 tie in. 160 ft of piping from tie in to GW081
1300 ~~ddc~~ Construction Conference Call. Chip & Johnny to JED office
1400 - Chip & Johnny back on site. Call over.
1410 - Fuse 8" riser at GW081 & pressure test cap
1450 - Fuse 2" forcemain tees at GW081/crossover junction
1600 - fuse 90s with risers ~~ends~~ terminating with fused butt caps on forcemain at GW081
1630 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
58°- 75°, Sunny, 10 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/12/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700- On site. CB+I on site; Safety & Review SOW
0725- move to top of landfill
0740- Begin backfilling GW081 trench + crossover at GW081 tie in. All Piping bedded with ≥6" soil then covered with ≥12" soil. Survey ~~mark~~ stakes every 50' from highpoint + ~~Wells~~ GW081 + at connections
0800- Trench west towards JEDGW90. Trenched ~50 ft past; exposed JEDGW90A tie-in.
0940- 1.5" forcemain line hit at GW090. Have compressor shut off + repair line.
1000- Line repaired, JED notified they can turn on compressor. Haul away trash.
1020- Begin fusing tees for GW90 + GW90A tie-ins + risers. ~~Move 12"+2" to trench.~~ (SW)
1130-1245- lunch
1255- Begin fusing ~~GW~~ Tees:
- 1 12"-8" at GW090 (vertical riser for well)
- 1 12"-8" 15 ft west of GW090 for GW090A replacement
- ~~2 2" risers at GW090 (vertical forcemain risers)~~
- ~~2 2" 15 west of GW090 for GW090A~~
- ~~200' stringer~~ Backfill from crossover high point to western landfill top edge

(SW)
1540- expose air line that passed ~1.5 ft below ground at GW090 Running North-South
1600- Johnny off site
1625- All others off site

SUBMITTED BY GOLDER ASSOCIATES
Scott Nal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
AM - 60°, light rain PM - 70 5mph, clouds
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/13/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0655 - Gas, Ice, waters
0705 - On site, CB+I on site. Light rain. Safety
0730 - Top of landfill. Load + haul away excess trash and ~~backfill~~ backfill western slope of crossover header
0850 - fuse 2" tees in Air/forcemain lines at JEDGW090 with 6' vertical risers.
- fuse 2 2" tees ~10 ft west of GW090 for GW090A → GW116 trench.
- ~5 ft stubouts with butt caps welded on west of GW090A → GW116 trench to terminate forcemain lines
1040 - 8" 45° fitting fused onto 8 ft section of 8" pipe from tee at cross over for GW090A → GW116 trench
Rain stops → 0940 - Trench from GW116 downslope to ~~45~~ (SN) 8" 45 at ~~12~~ (SN) GW090. Load + haul away trash
~~1030~~ (SN)
1135 - 1245 Lunch
1255 - Fuse 8" pipe to 45 at GW090 and run in trench
1350 - fuse 8" tee with ~~riser~~ (SN) capped riser at GW090A
1420 - fuse Air/forcemain lines to tee at GW090.
1445 - fuse 90 (8") at GW116 with capped riser attached (235' from GW90 → GW116)
1530 - Run air/force main 2" lines to GW116 + fuse tees with risers at GW090A
1620 - fuse 8" + 2" risers (2 2") at GW116
1700 - Off site

(SN)

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
75°, 10 mph, cloudy
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/14/17 **S M T W T F (S)**

THE FOLLOWING WAS NOTED: 0700 - On site; CB+I on site

0715 - Top of landfill. CB+I backfilling western end of crossover + GW090 → GW116 trench. 1 foot of soil on top of pipe (compacted) then backfill to surface. Survey stakes every 50 Ft and at fittings. Haul away excess trash

0730 - Johnny trenches crossover from eastern ~~at~~ edge to GW071R1; bed with 6" soil while trenching

0900 - lay ~~#~~ 12" crossover pipe in trench. Fuse 2" air/force main lines

0945 - weld air/force main + 12"-8" gas line tees at GW071R1. Risers for each also welded. Stubouts extend 50'+ ~~past~~ (S) east past well

1030 - Cover pipes with 1 foot soil then backfill to surface from top of landfill to (SW) ~~10 ft past~~ GW071R1. Excess trash hauled away. Survey stakes installed

1200 - Backfilling complete. Secure equipment

~~(SW)~~

1215 - Off site

(SW)

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65°-77° Sunny 5mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/16/17 S(M)T W T F S

THE FOLLOWING WAS NOTED: 0700 - On site. CB&I onsite. Safety, Review SOW.
0720 - Move equipment to existing 12"-18" tee where existing GW083 connects to existing 18" header. Chip stockpiling soil at Cell 9 tie-in
0800 - Excavato to locate tee
0840 - Tee found
0900 - Move 18" stringer to cell 9 tie in
0925 - Bring Tees to work area
0945 - Okay use of 4" saddles for HGC10
0955 - Fuse 18"-8" tee for future JEDGW129 trench
1055 - Tee fused
1105 - 1205 - lunch
1220 - fuse 18"-8" tee for future JEDGW126 trench
~~1400 - fuse~~ (SW)
1345 - Move 2" air & 4" forcemain stringers to CELL 9 tie-in ~~header~~ trench
1430 - Fuse 2 18" tees
1530 - Chip done stockpiling soil
1535 - fuse tees in air & forcemain at ~~Cell 9~~ (SW) & GW129 future trenches
1620 - Secure work area & equipment
1630 - All off site

SW

* Crew of 4 on site for CB&I (Chip, Johnny, Juan, Kenny)

SW

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Scott Golder
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

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PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65° - 80° Sunny 5 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/17/17 **S M (T) W T F S**

THE FOLLOWING WAS NOTED: 0700- On site. CB+I on site (Johnny, Chip, Juan, Kenny, Chance, Josh) Review SOW

0725- Move to Cell 9 header + begin trenching at 5%.

0800- fuse 90s with stubouts on 2" + 4" lines at CELL 9 tie-in point

0915 - Fuse 2" + 4" tees at location of future ~~bed~~ JED GW126 trench in 18" header trench. 4" tee is a 4" → 2" tee -- 2" into GW126 trench

1000 - Brad (JED) on site. Call Don G. about possible Removal of 16" pipe in CELL 9 and possible use of PVC caps on abandoned pipe. Don to check ASTM standards

1155 - 1205 - lunch

1212 - continue trenching. Laying New 18" header, 2" air, + 4" forcemain in trench and covering with soil. Survey stakes every 50' and at Fittings

1320 - Call Don about unmarked horizontal riser ~25 feet NE of future GW123 location. Okay to connect via 8" line + 90° ~~at~~ off of GW123 lateral Will need to be surveyed in

1420 - Weld in 4"-2" tee + 2" tee at GW127 lateral / header intersect (206 ft from tie in)

1500 - ~~Excavated to~~ Trenched to ~15 ft past JED GW122 trench. Existing line uncovered.

1520 - ~~Fuse 16" 8" Tee at~~ GW122 / header junction over excavated to allow men/equipment in trench

1545 - Rename wells to account for GW125 being removed from next phase of well installs

1645 - Secure equipment + work area

1655 - All off site

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MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
60° - 81°, Sunny / clouds
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/18/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0655 - on site

0700 - CELL 9 header. Clear out area to place heat welder into trench to connect 18" stringer and 18"-8" tee. Stockpile soil.

1000 - fuse 18"-12" tee to 18" header ~20 ft west of GW112 tee. fuse 200 feet of 18" header on tee continuing towards highpoint

1030 - Begin covering header with soil. Compact on top of header.

1020 - Don Grigg (Golder) on site

1110 - 1225 - Lunch

1230 - Fuse 4"-2" & 2" tees in forcemain & air lines, respectively, at GW122 trench

1230 - Backfill header trench

1300 - Move stockpile soil, fill in low-lying area upslope of header in Cell 9 with trash from trenching

1400 - Don walks through areas on top of landfill, installed wells, and Cell 3

1500 - Don Grigg off site

1625 - trenched to JEDGW074 lateral tie in area (~150' from high point) Clean work area; regrade

1725 - off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal, Golder, SN

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
65°-82°, sunny 5mph
CONTRACTOR: CB&I

DATE 01/19/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700 - On site, CB+I on site
0705 - Move to CELL 6. leachate in JEDGW122 trench/ header junction excavation which was left open. leachate draining into excavation from ditch/terrace adjacent to header at JEDGW122 junction. trench dug to allow drainage into lower terrace/ditch
0730 - Continue trenching towards high point
0820 - Connect 18"-8" tee to connect JEDGW074 down slope well vertical
Saddle will be electrofused next to tee for HGC09 Riser. Tee is located ~560 feet from cell 9 header tie-in
0940 - Cover header with soil
1030 - Chip onsite, was buying parts for CB+I equipment
- Survey stakes placed while backfilling trench
1130-1245 - Lunch, Josh B off site
1250 - Fuse 4"-2" tee and 2" tee at GW074 trench junction
1350 - Fuse Additional 2" + 4" stringers in main header trench. Trench to high point
1500 - Fuse 18" 45°s to make a ~10 ft flat section at high point. 18" vertical access riser with blind flange fused to tee between 45's. 18"-8" tee fused ~6 ft east of eastern high point 45 for GW082 lateral
1640 - All off site

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Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

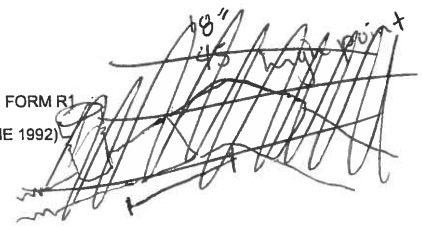
FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
65°-83° Sunny 5 mph
CONTRACTOR: CB&I

DATE 01/20/~~16~~ 17 S M T W T (F) S

THE FOLLOWING WAS NOTED: 0655- On site, CB+I on site, Safety
0705- ~~Repair~~ equipment at staging area
0735- Move to header high point in Cell 6a. (access (W))
0800- Need to move location of high point upslope so riser is not in terrace ditch. Also over-excavate high point to have more room to place fitting in at high point.
- Multiple cuts & welds to place properly. End up with one 45° at high point
1115-1225- lunch
1235- Trench to GW070 lateral trench & weld on 18" pipe from high point
- High point is single 18" 45° fitting. Access riser ~ 2ft downslope of high point on GW070 side
1420- Soil backfill from GW074 ~~from~~ lateral junction to high point. Fuse 4"-2" tee & 2" tee in forcemain & air lines. Air & forcemain into trench, soil, then backfilled to high point
((SV) at GW082 trench)
1500- ~~[illegible]~~ over-excavate area near GW070 trench to allow space to install valves
1620- All off site



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Scott Neal - Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

1745

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65° - 82°, SUNNY, 15 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/21/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0645 - Gas

0715 - On site. CB+I on site. Brandon (CB+I) new crew member on site

0730 - To header in Cell 6. Cell 6 Sump will have remote well head via saddle on header (no saddles on site). Construct and fuse (2) 18" valves and one 12" valve to go in at JED GW070 lateral. All valves are ~ 5 feet away from central point of Tee junction. One 18" valve on either side of tee & 12" valve on 12" side of tee (GW070 lateral)

1145 - 1255 - lunch

~~1300~~ (2) * valves are attached to header with gasketed flanges * Gate valves *

1300 - Fuse 45° fitting (12") approximately 8 feet from header in GW070 trench. Excavate to GW71R1.

1415 - backfill portion of header between valves and highpoint

1650 - All off site

(2)

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Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
Rain, 65°, 30 mph
CONTRACTOR: CB&I

DATE 01/23/17

S (M) T W T F S

THE FOLLOWING WAS NOTED: 0645 - on site, CB+I on site, heavy rain + wind. Front came through Sunday (1/22) and rained through the night
CB+I housekeeping in trailer
0730 - Rain Stops. Inspect work areas. Haul roads have saturated areas that are hard to pass. Standing water/mud near top of landfill. Slope in Cells 3, 6, 9 wet, trenches have standing water, haul road in turn washed over.
0815 - Johnny talks to Brad. Not able to work on header or trench.
0900 - Patch 8" line with ferrco near
0930 - 1030 - Pressure test 12" crossover from GW090 - GW116 - GW082. gate valve at GW082 in 8" line closed. 10 PSI for 1 hr with no pressure drop
1100 - All off site

SW

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

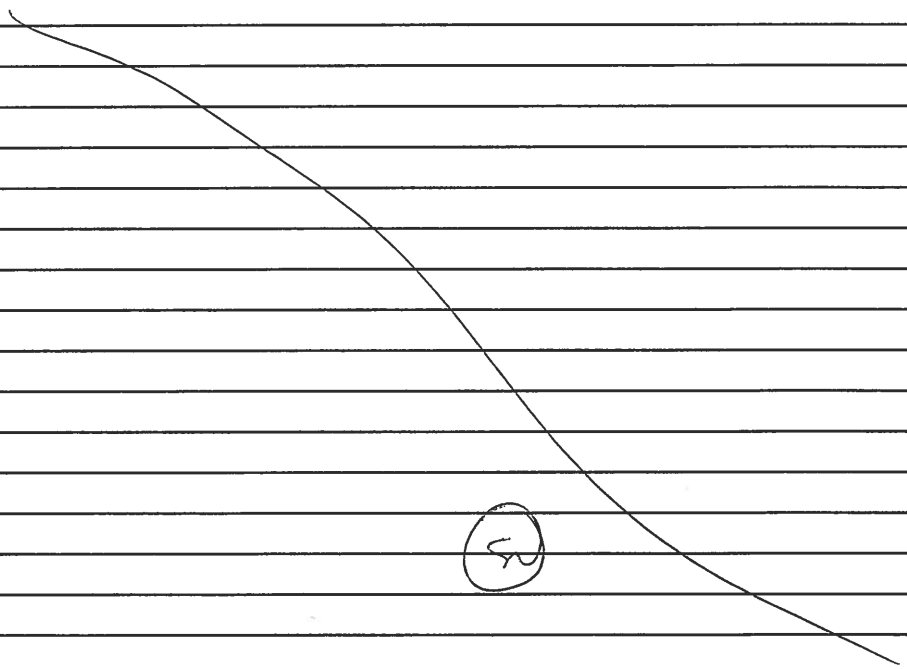
FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
50°-72°, Sunny, 15 mph
CONTRACTOR: CB&I

DATE 01/24/17

S M T W T F S

THE FOLLOWING WAS NOTED: 0715 - On site, CB+I on site. Johnny not on site (appointment)
0730 - Move to GW082 area. Fuse 4"-2" tee and 2" tee in forcemain & air lines respectively.
0800 - Kenny begins trenching from GW096 east towards GW084 at 5% grade
0945 - Tee risers at GW082 for well head, air, & forcemain. Fuse 12", & (two) 2" lines just east of G71R1
1130-1245 - lunch
1250 - continue trenching & hauling away trash
- 200 feet pipe/trench between ~~18" header in Cell 6~~ (SW) Tee in 18" header and GW084. ~175 feet between GW084 and GW096
1330 - Fuse tees with risers & welded butt caps for 2" lines
1530 - Run ~375 feet 8" line from 18" header to GW096. Riser & butt cap fused at GW096
1645 - off site



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Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
60°-80°, 2mph, sun
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/25/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0640 - HWY 192 block by accident in heavy fog
0715 - on site. CB+I on site
0725 - Top of landfill. Pipe crew (Kenny, Juan, Johnny, Brandon) working on GW084 Riser.
0730 - Drilling Begins on JEDGW121. See well log. (Chip + Chance) Drilling w/ SoilMec SR-30
0850 - Fuse GW082 riser + tee + fuse GW082 8" lateral to 18" header via 18"-8" tee
1000 - Run 2" air + forcemain lines in GW082 trench. Fuse Risers via tees at GW082, ~~G71R1~~ GW084, GW096
1055 - Backfill between GW096 + GW084 so leachate truck can drive through top of landfill
Backfill 12" header between 18" header and G71R1
1300 - Construction progress conference call
1705 ~~1655~~ All off site

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
60-82, 15 mph, clouds
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 01/26/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700- On site, CB&I on site. Steven added to crew
0710- Begin drilling gas well JEDGW124 - see well log for details
0715- Pipe crew hauling excess trash from trenches for disposal
0930- Pipe crew to 12" crossover tie-in west of GW090. Cut and cap former 12" header 12 feet west of GW090. Cap former GW090A lateral pipe at crossover trench.
0950- Prep and electrofuse ~~12"~~ (SW) new 12" crossover to existing 12" ~25 feet west of GW090
1180- Pipe crew to lunch - 1230 - Return
1230- ~~Attach~~ existing wells to new risers and abandon (cut + cap riser below grade) ~~exist~~ (SW) former risers: JEDGW90, JEDGW079, JEDGW081, JEDGW090A
Attach ~~well~~ (SW) new wells to risers via 2" QED control valves: JEDGW116, JED671R1, JED668R2
1420- Soil on west side slope, compact, and backdrag
1610- Off site

(SW)

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
65°, 12 mph, sun
CONTRACTOR: CB&I

DATE 01/27/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0700 - On site. CB+I onsite, Johnny Waters on site ~~the~~ to replace Chip (Chip's last day on site). Safety + vehicle checks
0745 - To proposed JEDGW127 - planned 128 ft well. Build bench for rig
0800 - Pipe crew to Cell 9 header tie in to prep for Pressure test of 18" header + attached laterals to highpoint gate valves
0830 - Begin drilling on GW127 - see well log for details
0913 - 10 psi in 18" header to gate valve at JED GW070 ~~+ GW082~~
1013 - Pressure test passed. No drop in PSI
1030 - Get saddles for header, drain standin water from header trench
1130 - 1230 - lunch
1235 - Electrofuse saddles to 18" header for 6" risers at Cell 9 sump riser, HGC 10' riser, and Cell 6 sump Riser tie in points. Also fuse risers to saddles
1600 - Cover GW127 borehole with visqueen + well grate for night. 103' bgs
1625 - Fuse 16" end cap for abandonment of header; likely on Monday
1655 - All off site

SW

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL
55°, 10 mph, cloudy
CONTRACTOR: CB&I

DATE 01/28/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0705 - on site CB+I on site
0710 - Resume drilling JED GW127. @ 97 ft bgs (2 ft collapse over night)
0715 - Pipe crew grading slope and hauling trash from header trench in cells 6 and 9 to low spots above header in Cell 9
0800 - Hydraulics out on main wench on drill rig. 103 ft
0830 - Repaired & drilling resumes
1030 - Slow/ no advancement past 105 ft. Buckets changed 4 times.
1035 - Talk to Don Grigg (Golder) & Brad (JED). Well construction changed from 128 feet total depth to 105 feet total depth. See Well log for details.
1230 - Well Construction complet (see well Log)
1245 - All off site

SV

SUBMITTED BY GOLDER ASSOCIATES
Swift Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I, Scott Neal

DATE 1/30/17 S (M) T W T F S

THE FOLLOWING WAS NOTED: 0700 - On site. CB+I on site, Safety & SOW.
0710 - Drill crew to JEDGW130
0715 - Pipe crew to Cell 9 tie in, clear out soil & trash that washed into trench
0720 - Begin drilling on JEDGW130, see well log for details
0930 - Cut existing header in CELL 9 in 18" just east of 18"-16" reducer. Plant is down for maintenance. Cut 16" ~ 100 feet to the west and remove 100 ft section of 16" pipe. Place temporary cap on 16" at end of exposed header.
0955 - Regrade trench to >5% grade & electrofuse new 18" to existing 18" at Cell 9 tie in adjacent to sump 24" flange
1120 - header fused
1140 - Pipe crew to lunch
1220 - Pipe crew on site
1230 - Excavate around existing 12" line that connects JED83R1 at existing 18" header.
1300 - Fuse 12" line to 12" tee in new 18" header. Electrofusion coupler used.
* 6" line used for H6C09 hit. Valve at riser closed. Will be repaired 1/31
1500 - Backfilling & compacting from Cell 9 ~~tie~~ (SN) header tie in
1548 - Well JEDGW130 complete to 122 ft. See well log
1615 - JEDH6C10 Riser hit while backfilling. Temporarily patched with coupling for night
1650 - Off site

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
Scott Neal. 40-68°, Sunny. 5mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 1/31/17 S M (T) W T F S

THE FOLLOWING WAS NOTED: 0655 - on site, CB&I on site. ~~to~~ Go directly to JEDGW129
0700 - Begin drilling on JEDGW129 - See Well Log
0715 - Pipe crew fusing fittings at top of landfill
1130 - 1230 - Pipe crew 3 inch, Cooper (CB&I) on site
1140 - JEDGW129 installed to 63 ft
* 0949 - Begin drilling to 61 ft bgs on JEDGW132 - See Well log
1300 - Pipe crew connects QED well heads to wells GW096, GW084, & GW082. All are sending gas to plant
1430 - JEDGW132 installed - See well log
1530 - Drill crew off site
1545 - Repair HGC13 lateral broken 1/30. two 6" Electrofusion couplings used
1645 - All off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

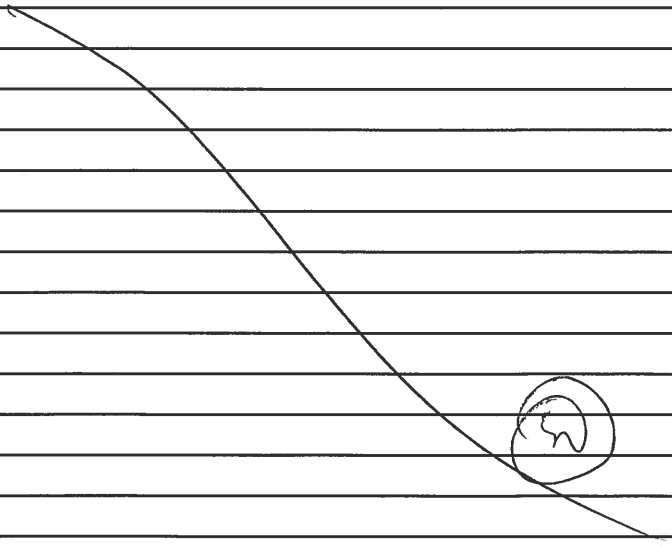
FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
45-72 Sunny
LOCATION: Osceola County, FL
CONTRACTOR: CB&I, Scott Neal

DATE 02/01/17 **S M T (W) T F S**

THE FOLLOWING WAS NOTED: 0655 - On site, CB+I on site. Safety Meeting
0710 - Cooper (CB+I) holds meeting with CB+I
0730 - Talk with Brad - move JEDGW126 location 10 ft along topo contour NW to give more horizontal separation from HGC10
0840 - Set up on JEDGW131 - See Well Log
0800 - Pipe crew to 18" high point in CELL 6
0945 - Fuse 18" - 8" tees for downslope well JEDGW069 and Cell 6 sump remote well head 90° +100' from JEDGW70 junction
~~0840~~ - (8)
0840 - CB+I repairs Kubota 4x4 and uses new pump for water - JED pump down
1130 - 1230 - CB+I Lunch
1240 - Construct JEDGW131 - see Log
1425 - Complete JEDGW131
1430 - Fuse 18" pipe ~~to + and tee~~. and 18" - 8" tee for JEDGG7R1 and feed 18" - 8" riser for JEDGW066 downslope well
1640 - All off site



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Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 68°, 10 mph, sunny
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 02/02/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700- On site, CB&I on site. Safety, Review S.O.W.
0745- Top of landfill, lube equipment
0815- to header in Cells 3 & 6
0830- Start Stockpiling soil for header & laterals
1000- Trench at 5% + towards tie-in
1105-1245- CB&I lunch
1255- Continue trenching towards header ~~at~~ (SW) located just west of JEDGW063
1310- ~~Fuse~~ (SW) Cover 18" header from valves to North of JEDGW066 lateral
1315- Fuse 2" & 4" lines From JEDGW070 ~~SW~~
8" JEDG67R1 / JEDGW066 cut & capped w/ PVC & screw where new header trench crosses
1430- Fuse 4"-2" tees & 2" tees at Cell 6 Remote Sump wellhead trench, JEDGW069 trench,
1600- To ~ 50 ft of where (SW) ~~EXT~~ 18" header ~~ends~~ Stubout is located west of JEDGW063
1615- off site

(SW)

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
60 - 80°; 10mph, partly cloudy
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 02/03/17 **S M T W T (F) S**

THE FOLLOWING WAS NOTED: 0655 - on site, CB&I on site. Safety & review SoW.
0720 - Move to 18" header in Cells 3 & 6. No drilling - all crew needed for header work
0815 - 18-inch existing header jumper cut and capped. ~100 foot section reused and fused to new 18-inch header
1000 - Existing GW064/GW063 lateral cut & capped.
1030 - Tees fused for JEDGW063 and JEDGW064 (18" - 8")
1130 - 1230 - lunch
1235 - Fuse 18" blind flange on 18" tee where existing 18" jumper will tie-in
1430 - Fuse 18" to ~~ext~~ 18" ~~near~~ stubout from Cell 3 tie in located by JEDGW063
Entire 18" header from tie-in to tie-in is ~1300 ft long
1530 - 8" tee fused for JEDGW064
1600 - 18" Jumper capped. Existing lines for GW063 & GW064 cut & capped
1620 - All off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
55°-80°, Sunny 5mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 2/6/17 S (M) T W T F S

THE FOLLOWING WAS NOTED: 0645 - On site, CB&I on site, Safety
0745 - Drill crew (Johnny W, Chance, Steve) to Cell 9. Pipe crew (Johnny, Juan, Kenny, Brandon) to Cell 3
0805 - Begin drilling on JEDGW128 - See Well Log
0800 - Pipe crew compact & backfill header trench from valves to JEDGW066. Connect 8" & 2" air/forcemain to ~~JEDGW066~~ (S) JEDGW063
0920 - Install/~~JED~~ (N) construct JEDGW128 - See Well Log
1010 - Begin Drilling JEDGW125 - See Well Log
1130-1230 - Pipe crew lunch
1055 - Construct/install JEDGW125 - See Well Log
1118 - Begin drilling JEDGW126 - See well log
1245 - Pipe crew fused 8" stringers to 18" header at JEDGW064 & JEDGG7R1. Trench to each respective well & run stringer to well.
1410 - Backfill & compact laterals
1620 - off site

(S)

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MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 60°-80°, 5 mph,
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 02/07/17 **S M (T) W T F S**

THE FOLLOWING WAS NOTED: 0650 - On site, CB+I on site
0700 - Move to top of landfill. Pipe crew unroll 2" & 4" hdpe spools
9730 - Begin drilling on JEDGW123 (See Well Log)
1150 - Begin JEDGW123 construction (See Log)
1130 - Peavy Surveying on site
1145 - CB+I to lunch
1300 - Return
* CB+I pipe crew trenched from JEDGW064 to JEDG65R2 to JEDGW037 ~~existing 6" capped / cut in place~~ (SV)
1300 - fuse 8" tee in 8" lateral at JEDGW064
1445 - Fuse 8" tee at JEDG65R2, clean up + backfill
1700 - off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 60-82°, Windy 20mph, Sunny
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 02/08/17 S M T (W) T F S

THE FOLLOWING WAS NOTED: 0655 - On site

0700 - Pipe crew to JEDGW037 - Fuse 8" & two 2" elbows & risers at JEDGW037. Soil over pipes, backfill, & compact trench

0700 - Drill crew to JEDGW122 proposed location. Already wet area is saturated with standing water & water/leachate seeping out of ground. Hold off drilling

0800 - Drill crew to help pipe crew. ~~Talk~~ (SW)

~~0930~~ 0745 - Talk to Don Grigg about possibly moving well location. JED checks location.

0900 - Brad & Andy shoot proposed new location ~ 50 ft ESE of original JEDGW122 location. Coordinates sent to Don to update well schedule. Allow area to dry

1130 - 1250 - CB+I lunch off site

1300 - Continue backfilling JEDGW122 trench. ~~Fit~~ fuse 8" to 8" at JEDG68R2 as well as two 2" lines

1350 - All of JEDG65R2 & JEDG68R2 laterals complete - finish backfill

1445 - JED starts pumping water from excavation at Cell 3 tie-in

1640 - off site - CB+I

1705 - off site

(SW)

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
70°-83°, Cloudy, 15 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 02/09/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0655 - On site. CB+I on site. Review S.O.W.
0705 - Move to Cell 3. Haul away trash from Northern trenches. Rest of crew to 18" header Cell 3 tie in excavation
0830 - JED personnel to excavation to pump liquid to cell 6 sump
1030 - JED done pumping. CB+I move end of 18" out of excavation, fuse on air pressure test cap + gauges
1100 - 1215 - Lunch
1220 - [redacted] - Pressure test 18" header + attached lateral north of ~~gate~~ valves for 1 hour at 10 psi. - Test passed; no pressure drop
1258 - Begin drilling / construction of JED GW122 in new location - See Well Log
1330 - Regrading slope in cells 3 + 6 by header
1330 - Prep cell 3 for 18" tie-in ~~tomo~~ on 2/10
1610 - All off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 55°-73°
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 02/10/17 **S M T W T F S**

THE FOLLOWING WAS NOTED: 0655- on site. CB+I on site.
0715- To Cell 3 18" header tie-in. Plant is running to flare.
0730- Cut + cap existing 12" line
0940- 18" header electrofused to existing 12" ~12 feet south of Access riser
1145- 18" jumper fused (electrofusion coupling) to tee south of JEDGW063.
1230-1330- Lunch
1445- 8" ~~header fused~~ lateral fused at JEDG68R2
* 1345- All valves open; Plant reports 300-400 cfm immediate increase
1450- Backfill cell 3 18" header. Only backfill to liner at tie-in
1450- Connect well heads ~~at~~ in cell 3
1620- off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 60°-80°, Sunny 15 mph
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 02/13/17 **S M T W T F S**

THE FOLLOWING WAS NOTED: 0655- On site. CB+I on site
0725- Move to Cell 3. Move well-heads from previous risers to new risers at JED6W037, JED6W063, JED665R1.
0920- Attach air + forcemain risers at JED6W062 + finish backfill + compaction to depth of liner (~5 ft bgs)
1000- Cut + cap remaining risers in Sequence One area.
- Ran out of 6" pvc caps. some temporarily capped
1100-1145 - lunch
1200- Resurface cell 3 ~~and~~. Run loads of fill to Cell 9 for Sequence 2 laterals.
Haul away trash from cell 3+6
1615- Off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
62°-82°, cloudy,
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 02/14/17 **S M T W T F S**

THE FOLLOWING WAS NOTED: 0700- On site. CB+I on site.
0715- Top of landfill & fuse 8" stringers
0800- Trench JEDGW125 → JEDGW127 trench. soil as base as trenching.
0945- Move more soil to GW125 trench
0930- Fuse capped 8" risers to 8" tees & elbows
1130-1245- lunch
1250 - 8" line in trench. Flanges ~~at~~ on both header tee & natural
1310- Fuse tee & riser at JEDGW125
1420- Fuse tee & riser at JEDGW126, Run 2" air & forcemain lines in trench
1530- Fuse elbow and riser at JEDGW127. Run 2" air & forcemain to risers at 90s at well
1650- off site

SW

SUBMITTED BY GOLDER ASSOCIATES

JS with Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
72°, Cloudy/light rain, 20 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 02/15/17 **S M T (W) T F S**

THE FOLLOWING WAS NOTED: 0655 - on site

0700 - Top of landfill, fuse fittings for JEDGW069 downslope well
0830 - Move to cell 6 to cut 18" jumper & remove to gain access to GW069
0845 - Fire from 18" jumper ~~caused by~~ after/while cutting 18" jumper. Fire put out by covering with soil. CB&I reconvene & address situation. JED personnel (Andy) on site when fire started. All gas sources to jumper shut. Don Grigg notified
0930 - Continue work. Trench from JEDGW066 to header
1030 - 8" tee glued ~ 3 feet below grade on gw066. 8" hdpe pipe ~~thru~~ (E) with flange bolted to flange off of 8" tee on well. ~~8" pipe run upslope to 8"~~ (SV)
1130 - 1245 - lunch
1250 - GW066 tee flange bolted to 8" hdpe line running to header. 8" riser at header. 2" Air & forcemain lines from header to GW066 from tees from 2" & 4" lines in main header trench
1445 - Backfill & compact trench
1605 - All off site

(SV)

SUBMITTED BY GOLDER ASSOCIATES

Matt Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF ____

PROJECT NUMBER: 083-82734.51 **PROJECT TITLE:** 2016 4th Qtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty. 60-73 5 mph sunny
LOCATION: Osceola County, FL **CONTRACTOR:** CB&I

DATE 2/16/17 **S M T W T F S**

THE FOLLOWING WAS NOTED: 0800 - On site, CB+I fusing 2" trees + elbows + excavating at valve cluster near Cell 6 Sump pad.
0900 - Start fusing Air (2") + forcemain (2") lines at JEDGW125 / 12" header junction. Install 4" - 2" reducer on forcemain
0915 - Brad (JED), ~~Doug~~ Kevin (CB+I) on site. 1 ft + standing water in excavation + excavation ~12 ft deep. Change ~~scop~~ plan to cutting J-trap just below header + ~6 ft bgs at blind flange + cap below surface. There is also a 6" Riser ~10 ft east of blind flange that will be cut + capped at same depth bgs
0950 - Doug Allen (CB+I) on site
1020 - 12" header removed from J-trap North. Immediately backfilled as pipe is pulled from ground.
1115 - 1225 - lunch
1345 - Air + forcemain fused with risers at GW125, GW126, GW127
1500 - 12" former header removed in Cells 6 + 3 from Cell 6 sump / valve cluster area North
1630 - 12" J-trap, 12" J-trap access riser, + 6" riser b/w access riser + sump pad cut ~5-8 ft bgs. Capped w/ PVC caps, lag screwed, sealed with Silicon, + covered with duct tape
1655 - Area backfilled, compacted, + surface restored except ~10'x10' area to be pumped in AM
1710 - All off site

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

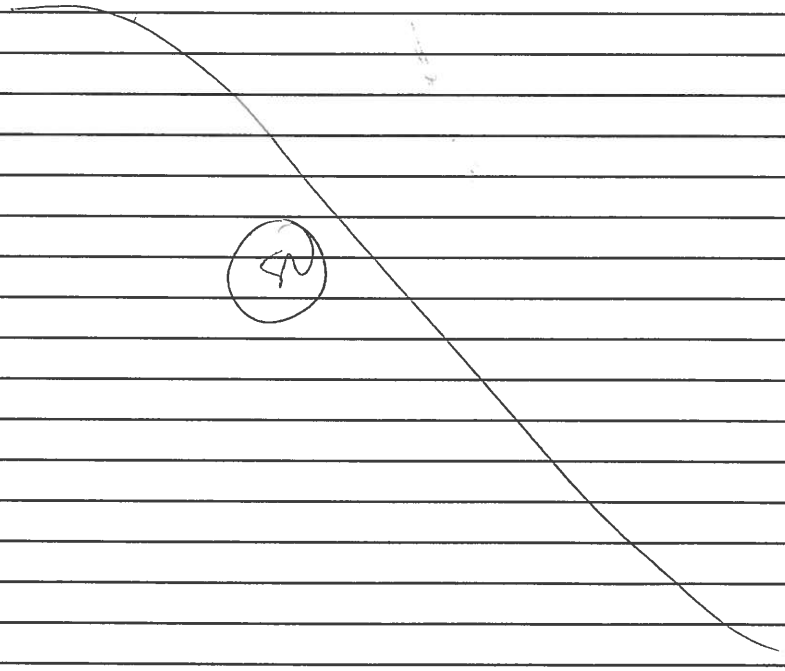
GOLDER ASSOCIATES

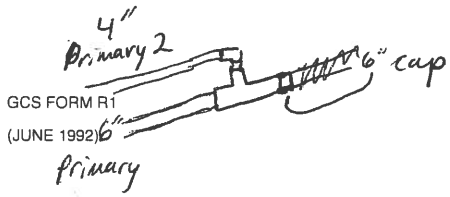
FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr. GCCS Expansion
OWNER: Omni Waste
45°-75°, Sunny, 5 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 2/17/17 **S M T W T F S**

THE FOLLOWING WAS NOTED: 0655 - on site. CB+I doing safety checks
0750 - Move to CELL 6, Expose Flanged valve connecting GW069 to former 12" header. Remove valve & connect blind to lateral flange.
1000 - Remove ~~lateral~~ From 12" header to above ground cell 6 leachate pipes
1000 - ~~ex~~ Trench From new header to GW069
~~1200~~ 1140 - backfill all of valve area; Compact
1200 - 1325 - lunch
1345 - Cut Cell 6 Riser
1520 - 6" gas line from Primary and 4" gas line from ~~prim~~ (2) Primary 2 (2) connected via 6"-4" tee fused to 6" Primary, 4" 90s into 4" top of tee, 6" end of tee capped temporarily. See sketch below (photographs taken)
(2) (2)
1605 - Off site





SUBMITTED BY GOLDER ASSOCIATES
Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
65°-75°, Sunny, 5 mph

DATE 2/18/17 S M T W T F (S)

THE FOLLOWING WAS NOTED: 0700 - on site
0730 - CB+I packing away equipment ~~no longer~~ (S) no longer needed (18", drill-related, etc)
0730 - Pressure test 8" lateral from 18" header flange location to GW125 - GW127
0845 - Pressure test passed. 1 hour at 10 psig, dropped <0.5 psi
0800 - CB+I move excess pipe from top of Cell 3 / Cell 4 to top of capped Cells 1 + 2
0910 - Off site, CB+I continuing clean up

(S)

SUBMITTED BY GOLDER ASSOCIATES

MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

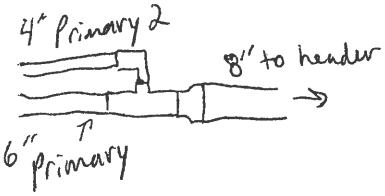
FIELD MONITORING REPORT

PAGE _____ OF _____

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
72°, 5 mph, sun

DATE 02/20/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0650 - On site; CB+I on site - Safety + Review SOW
0800 - to Cell 6, Auxillary leachate line is leaking into Cell 6 Riser area. JED working to resolve issue
0830 - Expose existing lines + trench from JEDGW074 + JEDHGC09 to new 18" header
0915 - Brad + Andy (JED) on site to discuss design. Both HGC09 + GW074 will be run in same trench. Existing HGC09 piping will be adjusted + reused
1035 - Bolt hdpe flange to pvc flange from pvc 8" tee on GW074. 8" pipe run to header
1100 - Air + forcemain (2") hdpe lines run from tees at header trench + terminate at capped risers off ~~of~~ elbows at GW074
1145-1245 - lunch
1300 - Excavate Cell 6 riser area to GW069
1330 - run pipe from header to Cell 6 Riser area
1400 - fuse Cell 6 (Primary 1 + Primary 2) tee to 8" line to header. Backfill ~~163~~ to GW069
1630 - off site



SUBMITTED BY GOLDER ASSOCIATES
Scott Veal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
75°, 5 mph, sunny

DATE: 02/21/17
S M (T) W T F S

THE FOLLOWING WAS NOTED: 0655 - on site, CB+I on site
0705 - to GW069 to modify into a downslope well.
0740 - Glue 8" tee ~3 ft below surface on well riser (tee w/ flange)
0900 - Bolt flange from 8" hdpe line from header into 8" pvc flange on GW069
0945 - Run 2" Air/forcemain lines from header trench to GW069. Elbows w/ risers fused on at well.
1100 - Fuse Air & forcemain (2") to 2" & 4"-2" tees, respectively, on main air & forcemain lines in header trench. Backfill rest of trench
1130-1230 - lunch
1235 - finish backfilling GW069 trench
1330 - Plant down; bolt GW125 trench to header with flange-flange connection
1350 - Move to HGC09 Riser. Cut out 10" knockdown chamber and rotate 180° to put 6" elbow on west side of horizontal drain pipe.
1515 - heating element in 6" fuser broken - to ~~start~~ work trailer to repair.
1630 - off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
65-75, cloudy/rain, 5mph

DATE 02/22/17 S M T W T F S

THE FOLLOWING WAS NOTED: 0700 - on site, CB&I on site. Juan on site, Johnny Waters & Steve off site
0710 - to HGC09, move 10" knockdown chamber downslope to ~10' north of GW074
0900 - Run 6" line to header to move Riser & well head to ~~[illegible]~~ (S) header
(6" line runs from HGC09 to 10" knockdown chamber, 6" line runs from knockdown chamber downslope to Cell 6 Sump, 6" line 90s out from chamber and runs upslope to riser at header)
1030 - Backfill & compact trench. Pipe remains above grade from knockdown chamber downslope to sump. Resurface area.
1115 - Rain starts, Pack Equipment, ~~Move to~~ (SW)
1145 - All off site

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Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr. GCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
60°-80°, Cloudy, 7 mph

DATE 2/23/17

S M T W (T) F S

THE FOLLOWING WAS NOTED: 0655- On site, CB+I (4 crew) on site
0740 - ~~top~~ of landfill
0800- Trench & bury (W) 2" air & forcemain lines from JEDGW096 to JEDGW117 (186 feet)
0935- Uncovering Cell 6 riser at new location by header & 18"-8" tee broken ~~inadvertently~~ (S) off header inadvertently. 18" capped and JED notified.
1240 - New 18" tee with 18"-8" reducer fused to header. Cell 6 Riser ~5 feet away from header. Backfill & compact
1300-1400 - Lunch
1400 - Connect 8 foot extensions to ~~valves in~~ (S) 18" header valves in Cell 6
- Backfill & compact GW124 trench
1715 - off site

(S)

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Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
65° 80°, cloudy, 15 mph

DATE 2/24/17 S M T W T F S

THE FOLLOWING WAS NOTED: * Interstate 95 south closed *

0730 - On site, CB+I on site - go to cells 6 + 9
0800 - Finish Backfilling + Compacting JEDGW125 Trench
0800 - Trench from header past GW128, GW129, to GW130
0815 - Fuse 8" pipe, risers, + flange for GW128 lateral
1115 - 1230 - Lunch
1245 - 8" pipe in GW128 trench
1350 - Fuse 8" riser off of tee at GW129
1540 - Fuse 8" riser off of elbow at GW130 (capped with Air valve and gauge for pressure test).
1640 - All off site

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Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82754.51
PROJECT TITLE: 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB+I
65°-80°, cloudy, 10 mph

DATE 2/27/17 S (M) T W T F S

THE FOLLOWING WAS NOTED: 0700- on site, CB+I on site
0725 - To top of cells 6+9
0745-0845- Pressure test 8" hdpe lateral + risers that extend from 18" header to JEDGW128, JEDGW129, JEDGW130. Tested at 10 PSI; no ~~noticeable~~ measurable drop in pressure after 1 hour
0755- Trench from header to JEDGW122, HGC13, JEDGW123, JEDGW124, & JEDGW121
0800- other crew fusing Risers to 8" pipe
1030- 8" pipe into trenches. Blind flange fused ~~at~~ on 8" at 18" header
1115-1230- lunch
1240- Bolt blind flange to 8" flange at 18"-8" tee at header
1350- JEDGW122 Riser
1450- JEDGW123
1550- Begin fusing tee b/w GW123 & GW124
1630- All off site

1630

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Scott Mud, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82734.51
PROJECT TITLE: 2016 4th Qrtr GCCS Expansion
OWNER: Omni Waste of Osceola Cty.
65°-84°, Foggy → Sunny, 10 mph
LOCATION: Osceola County, FL
CONTRACTOR: CB&I

DATE 02/28/17 S M (T) W T F S

THE FOLLOWING WAS NOTED: 0705-On site, CB+I on site, Move to JEDGW123
0725- Fuse tee between JEDGW123 & JEDGW124 to run 8" pipe to JEDGW121
0800- fuse 8" riser at JEDGW124
0900- Fuse 8" riser at JEDGW121
0920- begin fusing & laying 2" air & forcemain lines in trenches
1000- 2" risers at JEDGW121
1030-1130 - Pressure test GW121 → 122 → 124 8" hdpe @ 10psi for 1 hour. No measurable drop in pressure
1140- lunch
1250- Return
1300- 2" Air and forcemain capped risers at JEDGW124
1400- 2" Air & forcemain capped risers at JEDGW123
1515- 2" Air & forcemain capped risers at JEDGW122
1600 - JEDGW121, 122, 123, 124 trench backfilled & compacted to within 20 feet of header
1715 - CB+I off site
1745 - off site

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal - Golder
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82754.51
PROJECT TITLE: 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, Florida
CONTRACTOR: CB+I
70-88, Sunny, 5mph

DATE 03/1/17

S M T (W) T F S

THE FOLLOWING WAS NOTED: 0700- On site, Johnny on site
0725- Rest of CB+I on site
0800- To header by JEDGW131; uncover 18" blind flange ~50 ft east of HGC11
0910- Brad on site, Call Don Grigg and check future plans to see if 18" crossover to be used later- it's not. Plan to bolt on 18" flange to 18" ~~reducer~~ → 8" reducer (SV)
0945- Singke 2" (likely Air) line next to header at flange. ~~Plann~~ (SV) Only one line found so trenched from JEDGW128 header tie-in to JEDGW131 to run/extend 2" Air + 4" forcemain lines to JEDGW131 trench
0800-1000- Compact + regrade JEDGW121-124 area except at header
1000- Fuse 2" + 4" extensions to tees at JEDGW128/Header junction
1200-1315- lunch
1315- Fuse 18" flange to 18"-8" Reducer (SV)
1320- Fuse 2" tee + 4"-2" tee on air + forcemain lines at JEDGW131/header junction. 10 ft 2" + 4" stubouts east of JEDGW131/132 - Header junction
1500- Backfill header ~~between~~ in Cell 9 except at lateral tie in locations
1515- 8-inch ~~pipe~~ (SV) tees and risers fused for JEDGW131 + JEDGW132
1630- to staging area
1645- off site

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Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82754.51
PROJECT TITLE: 2016 4th Qtr. BCCS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: CB&I
65° - 84°, 15 mph, Sunny

DATE 03/02/17 S M T W (T) F S

THE FOLLOWING WAS NOTED: 0700 - On site, CB&I on site
0735 - ~~Ex~~ Trench from header (18" flange) to JEDGW131 and JEDGW132
0745 - Construct 8" pipe with 8" risers for GW131/132 lateral after measuring distances b/w wells and/or header
0910 - 1010 - Pressure test JEDGW131/132 8" lateral - 10 psi for 1hr - passed
1025 - Put lateral in trench
1100 - Use soil to anchor risers (8") vertically at wells
1130 - 1230 - Lunch
1235 - Fuse 2" ~~risers~~ risers and 2" lines for Air & forcemain. Risers on tees at JEDGW131. Risers on elbows at 132
4" - 2" reducer ~~at~~ on forcemain at lateral/header junction
1245 - Remove former header from ~10 ft east of HGC10 to Cell 6/9 boundary (~130 ft)
1400 - Expose HGC10 & HGC12 risers
1615 - Fuse 18 ft 6" hdpe to move HGC10 Riser from former location upslope to new header
1700 - Reattach HGC10 well-head to header
1735 - CB&I off site

SUBMITTED BY GOLDER ASSOCIATES
Scott Neal, Golder
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

FIELD MONITORING REPORT

PROJECT NUMBER: 083-82754.51 **PROJECT TITLE:** 2016 4th Qtr. QCCS Expansion
OWNER: Omni Waste 80°, clouds, 10 mph
LOCATION: Osceola County, FL **CONTRACTOR:** CB+I

DATE 03/03/17 S M T W T (F) S

THE FOLLOWING WAS NOTED: 0705 - on site, CB+I on site
0740 - Top of landfill
0750 - Plant to flare
0815 - Begin install of 6-inch saddle on header ~22 feet ~~from~~ (S) NE of HGC12
0840 - Saddle electrofused
0920 - 21 feet 6" hdpe fused to ~~extend~~ (S) connect HGC12 riser to header. Reattach (A) ~~0925~~ wellhead
0925 - Move to header at JEDGW122 trench to bolt 8" flanges & tie in wells JEDGW122, 123, 124, 121 & HGC13
1025 - 8" - 8" flange w/ gasket connection of header to JEDGW129, 130, 131 lateral
1215 - Connected 18" flange ~~to~~ (S) with gasket to connect JEDGW132, 133 lateral. (18" - 8" reducer immediately after flange on lateral). Flanges wrapped in plastic
1240 - 1350 - lunch
1400 - To cell 3 header tie-in location. Hook up valves & pressure gauges to (S) ~~2~~ 2" air & 4" forcemain pipes. The lines ~~are~~ run to all Air & forcemain lines installed ~~during~~ Schedule 1 & Schedule 2 well expansion construction (Nov/16 - March/17) during (A)
1430 - Begin pressure test. Both lines under 10 psi pressure.
1350 - Backfill & compaction in Cells 6 & 9 at trenches' tie-ins. Resurface slope
1700 - All off site

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

FIELD MONITORING REPORT

PAGE 1 OF 1

PROJECT NUMBER: 083-82754.51
PROJECT TITLE: 2016 4th Qtr. CCLS Expansion
OWNER: Omni Waste
LOCATION: Osceola County, FL
CONTRACTOR: 70°, cloudy, 30 mph
Peavey & Associates

DATE 3/6/17

S (M) T W T F S

THE FOLLOWING WAS NOTED: 0600- leave Jacksonville, FL Golder office
0905- On site Omni/JED Landfill
0955- Peavey surveyor on site
1000- Sets up base station
1030- Walk around with surveyor to Sequence 2 well & gas line locations. Also header location in cell 3 and northernmost lateral in cell 3
1530- Surveying complete
1600- off site
1910- Golder office, off job

SUBMITTED BY GOLDER ASSOCIATES

Scott Neal
MONITOR

GCS FORM R1
(JUNE 1992)

GOLDER ASSOCIATES

APPENDIX I

COMANCO LINEAR REPAIR DOCUMENTATION

COMANCO®

Safety ★ Quality ★ Service

[03/22/2017]

GEOSYNTHETICS QUALITY CONTROL DATA

Project No. 05178527
Name Waste Connections JED Landfill
Liner Repairs

4301 Sterling Commerce Drive * Plant City, FL 33566 * (813)988-8829 * FAX (813) 988-8779
www.comcnco.com

TABLE OF CONTENTS

Safety ★ Quality ★ Service

4301 Sterling Commerce Drive * Plant City, FL 33566 * (813)988-8829 * FAX (813) 988-8779

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Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION A

Panel Placement

Safety ★ Quality ★ Service

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Comanco Environmental Corporation

Daily Panel Placement

Page 1

Project Name: Waste Conenctions JED Liner repairs **Job #** 05178527 **Deployment Date** 03/15/17

Superintendent: Jorge B **Material Type:** 40 mil textured

X **Primary** **Secondary** **Cell** **Pond** **Pad** **Other:**

Description (i.e. Phase #, Cell #, Pond # etc.) Closure **Roll Stock SF** 16,100

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Notes:	Final SF	Lineal Feet Trench
1	0	26.00 LF	17.00 LF	0 / 0 / 22 / 26 / 26 / 12	442	0
2	0	26.50 LF	22.50 LF	22.5 / 27 / 26 / 22.5	596	0
3	0	27.00 LF	10.00 LF	10 / 27 / 27 / 10	270	27
		0.00 LF	0.00 LF		-	
		0.00 LF	0.00 LF		-	
		0.00 LF	0.00 LF		-	
		0.00 LF	0.00 LF		-	
		0.00 LF	0.00 LF		-	

Material in Anchor Trench		
Total LF In Trench This Page	27.00	LF
Depth and Width Allowed in Trench	4	LF
Total SF Trench This Page	**108**	**SF**
Total Panel SF This Page	**1,308**	**SF**
Total Pay Area This Page	**1,416**	**SF**
LF In Trench Previous	-	LF
LF In Trench To Date	27	LF
SF In Trench Previous	-	SF
Total SF in Trench to Date	108	SF
Total Panel SF Previous	-	SF
Total Panel SF To Date	1,308	SF
Total Pay Area To Date Including Anchor Trench	**1,416**	

Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION B

Pre-weld

Safety ★ Quality ★ Service

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COMANCO ENVIRONMENTAL CORPORATION
Preweld Test Report

Project Name: Waste Conections JED landfill repairs
Job # 05178527
Superintendent: Jorge Barrantes

Material Type: 40 mil
Job Description: Closure repair
Reported By : Jorge Barrantes
Other : Closure

Primary X
Secondary ☐

Pond ☐
Cell ☐
Pad ☐

Peel Test Extrusion Minimum 48 **PPI**
Peel Test Fusion Minimum 50 **PPI**
Shear Test Minimum 60 **PPI**

Liner Types **S = Smooth** **T = Textured** **SG = Super Grip**

Weld Date Liner Type	Time AM | PM	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1		Coupon 2		Coupon 3		Coupon 4		Coupon 5		Test Results
									A	B	A	B	A	B	A	B	A	B	
3/15/17	1:36	Eliazar Reyes	ET-A065		500	500	66	Peel	114		104		116		122		119		Pass
T TO T	PM							Shear	143		138		142		142		140		
3/15/17	1:48	Eliazar Reyes	WE-A100	6	860		66	Peel	121	121	123	126	130	127	120	128	110	135	Pass
S TO S	PM							Shear	168		188		171		174		163		
	:							Peel											
TO								Shear											
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Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION C

Seam Installation

Safety ★ Quality ★ Service

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COMANCO ENVIRONMENTAL CORPORATION
Seam Control Form

Project Name: Waste Conections JED landfill repairs **Job #** 05178527 **Superintendent:** Jorge Barrantes

Material Type: 40 mil **Primary** X **Pond** 30 PSI

Job Description: Closure repair **Secondary** **Cell** 5 Minutes

Reported By Jorge Barrantes **Pad** 4 PSI

Other Closure

133	Total LF of Welding to Date Combined	Extrusion LF Weld Total To Date	-	Fusion LF Weld Total To Date:	133

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In	PSI IN	AT Time Out	PSI OUT	PSI Loss	Test Results
03/15/17	1/2	7	2:15 PM	Eliazar Reyes	WE-A100	6	860		3/15/17	Air Pressure	2:30 PM	30	2:35 PM	30		Pass
03/15/17	1/2	12	2:16 AM	Eliazar Reyes	WE-A100	6	860		3/15/17	Air Pressure	2:31 PM	30	2:36 PM	30		Pass
03/15/17	2/3	27	2:25 PM	Eliazar Reyes	WE-A100	6	860		3/15/17	Air Pressure	2:42 PM	30	2:47 PM	30		Pass
03/15/17	1/Existing	22	3:40 PM	Eliazar Reyes	ET-A065	500	500		3/16/17	Vacuum						Pass
03/15/17	2/Existing	22.5	4:22 PM	Eliazar Reyes	ET-A065	500	500		3/16/17	Vacuum						Pass
03/15/17	3/Existing	10	4:31 PM	Eliazar Reyes	ET-A065	500	500		3/16/17	Vacuum						Pass
03/15/17	3/Existing	10	4:38 PM	Eliazar Reyes	ET-A065	500	500		3/16/17	Vacuum						Pass
03/15/17	2/Existing	22.5	4:56 PM	Eliazar Reyes	ET-A065	500	500		3/16/17	Vacuum						Pass

Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION D

Repair Records

Safety ★ Quality ★ Service

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Repair Report

Project Name Waste Conections JED landfill repairs **Job # :** 05178527 **Superintendent:** Jorge Barrantes

Material Type: 40 mil **Primary** ☒ **Pond** ☐

Job Description: Closure repair **Secondary** ☐ **Cell** ☐

Reported by : Jorge Barrantes **Pad** ☐

Other: Closure

Damage Codes				**SF Patch Material**	**Test Type**	**Abbrv.**	**Repair Types**
CR --Crease	FS --Failed Seam	--Lost Lap	CF --Custom Fit	50	Vacuum	*S=South	C--Cap Strip
DS --Destruct Sample	WR --Wrinkle	--Mechanical Damage	PB --Pipe Boot	**LF Welded**	Air Pressure	*N=North	P--Patch
SI --Subgrade Irregularity	AV --Airvent	--Damage By Others	BO --Burn Out	54.00	Spark	*W=West	B--Extrusion Bead
SJ --Seam Joint	AO --Add On		AT -Air Test		Air Lance	*E=East	

Repair Number	Damage Code	Seam Number	Panel Number	LAT. ; LON. ; EL	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
1	WR	1/EXT		28.064461 ; -81.095819 ; 37.10425		3	x	4		3/15/17	Eliazar Reyes	ET-A065	Vacuum	Pass	3/16/17
2	PB		1	28.064433 ; -81.095827 ; 36.9968		2	x	3		3/15/17	Eliazar Reyes	ET-A065	Vacuum	Pass	3/16/17
3	WR	1/EXT		28.064441 ; -81.095813 ; 36.36979		2	x	2		3/15/17	Eliazar Reyes	ET-A065	Vacuum	Pass	3/16/17
4	PB	1/2		28.064399 ; -81.095808 ; 36.28359		4	X	7		3/15/17	Eliazar Reyes	ET-A065	Vacuum	Pass	3/16/17
							x								
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Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION E

As-Built Drawing

Safety ★ Quality ★ Service

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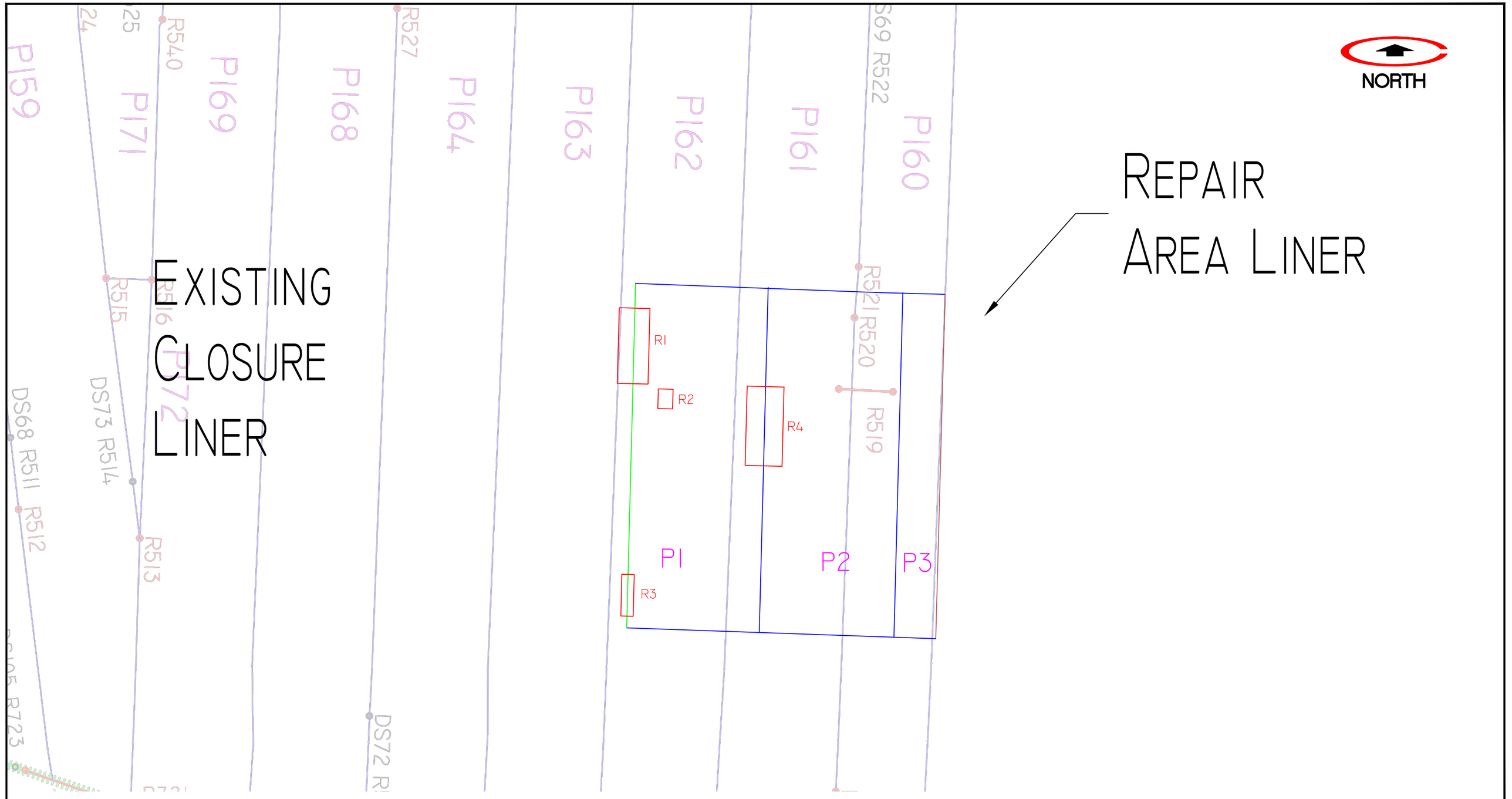

LEGEND

P	PANEL NUMBER	—	CAP
R	REPAIR NUMBER	○	PATCH
DS	DESTRUCTIVE SAMPLE NUMBER	○	DESTRUCTIVE TEST
—	ANCHOR TRENCH	—	EXTRUSION WELD TIE-IN

CLOSURE AREA LINER REPAIRS

PRIMARY
AS BUILT

WASTE CONNECTIONS JED LANDFILL

ST. CLOUD, FL

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ENVIRONMENTAL CORPORATION
4301 STERLING COMMERCE DR.
PLANT CITY, FL 33566-7372
TELEPHONE: (813) 988-8829
FAX: (813) 496-7305

DRAWN BY: G. Pignataro	CHKD. BY: G. Pignataro	DWG. NO:
DATE: 03/22/2017	APPRVD. BY: --	
PLOT SCALE: NTS	FILE NAME: COMANCO	
PROJECT NO.: 05178527	JED Closure Area Liner Repairs	

Project No 05178527
Name Waste Connections JED Landfill
Liner Repairs

SECTION F

Photos

Safety ★ Quality ★ Service

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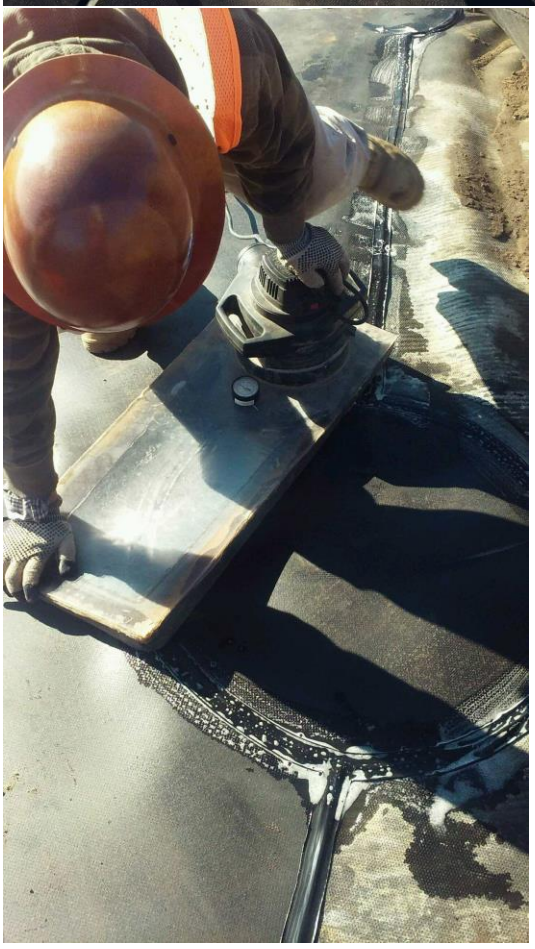

APPENDIX J

CERTIFICATION OF CONSTRUCTION COMPLETION

OF A SOLID WASTE FACILITY

Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

DEP Form # 62-701.900(2)
Form Title Certification of Construction Completion
Effective Date May 19, 1994

DEP Application No. _____
(Filled by DEP)

Certification of Construction Completion of a Solid Waste Management Facility

DEP Construction Permit No: SC49-0199726-017 County: Osceola

Name of Project: 2016-2017 Gas Collection and Control System Expansion

Name of Owner: Omni Waste of Osceola County, LLC

Name of Engineer: Golder Associates Inc.

Type of Project: Gas Collection and Control System (GCCS) Expansion Construction

Cost: Estimate $ 849,738 Actual $ 820,822

Site Design: Quantity: 7,500 ton/day Site Acreage: 135.9 Acres

Deviations from Plans and Application Approved by DEP: The construction was conducted in general accordance with the submitted Phase III Construction Drawings and submitted Modification Permit application package associated with Permit No. SO40-0199726-015 with some Intermediate modifications as described in Section 2 of the Construction Record Documentation Report. These modifications didn't alter the performance or design intent of the system.

Address and Telephone No. of Site: 1501 Omni Way, St. Cloud, Florida 34773; (407) 891-3720

Name(s) of Site Supervisor: Kirk Wills

Date Site inspection is requested: As soon as possible

This is to certify that, with the exception of any deviation noted above, the construction of the project has been completed in substantial accordance with the plans authorized by Construction

Permit No. SC49-0199726-017 :Dated: 9/22/2011

Date: 6/6/2017

Signature of Professional Engineer

DON E. GRIGG LICENSE No. 81578 STATE OF FLORIDA PROFESSIONAL ENGINEER

6/6/17

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600