# CONSTRUCTION DRAWINGS

**LANDFILL GAS COLLECTION AND CONTROL SYSTEM (GCCS) CONSTRUCTION**

**NEW HANOVER COUNTY LANDFILL**

**REQUEST FOR BID NO. 18-0197**

**NEW HANOVER COUNTY**

**NEW HANOVER COUNTY LANDFILL**

5210 US 421 NORTH

WILMINGTON, NORTH CAROLINA 28401

**SCS ENGINEERS, PC**

2520 WHITEHALL PARK DRIVE, SUITE 450

CHARLOTTE, NORTH CAROLINA 28273

(704) 504-3107

**SCS JOB NO. 02206379.20**

MARCH 2018

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**INDEX OF SHEETS**

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>TITLE SHEET</td>
</tr>
<tr>
<td>02</td>
<td>NOTES AND Scope of Work</td>
</tr>
<tr>
<td>03</td>
<td>SITE PLAN</td>
</tr>
<tr>
<td>04</td>
<td>ALIGNMENT PLAN</td>
</tr>
<tr>
<td>05</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
<tr>
<td>06</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
<tr>
<td>07</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
<tr>
<td>08</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>09</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>10</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>11</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>12</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
<tr>
<td>13</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>14</td>
<td>ELECTRICAL SITE PLAN</td>
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<tr>
<td>15</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
<tr>
<td>16</td>
<td>ELECTRICAL SITE PLAN</td>
</tr>
</tbody>
</table>

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**AREA MAP**

**LOCATION MAP**

Scale 1" = 2 MILES

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**FINAL DRAWING**

NOT RELEASED FOR CONSTRUCTION

DATE: 03/30/18
CONSTRUCTION NOTES:
1. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TESTING, TOOLS, EQUIPMENT, SUPERVISION AND CONTRACT SERVICES REQUIRED TO CONSTRUCT THE LANDFILL GAS COLLECTION AND CONTROL SYSTEM DEPICTED ON THESE CONSTRUCTION DRAWINGS AND DEFINED IN THE CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS.
2. CONTRACTOR SHALL RECOGNIZE THAT THE LANDFILL IS AN ACTIVE LANDFILL, AND ALL ACTIVITIES SHALL NOT HINDER OR OBSTRUCT THE NORMAL WORKING ACTIVITIES ASSOCIATED WITH LANDFILL OPERATIONS.
3. CONTRACTOR SHALL MINIMIZE LAND DISTURBANCE RELATED TO CONSTRUCTION ACTIVITIES TO THE EXTENT POSSIBLE.
4. CONTRACTOR SHALL PROVIDE AND INSTALL NEW PNEUMATIC PUMPS AND PUMP APPURTENANCES IN CONFORMITY WITH THIS CONTRACT.
5. ALL PIPE AND FITTINGS SHALL BE PROVIDED BY ONE MANUFACTURER, UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL DESIGN AND MANUFACTURE GAS HANDLING EQUIPMENT, FLARE, AND SUPERVISORY SYSTEMS IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.
7. CONTRACTOR SHALL TEST THE PIPE AT 4 PSIG FOR A PERIOD NOT LESS THAN 1 HOUR.
8. BARRED FITTINGS SHALL BE PROVIDED EXECUTIVE PATTERN OR CUSTOM, AS REQUIRED.
9. ALL AIR AND FORCEMAIN PIPING SHALL BE SUBJECT TO AN AIR TEST TO DETECT ANY LEAKS. TESTING SHALL BE CONDUCTED WITH THE PIPE IN THE TRENCHES.
10. ALL AIR AND FORCEMAIN PIPING SHALL BE PRESSURIZED WITH AIR AND HELD FOR A PERIOD OF TIME NOT LESS THAN 1 HOUR.
11. ALL PIPE AND PIPE FITTINGS SHALL BE PROVIDED BY ONE MANUFACTURER, UNLESS OTHERWISE NOTED.
12. FLANGE FITTINGS SHALL BE PROVIDED. FLANGE FASTENERS SHALL BE STAINLESS STEEL.
13. FLANGE FITTINGS SHALL BE PROVIDED.
14. PIPE INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF ASA B 31.3-2000, ASME CODE, AND THE MANUFACTURER’S RECOMMENDATIONS.
15. THE WORK TO BE PERFORMED INCLUDES, BUT IS NOT LIMITED TO, THE CONSTRUCTION AND INSTALLATION OF THE LANDFILL GAS COLLECTION AND CONTROL SYSTEM DEPICTED ON THESE CONSTRUCTION DRAWINGS AND DEFINED IN THE CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS.

SCOPE OF WORK:
1. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS AND METHODS, AND IS SOLELY RESPONSIBLE FOR THE HEALTH AND SAFETY OF HIS WORKERS.
2. PRIOR TO EXCAVATION CONTRACTOR SHALL LOCATE BELOW GROUND EXISTING UTILITIES, PIPING AND THE LANDFILL GEOMEMBRANE AND GEOCOMPOSITE IN THE CONSTRUCTION AREA, EXISTING UTILITIES, PIPING, AND CAP GEOSYNTHEICS SHOWN ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE.
3. CONTRACTOR TO PROVIDE CONSTRUCTION AND AS-BUILT SURVEYING.
4. LANDFILL GAS BLOWER/FLARE SYSTEM TO INCLUDE, BUT NOT LIMITED TO,
   a. SKID MOUNTED LANDFILL GAS HANDLING SYSTEM.
   b. LANDFILL GAS CANDIDESTIC FLARE SYSTEM INCLUDING,
      i. PNEUMATIC AUTOMATIC SHUT-OFF VALVE.
      ii. FLARE ARRESTOR.
   c. COMPRESSOR SYSTEM FOR THE LANDFILL GAS HANDLING AND FLARE.
   d. 3RD PARTY SCADA SYSTEM.
   e. ELECTRICAL AND CONTROL WIRING SUPPLY, INSTALLATION, AND EQUIPMENT CONNECTION.
   f. FLOW METER.
   g. ROTARY SCREW AIR COMPRESSOR.
   h. DELIVERY OF EQUIPMENT.
   i. THREE (3) DAY START-UP, TESTING, AND TRAINING.
   j. TWO (2) YEAR WORKMANSHIP AND MATERIAL WARRANTY AND FIVE (5) YEAR EQUIPMENT SERVICE AND MAINTENANCE CONTRACT.
5. CONTRACTOR SHALL DESIGN AND MANUFACTURE GAS HANDLING EQUIPMENT, FLARE, AND CONTROLS BASED ON CRITERIA SET FORTH IN SPECIFICATION SECTION 441.120 AND SITE CONDITIONS.
6. INSTALLATION OF LANDFILL GAS BLOWER/FLARE SYSTEM AND AIR COMPRESSOR EQUIPMENT.
7. COMPLETE SITE WORK AND CONSTRUCT REINFORCED CONCRETE FOUNDATIONS FOR BLOWER/FLARE STATION AND AIR COMPRESSOR BUILDING.
8. PROVIDE AND INSTALL PRE-FABRICATED PANTAL BUILDING FOR NEW AIR COMPRESSOR BUILDING. PROVIDE BUILDING SUBMITTAL FOR OWNER APPROVAL.
9. PROVIDE MATERIALS, LABOR, AND EQUIPMENT FOR INSTALLATION OF UFG COLLECTION SYSTEM, TO INCLUDE, BUT NOT LIMITED TO,
   a. INSTALL AND PRESSURE TEST NEW LANDFILL GAS COLLECTION PIPING AND AIR AND FORCERMAIN PIPING. ALL PRESSURE TESTING SHALL BE MONITORED AND APPROVED BY THE OWNER OR OWNER’S REPRESENTATIVE.
   b. PROVIDE AND INSTALL NEW LANDFILL GAS BLOWER/FLARE SYSTEM AND AIR COMPRESSOR BUILDING.
   c. FURNISH AND INSTALL CONDENSATE COLLECTION Sumps with PNEUMATIC Pumps.
   d. PROVIDE AND INSTALL NEW QED WELLHEADS ON EXISTING LFG EXTRACTION UGS.
   e. PROVIDE AND INSTALL NEW QED WELLHEADS ON EXISTING LFG EXTRACTION UGS.

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION
DATE: 03/03/18

02 of 16

SCS ENGINEERS, PC

NEW HANOVER COUNTY LANDFILL GCCS CONSTRUCTION
02206379.20
ADG
APP. BY:
JLM
ADG
**NOTES:**
1. Stormwater pipe locations and depths from field observation.
3. Stormwater pipe locations and depths from South slope closure construction drawings, prepared by SCS Engineers and dated September 2016.
4. Existing 24" dia. stormwater pipe scheduled to be removed and replaced with proposed 36" dia. stormwater pipe during the construction of the South slope closure.
5. LFG header pipe shall be installed with a minimum of 1% slope and a minimum 2-ft cover soil depth.
6. Contractor shall locate all underground utilities within the work area prior to excavation.
7. All concrete slabs shall be 10"-in dia. move 50%-20% wall thickness. Refer to Sheet 10 for detailed dimensions for each slab.
8. Above and downstream piping and valving not shown for clarity.
FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION
DATE: 03/30/18
NEW HANOVER COUNTY LANDFILL GCCS CONSTRUCTION

ACCESS ROAD CROSSING DETAIL

NOT RELEASED FOR CONSTRUCTION

DATE: 03/30/18

NOTES:
1. CONTRACTOR SHALL REMOVE WASTE UNITS TO LEAVE BEFORE TRENCHING AND INSTALLING LATERAL PIPE.
2. INSTALL PERMANENT MARKER PIPE TO NOTE EDGES OF ROAD CROSSING.

FINAL DRAWING

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NEW HANOVER COUNTY LANDFILL
5210 US 421 N
WILMINGTON, NC 28401

LEACHATE PUMP STATION TIE-IN DETAIL

ANCHOR TRENCH CROSSING DETAIL
**BOLLARD DETAIL**

**Note:** To be placed inside of landfill

**FORCEMAIN BLOW-OFF VALVE DETAIL**

- 3" NPS END-11 THREADED CONC. VALVE OR BRASS VALVE
- 4"" NPS END-11 THREADED CONC. VALVE OR BRASS VALVE
- 2-1/2" NPS 210 SS BUSHING
- 3/8" NPS END-11 THREADED CONC. VALVE OR BRASS VALVE
- 3/4" NPS END-11 THREADED CONC. VALVE OR BRASS VALVE
- 2-1/2" NPS 210 SS BUSHING
- HEX NUT REDUCER AND 2" NPS END-11 THREADED CONC. VALVE OR BRASS VALVE

**GALVANIZED WROUGHT IRON CLAMP** (TYPE 1) REARDED AROUND PIPE AND SUPPORT POST

**Details - 5**

**NEW HANOVER COUNTY LANDFILL GCCS CONSTRUCTION**

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**NEW HANOVER COUNTY LANDFILL**

5210 US 421 N

WILMINGTON, NC 28401

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**DATE:** 03/30/18

**FINAL DRAWING**

**NOT RELEASED FOR CONSTRUCTION**

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**FORCEMAIN BLOW-OFF AND ISOLATION VALVE DETAIL**

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**FORCEMAIN PIPE CLEANOUT (CO) DETAIL**

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**SCS ENGINEERS, PC**

2520 WHITEHALL PARK DRIVE, SUITE 450

CHARLOTTE, NORTH CAROLINA 28273

PHONE: (704) 504-3107   FAX: (704) 504-3174

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**APP. BY:** TAS

**Q/A RVW BY:** TAS

**CHK. BY:** ADG

**DWN. BY:** ADG

**DSN. BY:** ADG

**PROJ. NO.** 02206379.20

**DATE:** MARCH 30, 2018

**SCALE:** AS SHOWN

**DRAWING NO.:** 16

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**NOTES:**

1. **CLEANOUT** SHALL BE THE SAME SIZE AS THE CONNECTING PIPE.

2. **LOCATED OUTSIDE LANDFILL LIMITS.**

3. **CONTRACTOR SHALL INSTALL TWO (2) 1/2-INCH DIAMETER STEEL BOLTS OR ROAD SIDE FOR EACH CLEANOUT LOCATION. SEE BOLLARD DETAIL ON DRAWING NO. 12. DO NOT PLACE BOLTS ON THE ROAD.**
CONDENSATE SUMP DETAIL

FINAL DRAWING
NOT RELEASED FOR CONSTRUCTION

DATE: 03/30/18

CONDENSATE SUMP DEPTHS

<table>
<thead>
<tr>
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<th>DEPTH (FT)</th>
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<tbody>
<tr>
<td>C1</td>
<td>12'9&quot;</td>
</tr>
<tr>
<td>C2</td>
<td>17'-5&quot;</td>
</tr>
<tr>
<td>C3</td>
<td>10'-10&quot;</td>
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<tr>
<td>C4</td>
<td>11'-8&quot;</td>
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<tr>
<td>C5</td>
<td>17'-10&quot;</td>
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CONDENSATE SUMP DETAIL

1. CONTRACTOR SHALL PROVIDE ALL COMPONENTS SHOWN AND NOT SHOWN FOR A COMPLETE AND OPERATIONAL SUMP.
2. SUMP CONSTRUCTION NOTES:
   1.1. 1 3/8" OD STAINLESS STEEL SCH 40 PIPE FOR PUMP SUPPORT AND RETENTION PIPE HOE AT EACH END. SMALL VALVE TO STAINLESS STEEL DIAPHRAGM, Valve, DIAPHRAGM VALVE, AND DIAPHRAGM BALL CLAMPS (2) FOR EACH DIAPHRAGM.
   1.2. SUMP AUTOMATIC VACUUM MONITORING PORTS WITH ALUMINUM NYLON TUBING (1/32" OR 1/8"). NOTE: BASKETS WITH DRIP CAPS FOR BOTH PORTS.
   1.3. PLACE PUMP BOTTOME 24" ABOVE START OF 1" HOLES.
   1.4. CONTRACTOR SHALL PROVIDE FOUR (4) STEEL PIPE DOLLARS AROUND SUMP.
   2. SUMMARY SHEET DRAWING FOR SUMP PRIOR TO MANUFACTURING.
   3. CONTRACTOR SHALL INSTALL TWO (2) 2" DIAMETER STEEL DOLLARS ON ROAD SIDE OF EACH SUMP FOR PROTECTION (SEE DOLLARS DETAIL ON DRAWING NO. 12). DO NOT PLACE DOLLARS ON THE ROOF.
   4. Groundwater estimated at 8 FT will contract's responsibility to recapture during construction.

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Landfill GCCS CONSTRUCTION

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MARCH 30, 2018

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TAS
TAS
NEW HANOVER COUNTY
NEW 2" DUAL EXTRACTION WELL CAP WITH EASY FITTINGS

1/2" SCH 40 PRED 80 PVC 80 PRED 3/4" REINFORCED AR DRAINAGE CAP

STAINLESS STEEL SLEEVE CLAMP
HIGH QUALITY STEEL SLEEVE WITH LEVER CLAMPED AND WASHED FOR DRAINAGE

1/2" S.S. 1/4" BODY 1/4" BODY THREADED FIG.
1/2" 1/4" S.S. THREADED BUSHING
1/4" 1/4" NPT 1/4" 1/4" NPT NIPPLE

NEW FEMALE COUPLING WITH SS BANDS
NEW FEMALE COUPLING WITH SS BANDS
NEW FEMALE COUPLING WITH SS BANDS
NEW FEMALE COUPLING WITH SS BANDS

NEW 2" INCH OIL AIRLINE
NEW 2" INCH OIL AIRLINE
NEW 2" INCH OIL AIRLINE
NEW 2" INCH OIL AIRLINE

NEW PUMP AIR SUPPLY
NEW PUMP AIR SUPPLY
NEW PUMP AIR SUPPLY
NEW PUMP AIR SUPPLY

NEW PUMP DISCHARGE TUBE (1"
NEW PUMP DISCHARGE TUBE (1"
NEW PUMP DISCHARGE TUBE (1"
NEW PUMP DISCHARGE TUBE (1"

PUMP CONTROL VALVE
PUMP CONTROL VALVE
PUMP CONTROL VALVE
PUMP CONTROL VALVE

PUMP INSTALLATION SCHEDULE
PUMP INSTALLATION SCHEDULE
PUMP INSTALLATION SCHEDULE
PUMP INSTALLATION SCHEDULE

PUMP 0/2/20 O/D or EXTRACTOR TUBE (O/D, O/D)
PUMP 0/2/20 O/D or EXTRACTOR TUBE (O/D, O/D)
PUMP 0/2/20 O/D or EXTRACTOR TUBE (O/D, O/D)
PUMP 0/2/20 O/D or EXTRACTOR TUBE (O/D, O/D)

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