November 19, 2024
File No. 27224464.00

Mr. Mike Smith, Environmental Engineer Senior
Land Quality Bureau
Iowa Department of Natural Resources
Wallace Building
502 E 9th Street
Des Moines, Iowa 50319

Transmitted via email to: mike.smith@dnr.iowa.gov

Subject: Construction Observation Report
2024 Gas Collection and Control System Expansion
Loess Hills Regional Landfill
Permit No. 65-SDP-01-72P

Dear Mr. Smith:

On behalf of the Loess Hills Regional Landfill, SCS Engineers (SCS) is submitting the enclosed 2024 Gas Collection and Control System Construction Observation Report.

Please do not hesitate to contact Zach Mahon at (402) 938-0321 or by email at zmahon@scsengineers.com should you have any questions on the material enclosed or require additional information.

Sincerely,

Gabe Cohen, EI
Staff Professional
SCS Engineers

Zachary Mahon, PE*
Project Manager
SCS Engineers
*Licensed in AK, NE, and SD

GC/ZM

cc: Ms. Becky Jolly, Iowa Department of Natural Resources (electronic)
Mr. Kelly Danielson, Iowa Waste Services (electronic)
Mr. Chaz Robers, Iowa Waste Services (electronic)
Mr. Ryan Mitchell, Iowa Waste Services (electronic)
Mr. Bret Stephens, Iowa Waste Services (electronic)
Ms. Rachel Hanigan, Iowa Waste Services (electronic)

Encl. Construction Observation Report 2024 Gas Collection and Control System Expansion

Construction Observation Report
2024 Gas Collection and Control System Expansion
Loess Hills Regional Sanitary Landfill
Malvern, Iowa

Iowa Waste Services, LLC.
59722 290th Street
Malvern, Iowa 51551

SCS ENGINEERS

27224464.00 | November 19, 2024

14755 Grover Street
Omaha, NE 68144
(402) 884-6202

SIGNATURE PAGE

This Construction Observation Report, dated November 19, 2024, for the 2024 Gas Collection and Control System Expansion at the Loess Hills Regional Sanitary Landfill and as outlined in the following Table of Contents, was prepared and reviewed by the following:

Gabe Cohen, EI
Staff Professional
SCS Engineers

Zachary Mahon, PE*
Project Manager
SCS Engineers
*Licensed in AK, NE, SD

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1.0 INTRODUCTION

SCS Engineers (SCS) was retained by Iowa Waste Services, LLC. to provide Construction Quality Assurance (CQA) services during the construction of the 2024 Gas Collection and Control System (GCCS) at the Loess Hills Regional Landfill (Loess Hills) located at 59722 290th St, Malvern, Iowa 51551. The project included the following components:

- Installing and connecting approximately 2,300 feet of landfill gas (LFG) system collection piping;
- Installing 4 LFG horizontal collectors for a total of approximately 1,500 feet;
- Connecting six caisson extraction wells to the LFG system;
- Connection of one leachate cleanout to the LFG system;
- Installing an LFG condensate sump;
- Installing and connecting air conveyance piping; and
- Installing and connecting liquid conveyance piping.

2.0 PROJECT DESCRIPTION

SCS was responsible for observing construction activities and observing that the material placement and construction procedures were completed in general accordance with the following:

- Iowa Administrative Code (IAC) 567 Chapter 113;
- Current site permit and relative amendments;
- Construction drawings titled "2024 GCCS Expansion Design" dated June 2024 by Energyneering Solutions, Inc. (Construction Drawings).

2.1 PROJECT ORGANIZATION

The contacts for the project are provided below.

Owner

Iowa Waste Services, LLC.
59722 290th St
Malvern, Iowa 51551
Chaz Roberts, District Manager
Ryan Mitchell, Site Superintendent
Rachel Hanigan, Region Engineer

Contractor

Monitoring Control and Compliance, Inc.
39201 Schoolcraft Road
Livonia, MI 48150
Jeremy Simcox, Project Manager

Design Engineer

Energyneering Solutions, Inc. (ESI)
15820 Barclay Drive
Sisters, Oregon 97759
Alan Herin, Designer
Quintin Morton, Environmental Engineer
Benjamin Benson, PE, Certifying Engineer

Surveyor

Thompson, Dreessen & Dorner (TD2)
10836 Old Mill Road
Omaha, Nebraska 68154

Construction Quality Assurance Engineer

SCS Engineers (SCS)
14755 Grover Street
Omaha, Nebraska 68144
Riley Johnson, Resident Project Representative
Cole Tesar, Resident Project Representative
Zachary Mahon, PE, Project Manager

3.0 GCCS INSTALLATION AND CQA

This section describes the CQA activities associated with the installation of the 2024 Gas Collection and Control System (Project). Installation of the LFG piping began on September 7, 2024, and was substantially completed on September 21, 2024. The Photographic Log and Daily Field Reports are included in Appendix A1 and A2, respectively. Thompson, Dreeson, and Dorner, Inc. (TD2) completed the as-built survey and provided point files to SCS. SCS prepared an as-built record drawing from the survey data, which is included in Appendix B.

3.1 CQA PROGRAM

The CQA program for the construction of the LFG system expansion consisted of documentation and observation of the installation of vertical LFG extraction wells and associated landfill gas collection piping and components. The requirements for installation and construction were outlined in the documents listed in Section 2.0.

3.2 SUMMARY OF HORIZONTAL COLLECTOR AND CAISSON WELL INSTALLATION

The CQA activities during LFG extraction well installation included observing and documenting the installation of four horizontal extraction wells (HEW-4 through HEW-7) by the Contractor. The resident project representative documented the placement of the horizontal collector system components and backfill materials. SCS also observed the installation of wellheads on six Caisson extraction wells (CEW-4, CEW-5, and CEW-7 through CEW-10).

SCS completed CQA on a full-time basis during the installation of LFG extraction wells.

3.3 SUMMARY OF LFG COLLECTION PIPING INSTALLATION

The CQA activities during LFG piping installation included observing and documenting the following:

- Trenching for the installation of piping;
- Installation of 12-inch (~1,420 ft) SDR-17 HDPE LFG piping;
- Installation of 6-inch (~ 850 ft) SDR-17 HDPE LFG piping;
- Installation of 3-inch (~985 ft) SDR-11 HDPE liquid conveyance piping;
- Installation of 2-inch (~985 ft) SDR-9 HDPE air conveyance piping;
- Air pressure testing of the piping;
- Installation of fittings; and

The LFG collection piping installation performed by the Contractor was comprised of a 12-inch HDPE header line along the north side of the project running from an existing condensate sump to a new condensate sump installed in the northwest corner of the facility. An additional header line was run from the newly installed condensate sump to the newly installed manifold system for the horizontal collectors. The Contractor also installed 6-inch HPDE lateral lines connecting the caisson extraction wells to the newly installed header lines SCS observed the Contractor performed air pressure testing on installed air conveyance, liquid conveyance, and LFG piping. Air pressure test results show that tested piping met the requirements in the applicable Construction Drawings. Copies of air pressure tests are included in Appendix C1.

The existing topography encountered during construction was not as anticipated during the project design. Therefore, the Contractor and Owner developed modified piping alignments to allow sufficient pipe slope.

SCS completed CQA on a full-time basis during the installation of the landfill gas collection piping.

Appendix A

Construction Documentation

A1 Photographic Log

Photo # 1

Electronic File Name: IMG_7753

Date: 9/7/2024

Direction (facing): North

Description: Pipe fittings stockpiled and sorted for installation.

Photo # 2

Electronic File Name: IMG_7769

Date: 9/7/2024

Direction (facing): West

Description: Excavation of soil and waste for installation of landfill gas, air, and liquid conveyances (typical).

Photo # 3

Electronic File Name: IMG_7771

Date: 9/7/2024

Direction (facing): West

Description: Measuring grade of the trench with a laser to ensure installed piping will properly drain to the sump (typical).

Photo # 4

Electronic File Name: IMG_7806

Date: 9/8/2024

Direction (facing): East

Description: Loading excavated waste in the haul truck to be disposed in the landfill (typical).

Photo # 5

Electronic File Name: IMG_7835

Date: 9/9/2024

Direction (facing): South

Description: Fusing 12’ header pipe for placement in trench (typical).

Photo # 6

Electronic File Name: IMG_7839

Date: 9/9/2024

Direction (facing): East

Description: 12” header staged next to trench for fitting placement and preparation for installation (typical).

Photo # 7

Electronic File Name: IMG_7776

Date: 9/7/2024

Direction (facing): East

Description: Placing the header pipe in the trench (typical).

Photo # 8

Electronic File Name: IMG_7795

Date: 9/8/2024

Direction (facing): South

Description: Landfill gas, liquid and air conveyance tie-in to existing sump.

Photo # 9

Electronic File Name: IMG_7800

Date: 8/24/2024

Direction (facing): East

Description: Air testing of installed piping (typical).

Photo # 10

Electronic File Name: IMG_3325

Date: 9/12/2024

Direction (facing): East

Description: Valve installation in the air conveyance line.

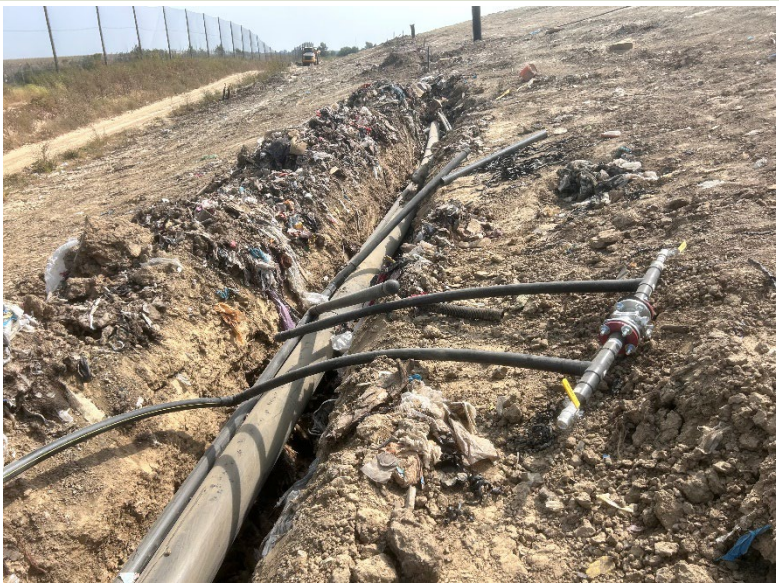


Photo # 11

Electronic File Name: IMG_7813

Date: 9/8/2024

Direction (facing): East

Description: Backfilling of installed piping (typical).

Photo # 12

Electronic File Name: IMG_7819

Date: 9/8/2024

Direction (facing): Southeast

Description: Hauling cover soil for restoration of disturbed areas (typical).

Photo # 13

Electronic File Name: IMG_7817

Date:9/8/2024

Direction (facing): East

Description: Fine grading of cover soil over disturbed areas. (typical).

Photo # 14

Electronic File Name: IMG_3569

Date: 9/19/2024

Direction (facing): West

Description: Excavated trench in waste for horizontal installation (typical).

Photo # 15

Electronic File Name: IMG_3555

Date: 9/18/2024

Direction (facing): South

Description: Placing aggregate in the bottom of the horizontal trench (typical).

Photo # 16

Electronic File Name: IMG_3558

Date: 9/18/2024

Direction (facing): West

Description: Perforated HDPE horizontal pipe place atop aggregate in the trench (typical).

Photo # 17

Electronic File Name: 20240516_234930523_iOS

Date: 9/19/2024

Direction (facing): East

Description: Aggregate placed atop the perforated horizontal pipe (typical).

Photo # 18

Electronic File Name: IMG_3587

Date: 9/19/2024

Direction (facing): Northeast

Description: Perforated pipe and aggregate covered with geotextile (typical).

Photo # 19

Electronic File Name: IMG_3681

Date: 9/21/2024

Direction (facing): East

Description: Backfilling horizontal trench (typical).

Photo # 20

Electronic File Name: IMG_3702

Date: 9/21/2024

Direction (facing): West

Description: Connecting caisson well to gas collection system (typical).

Photo # 21

Electronic File Name: IMG_3746

Date: 9/21/2024

Direction (facing): Northeast

Description: Installation of well head manifold for horizontal wells (typical).

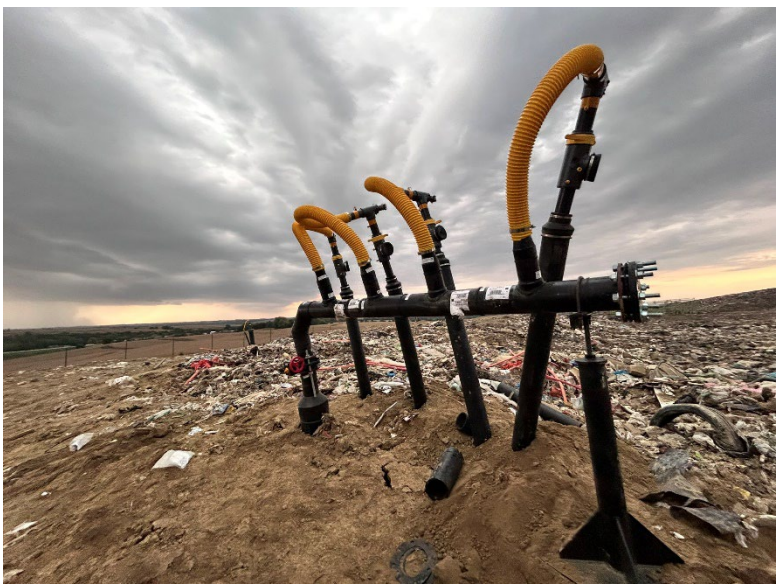


Photo # 22

Electronic File Name: IMG_3723

Date: 9/21/2024

Direction (facing): Southwest

Description: Completed sump installation.

Photo # 23

Electronic File Name: IMG_3735

Date: 9/21/2024

Direction (facing): West

Description: Witness post placed atop buried piping for survey (typical).

A2 Daily Field Activities Reports

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 7, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:20
SCS Engineers Project No:	27224464.00	**Stop Time:**	17:50
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

74 F, Sunny, 7 mph N wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - Jeremy Simcox, 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Riley Johnson

Work Areas/Boundaries

Prep area; POI A to POI D

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:20 - SCS (Johnson) arrived onsite. MCC begin excavating from Point of Interest (POI) A to POI D.
13:40 - Excavation complete for the day. Begin installation of 12" gas, 3" liquid, and 2" air conveyance piping from POI A to POI D.
17:44 - MCC could not get good seals using the pipe clamps on the liquid conveyance line. excavation was secured with equipment and MCC will attempt the tie-in at POI A in the morning.
17:50 -. SCS departed site.

Material(s) Delivered to Site

None

Riley Johnson
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 8, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:40
SCS Engineers Project No:	27224464.00	**Stop Time:**	15:30
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

79 F, Sunny, 10 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - Jeremy Simcox, 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Riley Johnson

Work Areas/Boundaries

Prep area; POI A to POI D

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Johnson) arrived onsite. MCC begins tie-in at POI A and preparations for air testing.
10:00 - Tie-in at POI A completed. Begin air test for 12" from POI A to POI D.
10:20 - Begin air test for 2" from POI A to POI D.
10:50 - Begin air test for 3" from POI A to POI D.
11:50 - All airtest from POI A to POI D completed and passed. Begin backfilling trench from POI A to POI D and preperations to continue trenching from POI D.
14:15 - No further trenching will be performed for the day. Begin hauling cover dirt for backfill and grading.
15:30 -. SCS departed site. MCC will continue backfilling and grading for the remainder of the day.

Material(s) Delivered to Site

None

Riley Johnson
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 9, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	18:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

85 F, Sunny, 22 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - Jeremy Simcox, 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Riley Johnson/Cole Tesar

Work Areas/Boundaries

Prep area; POI A to POI D

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:30 - SCS (Johnson, Tesar) arrived onsite. MCC begins trenching at POI D.
9:20 - TD2 on-site. Begin replacing lost stakes for horizontals and shooting new sump location.
9:50 - All stakes verified and new sump elevation confirmed. TD2 off-site. MCC continue trenching for 12" header.
12:00 - Trenching stopped at the haul road. MCC and SCS off-site for lunch.
12:30 - SCS and MCC on-site. Begin installation of 12" header from POI D to the haul road.
18:00 - Work completed for the day. Airtesting of installed conveyances will be completed in the morning. SCS and MCC off-site.

Material(s) Delivered to Site

None

Riley Johnson, Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 10, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:25
SCS Engineers Project No:	27224464.00	**Stop Time:**	16:30
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

81 F, Sunny, 10 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - Jeremy Simcox, 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; POI D to POI G

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:25 - SCS (Tesar) arrived onsite. MCC begins tie-in at POI D to POI G and preparations for air testing.
9:30 - Liquid cleanout, liquid isolation valve, and air isolation and blowout valves tie-in completed.
10:00 - Tie-in at POI D to POI G completed.
11:04 - Begin air test for 12" from POI D to POI G.
12:08 - Begin air test for 3" from POI D to POI G
14:29 - Begin air test for 2" from POI D to POI G
15:29 - All airtest from POI D to POI G completed and passed. Begin backfilling trench from POI D to POI G.
16:00 - No further trenching will be performed for the day. Begin hauling cover dirt for backfill and grading.
16:30 - SCS departed site. MCC will continue backfilling and grading for the remainder of the day.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 11, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	17:45
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

84 F, Sunny, 10 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 2 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; POI D to POI G, SUMP

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Tesar) arrived onsite. MCC begins capping end of POI G to SUMP in preparations for air testing.
8:30 - Capping on POI G to SUMP completed.
8:49 - Begin air test for 12"
9:49 - Airtest for 12" from POI G to SUMP completed and passed.
11:30- Liquid cleanout, liquid isolation valve, and air isolation and blowout valves tie-in completed.
16:00 - Begin air test for 2" from POI D to POI G
16:35 - Begin air test for 3" from POI D to POI G
17:35 - All airtest from POI G to SUMP completed and passed.
17:45 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 12, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	14:30
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

80 F, Sunny, 10 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 2 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; POI G to SUMP

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Tesar) arrived onsite. MCC began excavating POI G to SUMP
8:15 - SUMP was set in place.
11:30 - POI G 12" tie in to SUMP completed.
12:30 - Begin backfilling trench from POI G to SUMP. Begin hauling cover dirt for backfill and grading.
14:30 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 13, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	17:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

85 F, Sunny, 14 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; Isolation valve H to condensation Sump M, CEW-7 to CEW-5

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:30 - SCS (Tesar) arrived onsite.
7:40 - MCC began excavating Isolation valve H to condensation Sump M for 12 ".
15:30 - Caisson Extraction Well (CEW)-7 to CEW-5 12" tie completed.
17:00 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 14, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	14:30
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

78 F, Sunny, 5 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; POI G to SUMP

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:30 - SCS (Tesar) arrived onsite.
10:44 -Isolation valve H 12" tie in to CEW-7 complete.
12:07 - Begin air test for 12"
13:07 - Airtest for 12" from Isolation valve H to condensation pump M completed and passed.
12:30 - Begin backfilling trench from Isolation valve H to condensation pump M.
14:30 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 16, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	17:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

82 F, partly cloudy, 13 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; CEW 8 - CEW 4 & CEW 9 - CEW 3

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Tesar) arrived onsite. Waste Connections made aware that liner was damaged in NW corner of cell.
8:00- Waste Connections Ruled the damaged liner was not an issue.
8:30 MCC began excavating CEW 8 - CEW 4.
9:40 - Begin excavation from CEW 9 - CEW 3.
11:00 - Tie-in CEW 8 - CEW 4 complete.
13:00 - Tie in CEW 9 - CEW 3 complete.
15:00 - Begin air test from CEW 8 - CEW 4.
15:30 - Begin air test from CEW 9 - CEW 3.
16:30 - All airtest from CEW 8 - CEW 4 & CEW 9 - CEW 3 completed and passed. Begin backfilling trench from CEW 8 - CEW 4 & CEW 9 - CEW 3 .
17:00 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 17, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	16:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

70 F, Sunny, 9 mph N wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; CEW 10 - CEW-1, CEW 1 - CEW 2

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Tesar) arrived onsite. MCC began excavating CEW 10- CEW 1.
9:20 - Begin excavating CEW-1 to CEW-2. CEW-10 to CEW-1 tie-in complete.
11:30 - CEW-1 to CEW-2 tie in complete.
12:04 - Begin air test for 6" from CEW-10 to CEW-2.
13:04 - All airtest from CEW-10 to CEW-2 completed and passed.
13:30 - Begin hauling cover dirt for backfill and grading
16:00 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 18, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	16:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

88 F, Sunny, 16 mph N wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; HEW 2

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:30 - SCS (Tesar) arrived onsite. MCC began grading North slope.
10:40 - Proposal for field adjustments to manifold and horizontals.
11:15 - Manifold location modified to accomidate existing gradient.
11:30 - Begin trenching Horiztonal Extraction Well (HEW)-2.
14:00 - MCC began hauling gravel for base layer in HEW-2.
15:00 - HEW-2 a-b 6" installed. Begin hauling gravel for top layer.
16:00 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 19, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	7:40
SCS Engineers Project No:	27224464.00	**Stop Time:**	16:30
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

85 F, Cloudy, 7 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; HEW-3, HEW-4

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:40 - SCS (Tesar) arrived onsite. MCC began excavating HEW-3
9:20 - Begin halling gravel for base. HEW-3 a to HEW-3 b tie-in complete.
10:40 - Begin hauling gravel for top layer.
11:30 - Begin HEW-3 backfill.
13:04 - Begin trenching HEW-4.
14:30 - Begin halling gravel for base. Rock drain installed at HEW-4a due to gradient.
15:30 - Begin hauling gravel for top layer.
16:30 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 20, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	8:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	18:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

90 F, Sunny, 9 mph N wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; HEW-5

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

8:30 - SCS (Tesar) arrived onsite.
9:30 - HEW-5 a to HEW-5 b 6" tie in complete.
10:00 - Manifold to 12" tie in complete.
11:30 - Begin trenching for HEW-5.
15:30 - Trenching for HEW-5 complete. Begin hauling gravel for base.
17:30 - Begin hauling gravel for top layer.
18:00 - SCS departed site.

Material(s) Delivered to Site

None

Cole Tesar
Construction Observer

SCS ENGINEERS

DAILY FIELD ACTIVITIES REPORT

Client Name:	Iowa Waste Services, LLC.	**Date:**	September 21, 2024
SCS Engineers Project Name:	Loess Hills 2024 GCCS Expansion CQA	**Start Time:**	8:30
SCS Engineers Project No:	27224464.00	**Stop Time:**	19:00
Project Location:	Loess Hills Regional Sanitary Landfill Malvern, Iowa		

Task: *GCCS installation*

Weather Information

86 F, Cloudy with light rain, 9 mph S wind

Contractors, Personnel, and Equipment On Site

Monitoring Control and Compliance, Inc. (MCC) - 3 workers
Equipment: Kobelco SK210 (Excavator), Bobcat 1740 (Skidsteer), and UTV.
SCS - Cole Tesar

Work Areas/Boundaries

Prep area; HEW-5, SUMP, Manifold, CEW- 5,7,4,8,9,10

Testing Equipment Used/Observed and Calibration/Re-Calibration Documentation

None

Tests Completed/Observed

None

Work Comments/Observations and Test Results

7:30 - SCS (Tesar) arrived onsite. MCC began grading.
9:30 - LFG horizontal wellhead meter to CEW-5 tie-in complete.
10:30 - LFG horizontal wellhead meter to CEW-7 tie-in complete.
11:30 - LFG horizontal wellhead meter to CEW-4 tie-in complete.
12:30 - LFG horizontal wellhead meter to CEW-8 tie-in complete.
14:00 - LFG horizontal wellhead meter to CEW-9 tie-in complete.
15:00 - LFG horizontal wellhead meter to CEW-10 tie-in complete.
15:45 - MCC began horizontal manifold tie-in and pipe support installation.
16:00 - Air pressure regulator installed on SUMP.
17:00 - MCC began backfill and grading for HEW-5.
18:00 - Horizontal manifold tie-in and pipe support installation complete.
19:00 - SCS departed site.

Material(s) Delivered to Site

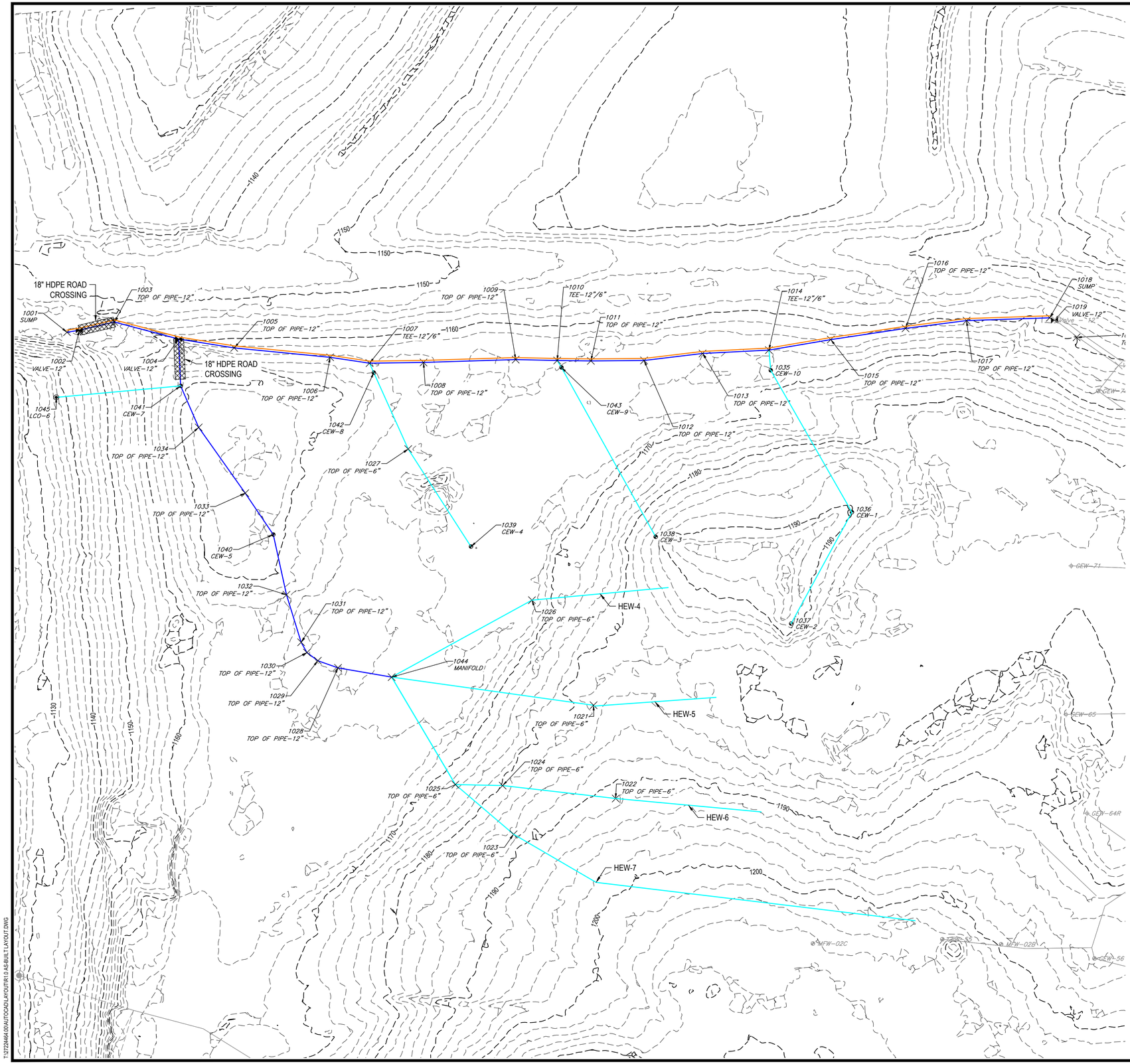
None

Cole Tesar
Construction Observer

SCS ENGINEERS

Appendix B

As-Built Drawing



LEGEND

- 10' EXISTING CONTOUR
- 2' EXISTING CONTOUR
- 12 IN LFG PIPING
- 6 IN LFG PIPING
- AIR AND LIQUID CONVEYANCE PIPING
- GAS EXTRACTION WELL
- VALVE
- LEACHATE CLEAN OUT

NOTES:

1. BACKGROUND TOPOGRAPHY FROM AERIAL SURVEY PERFORMED BY FIRMATECK ON FEBRUARY 12, 2024.
2. AS-BUILT POINTS PROVIDED BY THOMPSON, DREESSEN, AND DORNER, INC., (TD2) FROM SURVEY PERFORMED SEPTEMBER 27, 2024.
3. LOCATION OF LCO-6 FROM DESIGN DRAWINGS PREPARED BY ENERGYNEERING, INC.
4. LOCATION OF HORIZONTAL COLLECTORS ESTIMATED FROM SURVEY DATA AND FIELD OBSERVATIONS. ACTUAL LOCATIONS MAY VARY.
5. ELEVATIONS SHOWN FOR TOP OF PIPE ARE ESTIMATED FROM GROUND SURFACE ELEVATION AT TIME OF SURVEY AND ESTIMATED TRENCH DEPTH DURING CONSTRUCTION. ACTUAL ELEVATIONS MAY VARY.

COORDINATE TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1001	5841.38	2413.68	1154.7	SUMP
1002	5843.33	2425.90	1151.4	VALVE-12"
1003	5851.52	2460.74	1152.7	TOP OF PIPE-12"
1004	5834.63	2524.65	1158.5	VALVE-12"
1005	5825.79	2579.86	1161.0	TOP OF PIPE-12"
1006	5816.44	2675.22	1163.1	TOP OF PIPE-12"
1007	5810.61	2714.41	1164.0	TEE-12"/6"
1008	5811.33	2768.04	1165.2	TOP OF PIPE-12"
1009	5814.18	2859.66	1167.0	TOP OF PIPE-12"
1010	5813.26	2900.94	1168.1	TEE-12"/6"
1011	5812.86	2934.43	1170.6	TOP OF PIPE-12"
1012	5813.28	2987.20	1170.6	TOP OF PIPE-12"
1013	5820.25	3045.40	1169.5	TOP OF PIPE-12"
1014	5823.61	3111.33	1165.6	TEE-12"/6"
1015	5834.05	3172.82	1161.4	TOP OF PIPE-12"
1016	5845.21	3247.12	1159.8	TOP OF PIPE-12"
1017	5852.91	3307.78	1157.9	TOP OF PIPE-12"
1018	5855.71	3390.45	1158.5	SUMP
1019	5853.11	3395.24	1155.7	VALVE-12"
1020	5836.28	3417.24	1157.4	TOP OF PIPE-12"
1021	5470.53	2937.05	1204.1	TOP OF PIPE-6"
1022	5377.81	2959.04	1202.9	TOP OF PIPE-6"
1023	5342.22	2857.58	1202.5	TOP OF PIPE-6"
1024	5390.66	2846.70	1203.6	TOP OF PIPE-6"
1025	5391.63	2799.70	1204.0	TOP OF PIPE-6"
1026	5575.00	2875.85	1204.3	TOP OF PIPE-6"
1027	5725.27	2752.80	1185.5	TOP OF PIPE-6"
1028	5507.71	2683.11	1200.9	TOP OF PIPE-12"
1029	5514.79	2663.03	1197.4	TOP OF PIPE-12"
1030	5522.94	2652.15	1194.2	TOP OF PIPE-12"
1031	5533.14	2646.41	1193.5	TOP OF PIPE-12"
1032	5580.30	2631.86	1189.8	TOP OF PIPE-12"
1033	5681.43	2590.81	1178.8	TOP OF PIPE-12"
1034	5746.75	2544.56	1169.0	TOP OF PIPE-12"
1035	5803.44	3113.18	1173.8	CEW-10
1036	5662.47	3193.83	1201.0	CEW-1
1037	5551.70	3133.47	1203.0	CEW-2
1038	5637.96	2998.74	1202.0	CEW-3
1039	5628.28	2815.21	1201.7	CEW-4
1040	5640.22	2618.72	1187.2	CEW-5
1041	5787.98	2526.63	1166.9	CEW-7
1042	5801.23	2718.60	1168.1	CEW-8
1043	5806.34	2905.12	1173.0	CEW-9
1044	5498.49	2736.36	1212.2	MANIFOLD
1045	5776.60	2402.99	1137.4	LCO-6

REV.	DATE	CK BY
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-

SHEET TITLE
AS-BUILT LAYOUT

PROJECT TITLE
LOESS HILLS LANDFILL
2024 GCCS EXPANSION

CLIENT
IOWA WASTE SERVICES, LLC
59722 290TH STREET
MALVERN, IA

SCS ENGINEERS
14755 GROVER STREET
OMAHA, NE 68144
PH. (402) 884-6202 FAX: (913) 681-0012

PROJ. NO. 27224464.00
DSN. BY: ZEM
DWN. BY: BSG
CHK. BY: ZEM
PROJ. MGR: ZEM

CADD FILE:
R1.0 AS-BUILT LAYOUT.DWG

DATE:
11/19/24

DRAWING NO.
R1.0

T:\27224464.00\AUTOCAD\LAYOUT\R1.0 AS-BUILT LAYOUT.DWG

Appendix C

Field Pressure Test Results

SCS ENGINEERS

Pressure Testing Information

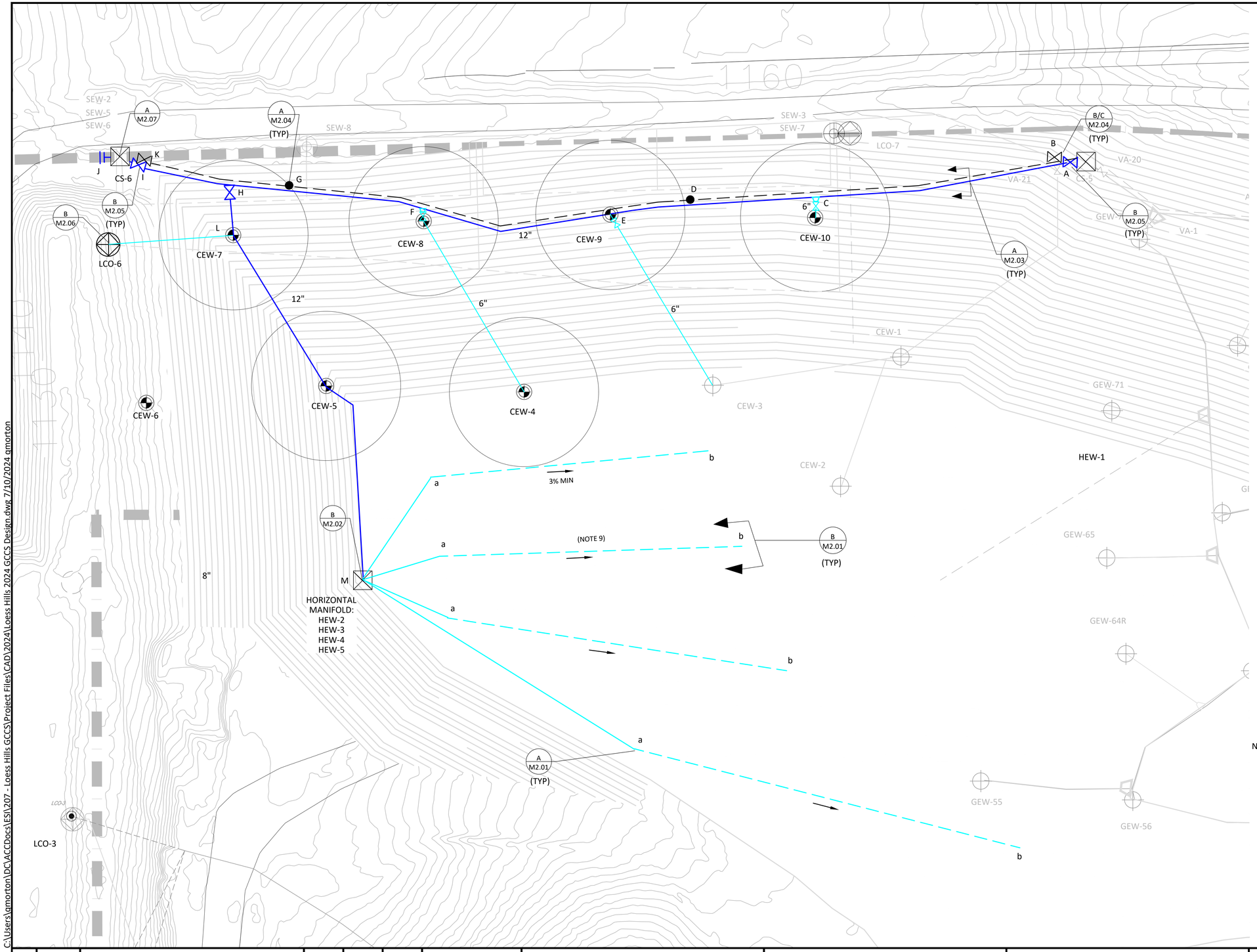
Client: Iowa Waste Services, LLC
Project: Loess Hills 2024 GCCS Expansion
Project No.: 27224464.00

CQA Technician: Riley Johnson, Cole Tesar
Contractor: Monitoring Control and Compliance, Inc.
Pressure Gauge Model: Trerice ANSI/NSF 61 & 372

Date	Test Number	Segment	Pipe Size (in.)	Time		Temperature (°F)		Pressure (psig)		Acceptable Pressure Change Due to Temp	Pressure Change (psig)	Pass/Fail
				Start	End	Start	End	Start	End			
09/08/24	1	POI A to POI D	12	10:00	11:00	91	106.7	10	13	0.70	3.00	P
09/08/24	2	POI A to POI D	2	10:20	11:20	86	103.5	101	101	3.71	0.00	P
09/08/24	3	POI A to POI D	3	10:50	11:50	105.6	110	102	102	0.91	0.00	P
09/10/24	4	POI D to POI G	12	11:04	12:04	95.3	91.5	13	13	-0.19	0.00	P
09/10/24	5	POI D to POI G	3	12:08	13:08	89	107.9	101	103	3.99	2.00	P
09/10/24	6	POI D to POI G	2	12:30		105.8	103.8	103	99	-0.42	-4.00	F
09/10/24	7	POI D to POI G	2	14:29	15:29	100.4	100.7	100	100	0.06	0.00	P
09/11/24	8	POI G to SUMP	12	8:49	9:49	88.5	88.7	11	11	0.01	0.00	P
09/11/24	9	POI G to SUMP	2	4:00	5:00	96.9	105.2	100	100	1.71	0.00	P
09/11/24	10	POI G to SUMP	3	4:35	5:35	88.7	91.2	102	102	0.53	0.00	P
09/14/24	11	Iso. Valve H to Cond. Pump M	12	12:07	13:07	86.5	102.3	10	10	0.71	0.00	P
09/16/24	12	CEW 8 to CEW 4	6	15:00	16:00	95.1	91.7	23	23	-0.23	0.00	P
09/16/24	13	CEW 9 to CEW 3	6	15:30	16:30	95.7	96	11	11	0.01	0.00	P
09/17/24	14	CEW-10 to CEW-2	6	12:12	13:12	98.6	117.8	11	11	0.88	0.00	P

Acceptable Change in Pressure =

$$\left((\text{End Pres} + 459)\left(\frac{\text{Start Pres} + 14.65}{\text{Start Temp} + 459}\right)\right) - 14.65 - \text{Start Pres}$$



LEGEND

- EXISTING FILL
- EXISTING VERTICAL LFG EXTRACTION WELL
- EXISTING MANIFOLD WELLS
- EXISTING MANIFOLD WELLHEADS
- EXISTING LFG PIPING
- PROPOSED VERTICAL LFG WELL
- PROPOSED VERTICAL LFG WELL REDRILL
- LEACHATE CLEANOUT
- REMOTE MANIFOLD
- EXISTING CONDENSATE SUMP
- 6IN LFG PIPING
- 8IN LFG PIPING
- 12IN LFG PIPING
- 24IN LFG PIPING
- AIR & LIQUID CONVEYANCE
- LIQUID/AIR CONVEYANCE CLEANOUT
- CHANGE IN PIPE SIZE
- ISOLATION VALVE
- PIPE TERMINATION
- REMOTE WELLHEAD
- ABUTMENT LINER
- ROAD CROSSING

N W E S

0 25 50 100

GRAPHIC SCALE IN FEET

NOTES:

1. SOLID PIPE LENGTHS ARE SHOWN AT APPROXIMATE LOCATION TO ENSURE ~3% GRADE. FIELD FIT PIPE LENGTHS AND LOCATIONS TO ENSURE GRADE AND PROPER DRAINAGE.
2. ALL LFG PIPING TO BE SDR17 HDPE PIPE UNLESS OTHERWISE SPECIFIED.
3. INSTALL ALL PIPING AND TERMINATE ALL PIPING AT LOCATIONS NOT TO INTERFERE WITH FUTURE FILLING OPERATIONS.
4. WHERE LATERAL RUNS ARE REQUIRED TO SUPPLY VACUUM TO A SINGLE VERTICAL WELL, UTILIZE 6"Ø SDR17 HDPE PIPE FOR THE LATERAL RUN UNLESS OTHERWISE INDICATED.
5. UNLESS OTHERWISE SPECIFIED FOR LATERAL & SUB-HEADER TIE-INS TO EXISTING HEADERS USE SADDLE TAPS, TEES WITH REDUCERS OR REDUCING TEES.
6. VERTICAL WELLS LOCATED ON LFG HEADER PIPING WILL HAVE 6"Ø LATERAL PIPING BETWEEN WELL AND HEADER (NOT SHOWN) FIELD FIT AS NEEDED TO ENSURE MIN 3% DROP IN LATERAL.
7. WHERE EXISTING LATERAL PIPING IS REPLACED, CAP AND TERMINATE EXISTING LATERAL AS NECESSARY.
8. USE CAUTION WHEN EXCAVATING NEAR EXISTING CONVEYANCE PIPING.
9. TRENCH AS NECESSARY TO ENSURE MIN 3% HORIZONTAL DROP INTO WASTE

REV	DATE	DESCRIPTION	DRN BY	DSN BY	CHK BY
1	6/24/2024	ISSUED FOR BID	PD	QM	AH
0	5/22/2024	ISSUED FOR BID	PD	QM	AH

IOWA WASTE SERVICES, LLC
LOESS HILLS LANDFILL
MALVERN, IOWA

ENERGYNEERING® SOLUTIONS
15820 BARCLAY DRIVE SISTERS, OR 97759
PHONE: (541) 549-8766
FAX: (541) 549-1901

2024 GCCS EXPANSION

2024 GCCS DESIGN
LOESS HILLS LANDFILL
MALVERN, IOWA

DRAWING NO.
M1.01
PROJECT NO.
207.511

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