



Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 Facility Identification

Name Equilon Enterprises LLC d/b/a/ SOPUS County Madison
 Street Address 900 South Central Ave Site No. (IEPA) 1191150002
 City Roxana Site No. (USEPA) ILD080012305

2.0 Owner Information

Name _____
 Mail Address _____
 City _____
 State _____ Zip Code _____
 Contact Name _____
 Contact Title _____
 Phone _____

3.0 Operator Information

Name Equilon Enterprises LLC d/b/a/ SOPUS
 Mail Address 128 East Center Street
 City Nazareth
 State PA Zip Code 18064
 Contact Name Leroy Bealer
 Contact Title Senior Program Manager
 Phone 484-632-7955

4.0 Type of Submission (check applicable item and provide requested information, as applicable)

RFI Phase I Workplan/Report IEPA Permit Log No. B-43R
 RFI Phase II Workplan/Report Date of Last IEPA Letter on Project May 5, 2023
 CMP Report; Log No. of Last IEPA Letter on Project B-43R-CA-109
 Other (describe): FPWY SEE - Additional Information to FDRCP (Area C) Does this submittal include groundwater information: Yes No
 Date of Submittal September 22, 2023

5.0 Description of Submittal: (briefly describe what is being submitted and its purpose)

Response to IEPA comments 14-16 in their 5/5/23 letter requesting an addendum based on additional data collected.

6.0 Documents Submitted (identify all documents in submittal, including cover letter; give dates of all documents)

Additional information letter, RCRA Corrective Action Certification, and Attachments. Electronic copies of submittal also sent directly to Amy Butler, Visal Poornaka and Ali Al-Janabi of IEPA.

For: FPWY SEE - Added Information to FDRCWP (Area C)

Date of Submission: September 22, 2023

7.0 Certification Statement

(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7.1 Owner/Operator Certification

(Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

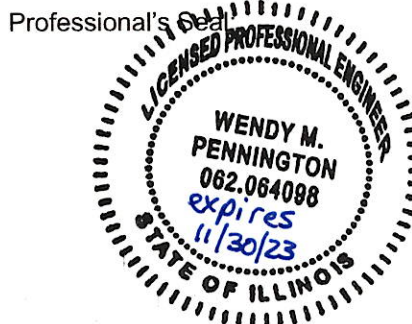
Owner Signature: _____ Date: _____
 Title: _____
 Operator Signature: _____ Date: 9/22/2023
 Title: Senior Program Manager

7.2 Professional Certification (if necessary)

Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44 (h))

Professional's Signature: Wendy Pennington Date: 9/22/2023
 Professional's Name Wendy Pennington
 Address 100 N. Broadway, 20th Floor
 City St. Louis
 State MO Zip Code 63089
 Phone 314-452-8929



IEPA RCRA Corrective Action Certification

For: FPWY SEE - Additional Information to FDRW (Area C)

Date of Submission: September 22, 2023

7.3 Laboratory Certification (if necessary)

The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory Teklab, Inc.


Signature of Laboratory Responsible Officer

Date: 9/22/23

Mailing Address of Laboratory

Address 5445 Horseshoe Lake Road

City Collinsville

State IL Zip Code 62234

Aaron Renner, Project Manager
Name and Title of Laboratory Responsible Officer



AECOM
100 N. Broadway,
20th Floor
St. Louis, MO 63102
www.aecom.com

314 429 0100 tel
314 429 0462 fax

September 22, 2023

Ms. Jacqueline M. Cooperider, PE
Manager, Permit Section
Illinois Environmental Protection Agency
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62702

**Former Public Works Yard Steam Enhanced Extraction – Additional Information to Final Design
Report and Construction Work Plan (Area C)
1191150002 – Madison County
Equilon Enterprises LLC d/b/a Shell Oil Products US
Log No. B-43R-CA-109**

Dear Ms. Cooperider:

AECOM Technical Services, Inc. (AECOM), on behalf of Equilon Enterprises LLC d/b/a Shell Oil Products US (Shell), is submitting this addendum (Addendum 1) to the Steam Enhanced Extraction Final Design Report and Construction Work Plan (FDRCWP) dated December 16, 2022. This addendum includes information requested by:

- Conditions 14 through 16 in the IEPA May 5, 2023, approval with conditions and modifications letter. These conditions required:
 - [Condition 14] Additional sampling in the vicinity of previous boring GP-17. If the results of that sampling were above the Csat value for benzene (580 mg/kg), a third treatment area (Area C) must be designated.
 - [Condition 15] Exploring the potential addition of two MPE wells to the northern parts of Area A and Area B to ensure the capture of VOCs volatilized and mobilized during SEE in the area closest to the adjacent residential area.
 - [Condition 16] Submitting information required by Conditions 14 and 15 at least 30 days before the start of SEE operations.
- An email from Visal Poornaka (IEPA) dated July 21, 2023. This email requested a winterization plan for the Steam Enhanced Extraction (SEE) System.

Applicable conditions from the IEPA's May 5, 2023, letter are provided below in *italics*, followed by the corresponding Shell response in regular **blue font**. Preliminary responses to these conditions were provided in the Former Public Works Yard Steam Enhanced Extraction – Response to 5/5/2023 IEPA Letter dated August 3, 2023. Applicable conditions from the May 5, 2023 letter are reprinted in full.

IEPA Conditions 14, 14.a and 14.b

Additional sampling must be conducted to at least 50 feet bgs and within 5ft of GP-17. This sampling will serve as a confirmatory sample to ensure, there is no contamination in this area since historical numbers from GP-17 shows significant contamination compared to the 2019 sampling results from PD-10. Once sampling results have been obtained;

a. If the results are below the Csat value for benzene (580 mg/kg) and TPH value (2,000 mg/kg), no other action is required.

b. If the results are higher than the Csat value for benzene (580 mg/kg) or TPH value (2,000 mg/kg), SOPUS must designate the area surrounding the sampling zone as the third treatment area, and necessary steps must be taken to install the steam injection wells, multi-phase extraction (MPE) wells, Sensors etc., and this area must be treated along with Areas A and B. The additional information for this area must be submitted as an addendum to the original submittal including the updated maps, confirmatory samples, updated system specifications etc.

Shell Response to IEPA 5/5/23 Letter Condition 14

New exploratory location SB-103 was drilled adjacent to historical boring GP-17. Sampling was performed at depths of 38 feet, 43 feet, 58 feet and 68 feet below ground surface (bgs) on May 17, 2023. Analytical results from this were reviewed upon receipt and additional drilling at the same location was performed to a depth of 77 feet bgs on May 24, 2023. Additional step-out borings (SB-104 through SB-107) were performed June 17 through 20, 2023. Locations of borings SB-103 through SB-107 are depicted in **Figure 1** below. The soil analytical data collected from these borings were evaluated and modeled. Benzene analytical results were found above the Csat value for benzene (580 mg/kg) and the SEE System design was expanded to incorporate Treatment Area C. The boring logs for locations SB-103 through SB-107 are enclosed as **Attachment 1**. A summary of the analytical results from these locations are enclosed as **Attachment 2**. The analytical laboratory reports from these locations will be included with the other analytical laboratory results in the SEE System Construction Completion Report.

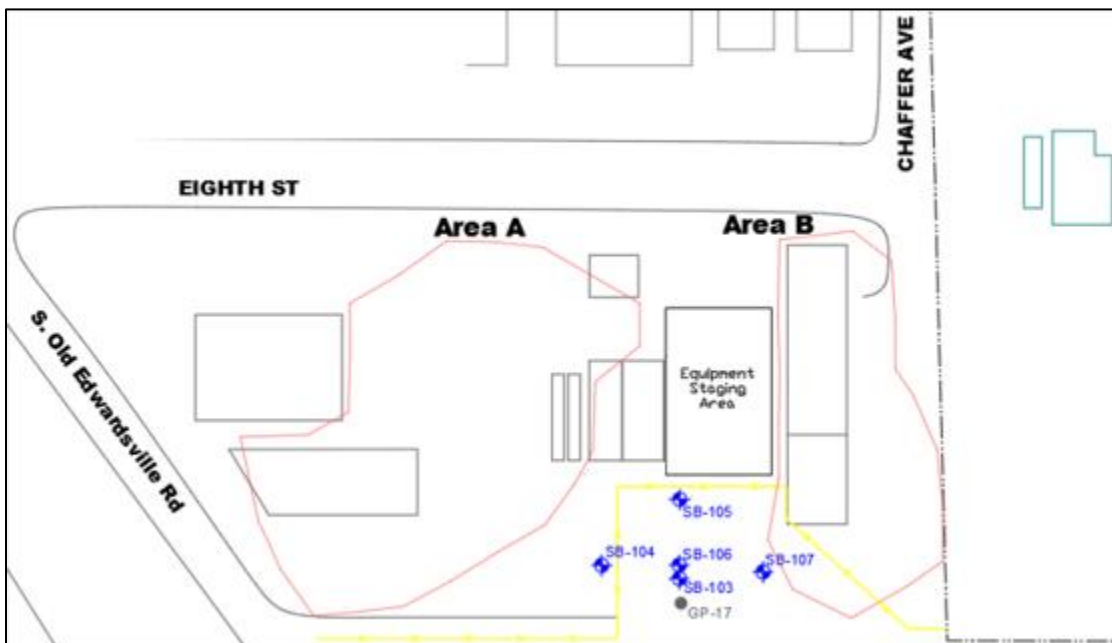


Figure 1 – Locations of Area C Borings

Treatment Area C addresses locations where soil benzene concentrations meet or exceed the remedial soil saturation limit (Csat) for benzene (580 mg/kg). **Figure 2** below depicts the modeling results using this Csat value.

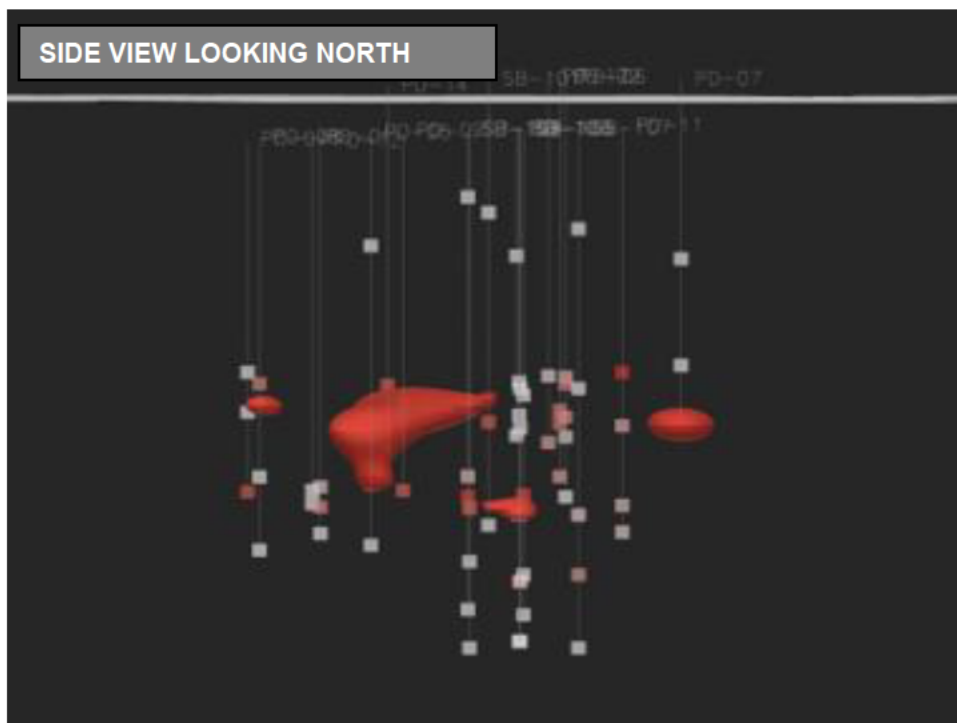


Figure 2 – Model Output – Benzene in Soil >580 mg/kg

Based upon the analytical and modeling results from boring locations SB-103 through SB-107, a new targeted treatment zone (TTZ) is being added to the SEE design previously submitted (Area C). Treatment Area C is approximately 3,100 ft² with a vertical treatment interval between 368 and 396 feet above mean sea level (amsl). The subsurface treatment volume of the three TTZs combined is approximately 3,325 cubic yards (CY). **Figure 3** below (also see **WFL-01** in **Attachment 3**) depicts the benzene modeling results and the revised SEE System layout, including new Treatment Area C.

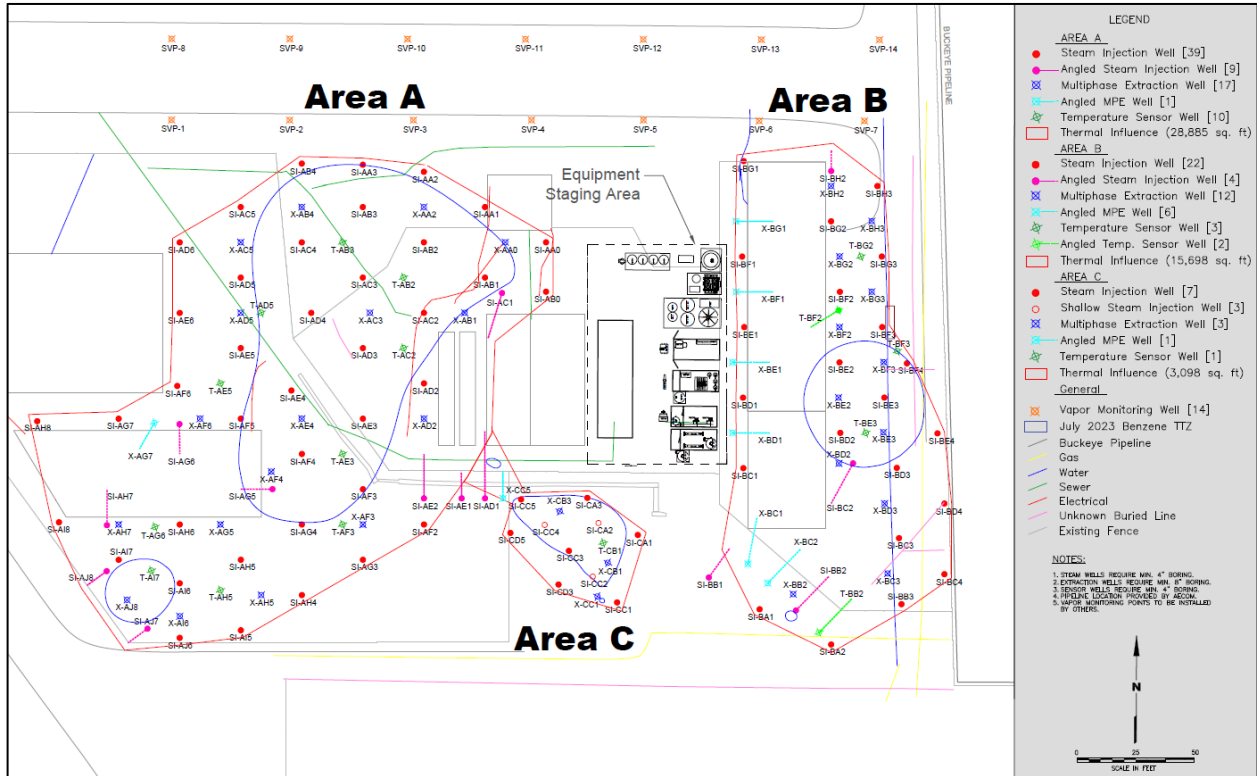


Figure 3 – SEE System Layout and Benzene Plume >580 mg/kg

There is no change necessary to the extraction system equipment outlined in Section 2.6 of the FDRCPW with the addition of Treatment Area C. The original system design was conservative enough to incorporate the new Area C components without exceeding maximum treatment capacity. **Figure 4** below depicts the anticipated layout of the SEE System equipment in the equipment staging area. Figures from the FDRCPW that have been revised due to the addition of Area C, as well as new figures associated with Area C, are enclosed as **Attachment 3**.

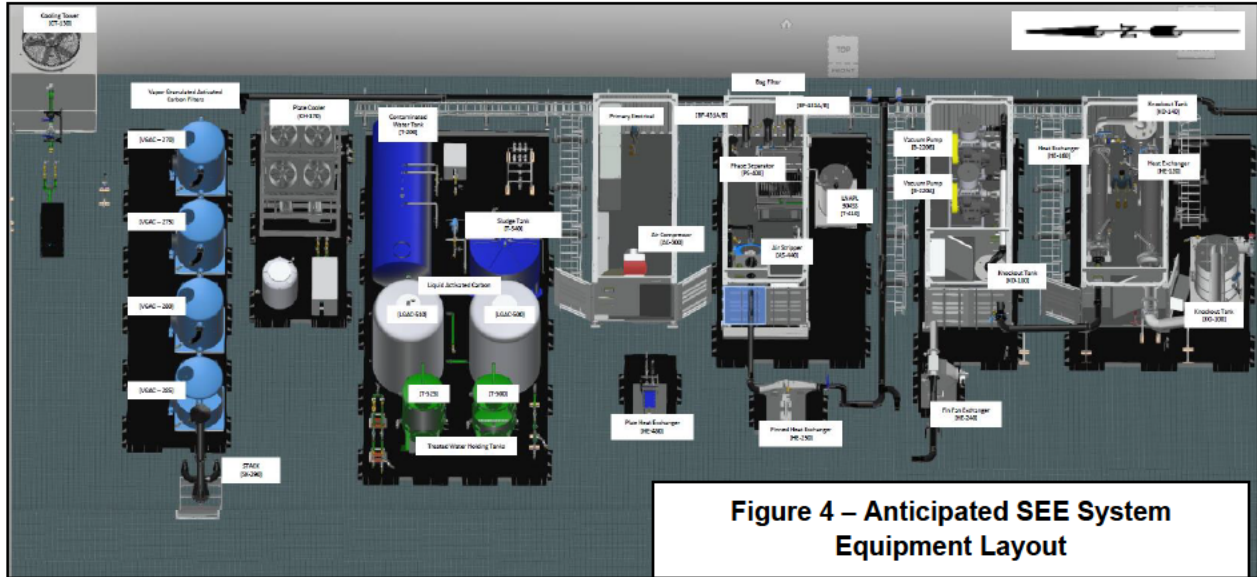


Figure 4 – Anticipated SEE System Equipment Layout

IEPA Conditions 15, 15.a and 15.b

SOPUS must explore adding two additional MPE wells to the northern parts of Area A and Area B. These additional MPE wells are required to ensure the capture of all VOCs volatilized and mobilized during SEE in the area closest to the adjacent residential area, provided that it would not interfere in the performance of SEE.

- a. This condition must be satisfied prior to commencement of SEE, with the installation of the additional MPE wells and a map depicting the updated MPE well locations submitted as an addendum to this submittal.
- b. If MPE well construction is not ideal, a technical explanation must be provided for such determination.

Shell Response to IEPA 5/5/23 Letter Condition 15

Below is the requested technical explanation supporting the determination that the additional MPE wells mentioned by IEPA is not ideal. The response below was included in Shell’s Response to 5/5/2023 IEPA Letter, dated August 3, 2023.

Upon review, Shell believes the MPE well construction described in IEPA Condition 15 could increase the risk of contaminant exposure to residents in the northern residential area. An essential function of the MPE system is to create an inward hydraulic and pneumatic gradient, preventing contamination from mobilizing outside of the treatment area. If MPE wells were to be placed north of the treatment area, there is significant risk that vaporized contamination would be pulled outside of the heated area before condensing and becoming difficult to extract, effectively pulling contaminant mass towards the residences.

Shell proposes a design strategy to surround the contaminant plume with steam injector wells and place MPE wells such that the radii of influences fully encapsulate the plume, which is how the SEE system is currently designed per the FDRCP and this Addendum 1. Shell believes this approach may better achieve the mutual goal of protecting resident health and safety. Additionally, steam vapor monitoring points are included in the design to monitor for potential migration towards the residences. If migration is observed, a targeted increase in vacuum pressure can be applied to the northern-most MPE wells to draw

contamination away from the residential properties. Existing SVE wells may also be utilized to target soil vapor in the vicinity of residences.

July 21, 2023, 10:31 a.m. Email from Visal Poornaka (IEPA) – SEE System Winterization Plan

In this case, since the system will need to run through winter, please send in a winterization plan for the SEE system. This plan can be included in the addendum required in Conditions 14. and 15. in the May 05th, 2023 letter from Illinois EPA to SOPUS.

SEE System Winterization Plan

SEE operations are anticipated to begin Fall 2023. With an expected operational span of approximately 6 months, operations will continue through winter. The SEE system is expected to be processing hot vapors and liquids prior to the onset of cold winter temperatures. This means that the system will be protected against minor freeze events. The steam boiler is housed in an all-weather housing. The treatment system power distribution panel can support heat-tracing. Heat-tracing may be utilized to prevent freezing in those components of the system that are not inherently freeze-resistant (i.e. components that are not carrying or processing hot vapor and liquids). As part of normal operations, regardless of ambient temperature, the system operator will routinely inspect system piping and components.

Updated Project Schedule

As of the date of this Addendum 1 submittal, the following items have been completed:

- Drilling and well installation within Treatment Areas A and B;
- Gravel pad placement within the equipment staging area; and
- Obtaining necessary permits related to SEE System construction and operation.

As of the date of this Addendum 1 submittal, the following items are currently in progress:

- Wellhead completions and laying out the system piping;
- Installation of Area C wells
- Utility connections

Below is a list of the SEE System project phases yet to be completed and the associated approximate durations for each. Actual dates and milestones may vary.

Project Phase	Approximate Duration	Anticipated Date(s)
Installation Completion	10 months	October 2023
System Startup and Acceptance Testing	1-2 weeks	Oct – Nov 2023
Operations & Maintenance	~ 6 months*	Nov 2023 – May 2024
Demobilization	3-4 weeks	June 2024
System Operational Data Delivery to AECOM	4-6 weeks	July – August 2024

* SEE System shutdown is based on specific criteria and not a time limit.

Updated Project Cost Estimate

A detailed cost estimate for SEE System Installation/Construction activities is presented in the table below.

ACTIVITY	COST
SEE System Installation/Construction	
AECOM Labor	\$ 375,000
IDW Management	\$ 240,000
Sampling/Oversight Equipment/Materials	\$ 40,000
Permitting Fees	\$ 10,150
Sample Analysis	\$ 110,000
Civil Support (gravel, fencing)	\$ 125,000
SVP Install, GWP, Well Abandon	\$ 80,000
System Well Install, Construction/Installation	\$ 3,100,000
GRAND TOTAL	\$ 4,080,150

IEPA 5/5/23 Letter Condition 16

Information required in Conditions 14 and 15 of this letter must be submitted, at a minimum 30 days prior to the commencement of SEE operations.

Shell Response to IEPA 5/5/23 Letter Condition 16

[This Addendum 1](#) should satisfy the requirements of Condition 16.

An electronic copy of this submittal is being sent separately directly to Visal Poornaka, Amy Butler, Rob Watson, and Ali Al-Janabi with the IEPA.

If you have any questions please contact Buddy Bealer, Shell Senior Program Manager, at leroy.bealer@shell.com (484-632-7956), or Wendy Pennington at wendy.pennington@aecom.com (314-452-8929).

Sincerely,

AECOM, on behalf of Shell Oil Products US



Samuel Fisher, CHMM
Environmental Scientist



Brett Howell, PG
Geologist



Wendy Pennington, PE
Project Manager



Enclosures: RCRA Corrective Action Certification Form (original plus 1 copy)
Attachment 1 – Area C Boring Logs
Attachment 2 – Area C Soil Analytical Results
Attachment 3 – Revised and New Figures Associated with Area C

cc: Buddy Bealer, Shell
Amy Butler, IEPA, Springfield
Visal Poornaka, IEPA, Springfield
Ali Al-Janabi, IEPA, Collinsville
Gregg Mollett, Greensfelder, Hemker & Gale P.C.
Repositories – Roxana Public Library, website
Project File

Attachment 1

Area C Boring Logs

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\DCIONEDRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\DCIONEDRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\DCIONEDRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ

LOG OF BORING SB-103

Starting Date: 5/16/23 Completion Date: 5/24/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
5				0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0					Air knifed to 10' bgs to clear utilities
10				4.2			ML	Soft, moist, reddish brown (2.5 YR - 4/4) sandy SILT (ML)	
15		100		4.1 6.7 60.3 95.6			SM	Loose, moist, reddish brown (2.5 YR - 4/4), very fine to fine grained silty SAND (SM)	
20		90		36.7 55.0 24.7 7.1 3.1 2.1 1.8 3.6 7.7			ML	Medium stiff, moist, dark brown (7.5 YR - 3/2) SILT (ML)	
							SM	Loose, moist, reddish brown (2.5 YR - 4/4), very fine to fine grained silty SAND (SM) Becomes dark yellowish brown (10 YR - 3/6)	
							SP	Loose, moist, pale brown (10 YR - 6/3), very fine to fine grained SAND (SP) with trace silt Becomes yellowish brown (10 YR - 5/4) Loose, moist, pale brown (10 YR - 6/3), very fine to fine grained SAND (SP) with trace silt Becomes yellowish brown (10 YR - 5/4) with silt	

Completion Depth: 89.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

C:\USERS\MCD\DAVID\CD\DRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23
 AECOM (ENVIRON)\LOG (EPA FORMAT)\C:\USERS\MCD\DAVID\CD\DRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-103

Starting Date: 5/16/23 Completion Date: 5/24/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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DESCRIPTION

NOTES

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
				4.4				SAME: Loose, moist, yellowish brown (10 YR - 5/4), very fine to fine grained SAND (SP) with silt	
		90		4.5					
				5.7					
30				11.9					
				5.3					
		50		10.5				Becomes wet with trace silt	▽
35				34.4				Becomes dark yellowish brown (10 YR - 4/4), fine grained SAND (SP) with silt	
				398.0			SP	Becomes dark yellowish brown (10 YR - 4/6) and fine to medium grained SAND (SP) with trace silt	
								Becomes dark gray (10 YR - 4/1)	Sample SB103-38-051723 @0850
40				13.8					
				82.4					
				88.0					
		70		175.0					
				208.0					Hydrocarbon sheen observed Sample SB103-43-051723 @0855 for West Hollow
45				22.2					
				2.6					
				3.0					
		100		7.8					

Completion Depth: 89.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 33 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

- Geoprobe
- Air Knife
- Hand Auger
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-
Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDRIVE -- AECOM\INT\BORING\BPHW - SB - BOREHOLES - 60697537.GPJ C:\USERS\MCD\DAVID\CDRIVE -- AECOM\INT\BORING\BPHW - SB - BOREHOLES - 60697537.GPJ C:\USERS\MCD\DAVID\CDRIVE -- AECOM\INT\BORING\BPHW - SB - BOREHOLES - 60697537.GPJ

LOG OF BORING SB-103

Starting Date: 5/16/23
Completion Date: 5/24/23
Casing Elevation: Not Installed
Ground Elevation: NAVD 88

Quadrangle Sec: 34.00
T: 5N R: 9W
UTM (or State Plane) Coord
N: (X): N/A
E: (Y): N/A

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
80	13			0.0 0.0			SW	Loose, wet, gray (7.5 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	Sample SB103-77-052423 @1410
85	0								No recovery from 78.5' to 89.5' bgs Heaving sands encountered
90								Bottom of boring at 89.5' bgs	Boring backfilled with sand
95									

Completion Depth: 89.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
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








Water Depth: 33 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

- Geoprobe
- Air Knife
- Hand Auger
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

LOG OF BORING SB-104

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	Starting Date: 6/20/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88		Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A	
								DESCRIPTION	NOTES		
0.0				0.0							Air knifed to 10' bgs to clear utilities
0.0				0.0							
0.0				0.0							
0.0				0.0							
5				0.0							
0.0				0.0							
10				0.0							
0.0				0.0			ML	Soft, dry, dark brown (7.5 YR - 3/2), very fine to medium grained sandy SILT (ML)			
0.0				0.0			CL	Soft, dry, brown (7.5 YR - 4/4), low plasticity, very fine grained CLAY (CL) with sand			
0.0	100			0.0			SM	Loose, dry, yellowish brown (10 YR - 5/4), very fine to fine grained silty SAND (SM)			
15				0.0				Becomes SAND (SP) with silt			
0.0				0.0				Dry, loose, brown (10 YR - 5/3), very fine to fine grained SAND (SP) with trace silt			
0.0				0.0				Becomes fine to medium grained and grayish brown (10 YR - 5/2)			
20				0.0			SP				
0.0	90			0.0							

Completion Depth: **78.5 Ft bgs**
 Project No.: **60697537**
 Project Name: **Shell - Roxana Public Works**
 Drilling Contractor: **HD Sonic**
 Driller Name: **Alex Duncan**
 Drilling Method: **Sonic**
 Drill Rig Type: **Versa Sonic**
 Logged by: **B. Howell**
 County: **Madison**
 Site ID No.: **1191150002**
 Federal ID No.: **ILD080012305**

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger -
 Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-104

Starting Date: 6/20/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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DESCRIPTION **NOTES**

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
30		90		0.0 0.0		•••••		SAME: Dry, loose, grayish brown (10 YR - 5/2), fine to medium grained SAND (SP) Becomes olive (5 Y - 5/3)	
35		90		0.0 0.0 0.0 0.0		•••••		Becomes dark grayish brown (10 YR - 4/2) and moist Loose, moist, very fine to fine grained SAND (SP) with silt Loose, wet, yellowish brown (10 YR - 5/4), fine to medium grained SAND (SP) with trace silt	▽
40				91.0 169.0 1580.0 890.0		•••••	SP	Becomes very dark gray (7.5 YR - 3/1)	Sample SB104-42-062023 @1430
45		100		715.0 555.0 263.0 202.4 363.0		•••••		Becomes dark gray (7.5 YR - 4/1)	
		100		280.0		•••••			

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\DRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ C:\USERS\MCD\DAVID\DRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ C:\USERS\MCD\DAVID\DRIVE - AECOM\INT\BOREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ

**LOG OF BORING
SB-104**

Starting Date: 6/20/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
55		100		302.0 134.0 208.0			SP
				589.0 864.0			ML
				3100.0 4201.0			SM
60				2489.0 300.0 50.0 6.4 18.3			SP
65		100		42.8 4.4 3.4 0.6 0.2			SC
70		100		0.4 6.3 3.8 0.0 0.2			SW

DESCRIPTION	NOTES
SAME: Loose, wet, dark gray (7.5 YR - 4/1), fine to medium grained SAND (SP) with trace silt	
Soft, wet, black (7.5 YR - 2.5/1), very fine to fine grained sandy SILT (ML)	
Loose, wet, very dark gray (7.5 YR - 3/1), very fine to fine grained silty SAND (SM)	
Loose, wet, very dark gray (10 YR - 3/1) fine to medium grained SAND (SP) with silt	Sample SB104-57-062023 @1435 Sample SB104-57-062023-DUP
Becomes dark gray (10 YR - 4/1) sand with trace silt	
Loose, wet, dark gray (10 YR - 4/1), fine to medium grained clayey SAND (SC)	
Loose, wet, gray (10 YR - 5/1), fine to medium grained SAND (SP) with trace silt	
Becomes fine to coarse grained SAND (SW)	Sample SB104-65-062023 @1440

Completion Depth: 78.5 Ft bgs
Project No.: 60697537
Project Name: Shell - Roxana Public Works
Drilling Contractor: HD Sonic
Driller Name: Alex Duncan
Drilling Method: Sonic
Drill Rig Type: Versa Sonic
Logged by: B. Howell
County: Madison
Site ID No.: 1191150002
Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable
 Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

LOG OF BORING SB-104

Starting Date: 6/20/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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DESCRIPTION	NOTES
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
80		100		0.0		•••••	SW	SAME: Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt Becomes black (10 YR - 2.5/1) with trace gravels Becomes dark gray (10 YR - 4/1)	Sample SB104-78-062023 @1445 Boring backfilled with sand
85								Bottom of boring at 78.5' bgs	
90									
95									

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

- Geoprobe
- Air Knife
- Hand Auger
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-
Soil samples not collected



AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDRIVE - AECOM\INTUTUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-105

Starting Date: 6/19/23
 Completion Date: 6/20/23
 Casing Elevation: Not Installed
 Ground Elevation: NAVD 88

Quadrangle Sec: 34.00
 T: 5N R: 9W
 UTM (or State Plane) Coord
 N: (X): N/A
 E: (Y): N/A

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
0.0				0.0					Air knifed to 10' bgs to clear utilities
5.0				0.0					
10.0				0.0					
11.0				0.0			SP	Loose, moist, dark yellowish brown (10 YR - 4/4), very fine to fine grained SAND (SP) with silt	
12.0				0.0			CL	Soft, moist, brown (10 YR - 5/3), low plasticity CLAY (CL) lens for 6"	
13.0				0.0				Loose, moist, yellowish brown (10 YR - 5/4), very fine to fine grained SAND (SP) with silt	
15.0	100			0.0				Becomes pale brown (10 YR - 6/3) sand with trace silt	
17.0				0.0				Becomes sand with silt	
20.0				0.0			SP	Loose, moist, brown (7.5 YR - 5/3), fine to medium grained SAND (SP) with trace silt	
21.0				0.0					
22.0				0.0					
23.0				0.0					
24.0				0.0					
25.0				0.0					
26.0				0.0					
27.0				0.0					
28.0				0.0					
29.0				0.0					
30.0				0.0					
31.0				0.0					
32.0				0.0					
33.0				0.0					
34.0				0.0					
35.0				0.0					
36.0				0.0					
37.0				0.0					
38.0				0.0					
39.0				0.0					
40.0				0.0					
41.0				0.0					
42.0				0.0					
43.0				0.0					
44.0				0.0					
45.0				0.0					
46.0				0.0					
47.0				0.0					
48.0				0.0					
49.0				0.0					
50.0				0.0					

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-105

Starting Date: 6/19/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
30		90		0.0 0.0			SP
				0.0 0.0			
35		80		0.0 0.0 0.0			
				0.0 0.0			
40				236.0 1695.0 1198.0 1498.0 1184.0			
45		100		1382.0 151.0			
				47.5 39.0 13.6			SP
		100		0.0			ML

DESCRIPTION	NOTES
SAME: Loose, moist, brown (7.5 YR - 5/3), fine to medium grained SAND (SP) with trace silt Loose, moist, yellowish brown (10 YR - 5/4), fine to medium grained SAND (SP) with silt Loose, wet, brown (10 YR - 4/3), fine to medium grained SAND (SP) with trace silt	
Loose, wet, dark gray (7.5 YR - 4/1), very fine to medium grained SAND (SW) with trace silt Becomes gray (7.5 YR - 5/1) Becomes very dark gray (10 YR - 3/1) Becomes dark gray (7.5 YR - 4/1)	Sample SB105-40-062023 @0910
Becomes gray (7.5 YR - 5.1), very fine to fine grained SAND (SP)	
Soft, wet, gray (10 YR - 5/1), non-plastic sandy SILT (ML) with very fine to fine grained sand	

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

C:\USERS\MCD\DAVID\CDICIONEDRIVE--AECOM\GINT\BOREHOLES\SHELL-RPW-SB-BOREHOLES-60697537.GPJ_C:\USERS\MCD\DAVID\CDICIONEDRIVE--AECOM\GINT\TUTORIAL\AECOM-STL-(ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-105

Starting Date: 6/19/23
 Completion Date: 6/20/23
 Casing Elevation: Not Installed
 Ground Elevation: NAVD 88

Quadrangle Sec: 34.00
 T: 5N
 R: 9W
 UTM (or State Plane) Coord
 N: (X): N/A
 E: (Y): N/A

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		100		16.0			CL	Very dark gray (10 YR - 3/1), medium plasticity CLAY (CL) with trace sand	
			28.2		ML	Soft, wet, very dark gray (10 YR - 3/1) sandy SILT (ML) with very fine to fine grained sand			
			110.6		SM	Loose, wet, very dark gray (10 YR - 3/1), very fine to fine grained silty SAND (SM)			
			1789.0		SP	Loose, wet, dark gray (10 YR - 4/1), fine to medium grained SAND (SP) with silt			
			>15000		SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels			
60		90		557.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	Sample SB105-67-062023 @0930 Sample SB105-67-062023-MS Sample SB105-67-062023-MSD
			268.0		SP	Loose, wet, dark gray (10 YR - 4/1), fine to medium grained SAND (SP) with silt			
			1661.0			SW	Becomes sand with trace silt		
			508.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels		
65		25		96.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	Sample SB105-73-062023 @0950
			12.6			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels		
			2.3			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels		
70		25		3.7			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	Sample SB105-73-062023 @0950
			1.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels		
				0.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	Sample SB105-73-062023 @0950
				0.0			SW	Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

- Geoprobe
- Air Knife
- Hand Auger
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger
- Soil samples not collected



USC based on field visual observations

LOG OF BORING SB-105

Starting Date: 6/19/23 Completion Date: 6/20/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
		25		0.0		•••••	SW
80							
85							
90							
95							

DESCRIPTION	NOTES
SAME: Loose, wet, gray (10 YR - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravels	
Bottom of boring at 78.5' bgs	Boring backfilled with sand

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger-
 Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM 4) C:\USERS\MCD\DAVID\CDICIONEDRIVE - AECOM\INT\BUREAUSHELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\CDICIONEDRIVE - AECOM\INT\BUREAUSHELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\CDICIONEDRIVE - AECOM\INT\BUREAUSHELL_RPW_SB_BOREHOLES_60697537.GPJ

LOG OF BORING SB-106

Starting Date: 6/17/23 Completion Date: 6/19/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
30	90			0.0			SP
				0.0			SM
35	85			0.0			SP
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
				0.0			
40				0.0			
				116.0			
				301.0			
				431.0			
				786.0			
				798.0			
				810.0			
45				596.0			
				330.0			
				11.0			
				0.0			
	100			0.0			
				0.0			

DESCRIPTION	NOTES
SAME: Loose, moist, brown (7.5 YR - 4/2), fine to medium grained SAND (SP) with trace silt	
Loose, moist, brown (10 YR - 5/3), fine to medium grained silty SAND (SM), with 1/8" thick black bands from 26'-26.5'	
Loose, moist, yellowish brown (10 YR - 5/6), very fine to fine grained SAND (SP) with trace silt	
Becomes brown (7.5 YR - 4/3)	
Becomes wet	▽
Becomes fine to medium grained and brown (7.5 YR - 5/3)	Sample SB106-39-061923 @1150
Becomes dark gray (2.5 Y - 4/1)	
Becomes very dark gray (2.5 Y - 3/1)	
Becomes dark gray (2.5 Y - 4/1)	Sample SB106-45-061923 @1200 Sample SB106-45-061923-DUP

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM 4) C:\USERS\MCD\DAVID\CDRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-106

Starting Date: 6/17/23 Completion Date: 6/19/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		100		0.0			SP	Loose, wet, dark gray (2.5 Y - 4/1), very fine to fine grained SAND (SP) with silt	
				0.0			SP		
				0.0			SP		
				0.0			SP		
				21.0			SM	Becomes silty SAND (SM)	
				162.0			ML	Soft, wet, dark gray (2.5 Y - 4/1), very fine grained sandy SILT (ML)	
				2396.0			CL	Soft, wet, very dark gray (2.5 Y - 3/1), medium plasticity CLAY (CL) with sand for 6"	
				1600.0			SP	Soft, wet, dark gray (2.5 Y - 4/1), very fine grained SAND (SP) with silt	
				2100.0			SP		
60				38.1			CL	Soft, wet, black (2.5 Y - 2.5/1), non-plastic CLAY (CL) with sand and trace gravels	Sample SB106-58-061923 @1220
				160.1			SP	Loose, wet, dark gray (2.5 Y - 4/1), very fine to fine grained SAND (SP) with silt	
				167.1			SP	Becomes fine to medium grained sand with trace silt	
		90		16.3			SP		
				2.1			SP		
				0.8			SP		
				2.2			SP		
				14.5			SP	Becomes black (2.5 Y - 2.5/1)	
70				0.0			SW	Loose, wet, gray (2.5 Y - 5/1), fine to coarse grained SAND (SW) with trace gravel	Sample SB106-68-061923 @1330
				0.0			SW		
				0.0			SW		
				0.0			SW		
				0.0			SW		
				0.0			SW		
				0.0			SW		
				0.0			SW		

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger-
 Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BOREHOLES\HELL - RPW - SB - BOREHOLES - 60697537.GPJ C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BOREHOLES\HELL - RPW - SB - BOREHOLES - 60697537.GPJ C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BOREHOLES\HELL - RPW - SB - BOREHOLES - 60697537.GPJ

LOG OF BORING SB-106

Starting Date: 6/17/23 Completion Date: 6/19/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
		100		0.0		•••••	SW
80				0.0			
85				0.0			
90							
95							

DESCRIPTION	NOTES
SAME: Loose, wet, gray (2.5 Y - 5/1), fine to coarse grained SAND (SW) with trace silt and trace gravel	Sample SB106-77-061923 @1355
Bottom of boring at 78.5' bgs	Boring backfilled with sand

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 32 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORMAT) C:\USERS\MCD\DAVID\CDRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-107

Starting Date: 6/17/23 Completion Date: 6/17/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
0.0							
0.0							
0.0							
0.0							
5							
0.0							
0.0							
0.0							
0.0							
0.0							
0.0							
10							
0.0							
0.0							
0.0							
0.0							
15		100		47.5			SP
0.0				3.5			
0.0				0.0			
0.0				0.0			
0.0				0.0			
0.0				0.0			
20				0.0			
0.0				0.0			
0.0				0.0			
0.0		100		46.2			ML
0.0				71.6			
0.0				29.3			SP

DESCRIPTION	NOTES
	Air knifed to 10' bgs to clear utilities
Loose, moist, brown (7.5 YR - 4/3), fine to medium grained SAND (SP) with trace silt	
Becomes very dark brown (7.5 YR - 2.5/2)	
Becomes dark yellowish brown (10 YR - 3/4)	
Loose, moist, dark yellowish brown (10 YR - 4/6) fine grained sand with silt (SP)	
Loose, moist, brown (10 YR - 5/3), fine to medium grained SAND (SP) with trace silt	
Medium stiff, moist, brown (7.5 YR - 4/3), sandy SILT (ML) with very fine to fine grained sand	
Loose, moist, brown (7.5 YR - 4/3), fine to medium grained SAND (SP) with silt	
	Sample SB107-15-061723 @1000 Slight hydrocarbon odor

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM 4) C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-107

Starting Date: 6/17/23 Completion Date: 6/17/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS
30		100		4.3 0.0 0.0 0.0			
35		85		0.0 0.0 0.0 0.0 0.0 2.1 143.1			SP
40				815.2 644.9 663.3 592.4 748.0 884.2			
45		100		364.1 119.1 83.9 28.1			
		100		0.0 0.0			

DESCRIPTION	NOTES
Loose, wet, brown (10 YR - 4/4), fine to medium grained SAND (SP) with trace silt	
Loose, wet, dark brown (7.5 YR - 3/2), very fine to fine grained SAND (SP) with trace silt	▽
Becomes fine to medium grained and dark grayish brown (10 YR - 4/2) Becomes very dark gray (10 YR - 3/1)	
Becomes dark brown (7.5 YR - 3/2)	Sample SB107-39-061723 @1110
Becomes dark gray (2.5 Y - 4/1)	

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger-
 Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CD\DRIVE - AECOM\INT\TUTORIAL\AECOM STL (ENVIRONMENTAL)\GLB_9/12/23

LOG OF BORING SB-107

Starting Date: 6/17/23 Completion Date: 6/17/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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DESCRIPTION **NOTES**

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
55		100		0.0 0.0 0.0 0.0 13.1 377.1 378.1 337.0			SW	Loose, wet, dark brown (7.5 YR - 3/2), fine to coarse grained SAND (SW) with trace silt and trace cobbles	
							ML	Soft, wet, very dark gray (7.5 YR - 3/1) sandy SILT (ML) with fine grained sand Becomes medium stiff	
60				891.0			SP	Loose, wet, dark gray (7.5 YR - 5/1), fine to medium grained SAND (SP) with silt	Sample SB107-58-061723 @1130
65		30		1001.0			SM	Loose, wet, very dark gray (7.5 YR - 3/1), very fine to fine grained silty SAND (SM) with trace gravel	
				337.0			SW	Loose, wet, dark gray (2.5 Y - 4/1), fine to coarse grained SAND (SW) with trace silt	Sample SB107-67-061723 @1220
							ML	Hard, wet, low plasticity SILT (ML) with trace sand	
70				0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.2			SW	Loose, wet, brown (7.5 YR - 4/3), fine to coarse grained SAND (SW) with trace silt	

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

AECOM (ENVIRON) LOG (EPA FORM) C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BUREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BUREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ_C:\USERS\MCD\DAVID\CDACIONEDRIVE - AECOM\INT\BUREHOLES\HELL_RPW_SB_BOREHOLES_60697537.GPJ_9/12/23

LOG OF BORING SB-107

Starting Date: 6/17/23 Completion Date: 6/17/23 Casing Elevation: Not Installed Ground Elevation: NAVD 88	Quadrangle Sec: 34.00 T: 5N R: 9W UTM (or State Plane) Coord N: (X): N/A E: (Y): N/A
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DESCRIPTION **NOTES**

Depth In feet	Inches Driven	Inches Recovered	Blow Counts	PID (ppm)	Sampler Graphic	Symbol	USCS	DESCRIPTION	NOTES
80				0.0		•••••	SW	SAME: Loose, wet, brown (7.5 YR - 4/3), fine to coarse grained SAND (SW) with trace silt Trace gravels appear	Sample SB107-78-061723 @1350 Boring backfilled with sand
85				0.0				Bottom of boring at 78.5' bgs	
90				0.0					
95									

Completion Depth: 78.5 Ft bgs
 Project No.: 60697537
 Project Name: Shell - Roxana Public Works
 Drilling Contractor: HD Sonic
 Driller Name: Alex Duncan
 Drilling Method: Sonic
 Drill Rig Type: Versa Sonic
 Logged by: B. Howell
 County: Madison
 Site ID No.: 1191150002
 Federal ID No.: ILD080012305

Water Depth: 35 ft., After ATD hrs.
 Water Depth: _____ ft., After _____ hrs.
 Water level at time of drilling
 Water level after drilling
 ATD - At time of drilling
 NE - None Encountered
 NA - Not Applicable

Geoprobe
 Air Knife
 Hand Auger
 Sonic
 Splitspoon Sampler
 Hollow Stem Auger - Soil samples not collected



USC based on field visual observations

Attachment 2

Area C Soil Analytical Results

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Acetone			Acrolein			Acrylonitrile			Benzene			Bromobenzene			Bromochloromethane		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.721	U	UJ	< 1.44	U		< 0.144	U		< 0.0288	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.609	U	UJ	< 1.22	U		< 0.122	U		< 0.0244	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	0.0547		J	< 0.0508	U		< 0.0051	U		0.0345			< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 6.68	U	UJ	< 13.4	U		< 1.34	U		1030			< 0.534	U		< 0.534	U	UJ
SB-103	SB103-77-052423	77	5/24/2023	0.213		J	< 0.0469	U		< 0.0047	U		0.0081			< 0.0019	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 3.35	U	UJ	< 6.71	U		< 0.671	U		14			< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 28.9	U		< 57.8	U		< 5.78	U		149			< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 26.6	U		< 53.1	U		< 5.31	U		197			< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.751	U	UJ	< 1.5	U		< 0.15	U		0.382			< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.76	U	UJ	< 1.52	U	UJ	< 0.152	U	UJ	< 0.0304	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 5.75	U		< 11.5	U		< 1.15	U		< 0.23	U		< 0.46	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.759	U		< 1.52	U		0.451			471			< 0.0607	U		< 0.0607	U	UJ
SB-105	SB105-67-062023	67	6/20/2023	< 0.648	U		< 1.3	U	UJ	< 0.13	U	UJ	0.27			< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0239	U	UJ	< 0.0477	U		< 0.0048	U		0.0077			< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.726	U		< 1.45	U		< 0.145	U		< 0.0291	U		< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.77	U	UJ	< 1.54	U	UJ	< 0.154	U	UJ	< 0.0308	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.775	U	UJ	< 1.55	U		< 0.155	U		< 0.0310	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 8.65	U		< 17.3	U		< 1.73	U		1530			< 0.692	U		< 0.692	U	UJ
SB-106	SB106-68-061923	68	6/19/2023	0.0822		J	< 0.0466	U		< 0.0047	U		0.0419			< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.653	U	UJ	< 1.31	U		< 0.131	U		0.0598			< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 5.58	U		< 11.2	U		< 1.12	U		< 0.223	U		< 0.446	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 4.74	U		< 9.48	U		< 0.948	U		< 0.19	U		< 0.379	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 1.57	U		< 3.13	U		< 0.313	U		7.37			< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 5.65	U	UJ	< 11.3	U	UJ	< 1.13	U	UJ	51.4			< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.601	U		< 1.2	U		< 0.12	U		0.0305			< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Bromodichloromethane			Bromoform			Bromomethane			2-Butanone (Methyl Ethyl Ketone)			n-Butylbenzene			sec-Butylbenzene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.144	U		< 0.288	U		< 0.721	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.122	U		< 0.244	U		< 0.609	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0051	U		< 0.0102	U	UJ	< 0.0254	U		< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U	UJ	< 1.34	U		< 2.67	U	UJ	< 6.68	U		< 0.534	U		< 0.534	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		< 0.0047	U		< 0.0094	U		0.0574			< 0.0019	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.671	U		< 1.34	U		< 3.35	U		< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 5.78	U		< 11.6	U		< 28.9	U		< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 5.31	U		< 10.6	U		< 26.6	U		< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.15	U		< 0.3	U		< 0.751	U		< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.152	U	UJ	< 0.304	U	UJ	< 0.76	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 1.15	U		< 2.3	U	UJ	< 5.75	U		1.83			1.3		
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U	UJ	< 0.152	U		< 0.304	U	UJ	< 0.759	U		< 0.0607	U		< 0.0607	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.13	U	UJ	< 0.259	U	UJ	< 0.648	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0048	U		< 0.0095	U		< 0.0239	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.145	U		< 0.291	U		< 0.726	U		< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.154	U	UJ	< 0.308	U	UJ	< 0.77	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.155	U		< 0.31	U		< 0.775	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U	UJ	< 1.73	U		< 3.46	U	UJ	< 8.65	U		< 0.692	U		< 0.692	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0047	U		< 0.0093	U		< 0.0233	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.131	U		< 0.261	U		< 0.653	U		< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 1.12	U		< 2.23	U	UJ	< 5.58	U		0.69			< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.948	U		< 1.9	U	UJ	< 4.74	U		0.85			0.817		
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.313	U		< 0.627	U		< 1.57	U		< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 1.13	U	UJ	< 2.26	U	UJ	< 5.65	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.12	U		< 0.24	U		< 0.601	U		< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	tert-Butylbenzene			Carbon Disulfide			Carbon Tetrachloride			Chlorobenzene			Chlorodibromomethane (Dibromochloromethane)			Chloroethane		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.288	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.244	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0102	U	UJ
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 0.534	U		< 0.534	U		< 0.534	U		< 0.534	U	UJ	< 2.67	U	UJ
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0094	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U		< 1.34	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 11.6	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 10.6	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.3	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.304	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 2.3	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.0607	U	UJ	< 0.304	U	UJ
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.259	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0095	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.291	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.308	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.31	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U		< 0.692	U		< 0.692	U	UJ	< 3.46	U	UJ
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0093	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.261	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		0.697			< 0.446	U		< 2.23	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 1.9	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.627	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 2.26	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.24	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Chloroform			Chloromethane			2-Chlorotoluene			4-Chlorotoluene			1,2-Dibromoethane (EDB)			Dibromomethane		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.288	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.244	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0102	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 2.67	U	UJ	< 0.534	U		< 0.534	U		< 0.534	U	UJ	< 0.534	U	UJ
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		< 0.0094	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 1.34	U		< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 11.6	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 10.6	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.3	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.304	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 2.3	U		< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.304	U	UJ	< 0.0607	U		< 0.0607	U		< 0.0607	U	UJ	< 0.0607	U	UJ
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.259	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0095	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.291	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.308	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.31	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 3.46	U	UJ	< 0.692	U		< 0.692	U		< 0.692	U	UJ	< 0.692	U	UJ
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0093	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.261	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 2.23	U		< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 1.9	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.627	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 2.26	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.24	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	1,2-Dichlorobenzene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			Dichlorodifluoromethane (Freon 12)			1,1-Dichloroethane			1,1-Dichloroethene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.288	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.244	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0102	U		< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 0.534	U		< 0.534	U		< 2.67	U	UJ	< 0.534	U	UJ	< 0.534	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0094	U		< 0.0019	U	UJ	< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.268	U		< 0.268	U		< 1.34	U		< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 11.6	U	UJ	< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 10.6	U	UJ	< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.3	U		< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.304	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 0.46	U		< 0.46	U		< 2.3	U		< 0.46	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.304	U	UJ	< 0.0607	U	UJ	< 0.0607	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.259	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0095	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.291	U	UJ	< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.308	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.31	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U		< 3.46	U	UJ	< 0.692	U	UJ	< 0.692	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0093	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.261	U		< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		< 2.23	U	UJ	< 0.446	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.379	U		< 0.379	U		< 1.9	U	UJ	< 0.379	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 0.627	U	UJ	< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 2.26	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.24	U	UJ	< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	cis-1,2-Dichloroethene			trans-1,2-Dichloroethene			1,2-Dichloropropane			1,3-Dichloropropane			2,2-Dichloropropane			1,1-Dichloropropane		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 0.534	U		< 0.534	U	UJ	< 0.534	U		< 0.534	U		< 0.534	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U	UJ	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U	UJ	< 0.0607	U	UJ	< 0.0607	U	UJ	< 0.0607	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U	UJ	< 0.692	U	UJ	< 0.692	U	UJ	< 0.692	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	trans-1,3-Dichloropropene			cis-1,3-Dichloropropene			Ethyl Methacrylate			Ethylbenzene			Freon 11 (Trichlorofluoromethane)			Hexachlorobutadiene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.144	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.122	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0051	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 0.534	U		< 0.534	U		< 0.534	U		< 1.34	U	UJ	< 0.534	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		0.0020			< 0.0047	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.268	U		< 0.268	U		1.85			< 0.671	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 5.78	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 5.31	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.15	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.152	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 1.15	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.152	U	UJ	< 0.0607	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.13	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0048	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.145	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.154	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.155	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U		< 0.692	U		< 1.73	U	UJ	< 0.692	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0047	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.131	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U		< 1.12	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.948	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.313	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 1.13	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.12	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	2-Hexanone			Isopropylbenzene			p-Isopropyltoluene			4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)			Methyl Tert-butyl Ether (MTBE)			Methylene Chloride (Dichloromethane)		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.721	U		< 0.0577	U		< 0.0577	U		< 0.721	U		< 0.0577	U		< 0.288	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.609	U		< 0.0487	U		< 0.0487	U		< 0.609	U		< 0.0487	U		< 0.244	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0254	U		< 0.0020	U		< 0.0020	U		< 0.0254	U		< 0.0020	U		< 0.0102	U	
SB-103	SB103-68-051323	68	5/17/2023	< 6.68	U		< 0.534	U		< 0.534	U		< 6.68	U		< 0.534	U		< 2.67	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0235	U		< 0.0019	U		< 0.0019	U		< 0.0235	U		< 0.0019	U		< 0.0094	U	
SB-104	SB104-42-062023	42	6/20/2023	< 3.35	U		0.661			< 0.268	U		< 3.35	U		< 0.268	U		1.45		
SB-104	SB104-57-062023	57	6/20/2023	< 28.9	U		< 2.31	U		< 2.31	U		< 28.9	U		< 2.31	U		< 11.6	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 26.6	U		< 2.12	U		< 2.12	U		< 26.6	U		< 2.12	U		< 10.6	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.751	U		< 0.0601	U		< 0.0601	U		< 0.751	U		< 0.0601	U		< 0.3	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.76	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.76	U	UJ	< 0.0608	U	UJ	< 0.304	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 5.75	U		2.65			< 0.46	U		< 5.75	U		< 0.46	U		< 2.3	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.759	U		0.203			< 0.0607	U		< 0.759	U		< 0.0607	U		< 0.304	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.648	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.648	U	UJ	< 0.0518	U	UJ	< 0.259	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0239	U		< 0.0019	U		< 0.0019	U		< 0.0239	U		< 0.0019	U		< 0.0095	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.726	U		< 0.0581	U		< 0.0581	U		< 0.726	U		< 0.0581	U		0.399		
SB-106	SB106-45-061923	45	6/19/2023	< 0.77	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.77	U	UJ	< 0.0616	U	UJ	< 0.308	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.775	U		< 0.0620	U		< 0.0620	U		< 0.775	U		< 0.0620	U		< 0.31	U	
SB-106	SB106-58-061923	58	6/19/2023	< 8.65	U		1.5			< 0.692	U		< 8.65	U		< 0.692	U		< 3.46	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0233	U		< 0.0019	U		< 0.0019	U		< 0.0233	U		< 0.0019	U		< 0.0093	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.653	U		< 0.0523	U		< 0.0523	U		< 0.653	U		< 0.0523	U		< 0.261	U	
SB-107	SB107-15-061723	15	6/17/2023	< 5.58	U		< 0.446	U		< 0.446	U		< 5.58	U		< 0.446	U		< 2.23	U	
SB-107	SB107-39-061723	39	6/17/2023	< 4.74	U		1.17			< 0.379	U		< 4.74	U		< 0.379	U		< 1.9	U	
SB-107	SB107-58-061723	58	6/17/2023	< 1.57	U		< 0.125	U		< 0.125	U		< 1.57	U		< 0.125	U		0.65		
SB-107	SB107-67-061723	67	6/17/2023	< 5.65	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 5.65	U	UJ	< 0.452	U	UJ	< 2.26	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.601	U		< 0.0481	U		< 0.0481	U		< 0.601	U		< 0.0481	U		0.322		

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Naphthalene			n-Propylbenzene			Styrene			1,1,1,2-Tetrachloroethane			1,1,2,2-Tetrachloroethane			Tetrachloroethene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.144	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.122	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0051	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 1.34	U		1.19			< 0.534	U		< 0.534	U	UJ	< 0.534	U	UJ	< 0.534	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0047	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.671	U		1.02			< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 5.78	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 5.31	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.15	U		0.0997			< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.152	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 1.15	U		6.11			< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.152	U		< 0.0607	U		< 0.0607	U		< 0.0607	U	UJ	< 0.0607	U	UJ	< 0.0607	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.13	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0048	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.145	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.154	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.155	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 1.73	U		5.53			< 0.692	U		< 0.692	U	UJ	< 0.692	U	UJ	< 0.692	U	
SB-106	SB106-68-061923	68	6/19/2023	< 0.0047	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.131	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 1.12	U		0.487			< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.948	U		2.4			< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.313	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 1.13	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.12	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Toluene			1,2,3-Trichlorobenzene			1,2,4-Trichlorobenzene			1,1,1-Trichloroethane			1,1,2-Trichloroethane			1,2,3-Trichloropropane		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.0577	U		< 0.144	U		< 0.0577	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.0487	U		< 0.122	U		< 0.0487	U	
SB-103	SB103-58-051723	58	5/17/2023	0.0039			< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0051	U		< 0.0020	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		< 0.534	U		< 0.534	U		< 0.534	U	UJ	< 1.34	U	UJ	< 0.534	U	UJ
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U	UJ	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0047	U		< 0.0019	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		< 0.268	U		< 0.268	U		< 0.268	U		< 0.671	U		< 0.268	U	
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 2.31	U		< 5.78	U		< 2.31	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 2.12	U		< 5.31	U		< 2.12	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.0601	U		< 0.15	U		< 0.0601	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.152	U	UJ	< 0.0608	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		< 0.46	U		< 0.46	U		< 0.46	U		< 1.15	U		< 0.46	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U		< 0.0607	U	UJ	< 0.152	U	UJ	< 0.0607	U	UJ
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.13	U	UJ	< 0.0518	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	0.0026			< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0048	U		< 0.0019	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.0581	U		< 0.145	U		< 0.0581	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.154	U	UJ	< 0.0616	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.0620	U		< 0.155	U		< 0.0620	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U		< 0.692	U	UJ	< 1.73	U	UJ	< 0.692	U	UJ
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0047	U		< 0.0019	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.0523	U		< 0.131	U		< 0.0523	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		< 0.446	U		< 1.12	U		< 0.446	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		< 0.379	U		< 0.379	U		< 0.379	U		< 0.948	U		< 0.379	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 0.125	U		< 0.313	U		< 0.125	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 1.13	U	UJ	< 0.452	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.0481	U		< 0.12	U		< 0.0481	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	Trichloroethene			1,2,4-Trimethylbenzene			1,3,5-Trimethylbenzene			Vinyl Acetate			Vinyl Chloride			m,p-Xylene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.0577	U		< 0.0577	U		< 0.0577	U		< 1.44	U		< 0.0577	U		< 0.115	U	
SB-103	SB103-43-051723	43	5/17/2023	< 0.0487	U		< 0.0487	U		< 0.0487	U		< 1.22	U		< 0.0487	U		< 0.0974	U	
SB-103	SB103-58-051723	58	5/17/2023	< 0.0020	U		< 0.0020	U		< 0.0020	U		< 0.0508	U		< 0.0020	U		< 0.0041	U	
SB-103	SB103-68-051323	68	5/17/2023	< 0.534	U		0.66			< 0.534	U		< 13.4	U		< 0.534	U		< 1.07	U	
SB-103	SB103-77-052423	77	5/24/2023	< 0.0019	U		0.0021			< 0.0019	U		< 0.0469	U		< 0.0019	U		< 0.0038	U	
SB-104	SB104-42-062023	42	6/20/2023	< 0.268	U		8.44			1.27			< 6.71	U		< 0.268	U		4.64		
SB-104	SB104-57-062023	57	6/20/2023	< 2.31	U		< 2.31	U		< 2.31	U		< 57.8	U		< 2.31	U		< 4.63	U	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 2.12	U		< 2.12	U		< 2.12	U		< 53.1	U		< 2.12	U		< 4.25	U	
SB-104	SB104-65-062023	65	6/20/2023	< 0.0601	U		< 0.0601	U		< 0.0601	U		< 1.5	U		< 0.0601	U		0.26		
SB-104	SB104-78-062023	78	6/20/2023	< 0.0608	U	UJ	< 0.0608	U	UJ	< 0.0608	U	UJ	< 1.52	U	UJ	< 0.0608	U	UJ	< 0.122	U	UJ
SB-105	SB105-40-062023	40	6/20/2023	< 0.46	U		38			< 0.46	U		< 11.5	U		< 0.46	U		< 0.92	U	
SB-105	SB105-55-062023	55	6/20/2023	< 0.0607	U		< 0.0607	U		< 0.0607	U		< 1.52	U		< 0.0607	U		< 0.121	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.0518	U	UJ	< 0.0518	U	UJ	< 0.0518	U	UJ	< 1.3	U	UJ	< 0.0518	U	UJ	< 0.104	U	UJ
SB-105	SB105-73-062023	73	6/20/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0477	U		< 0.0019	U		< 0.0038	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.0581	U		< 0.0581	U		< 0.0581	U		< 1.45	U		< 0.0581	U		< 0.116	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.0616	U	UJ	< 0.0616	U	UJ	< 0.0616	U	UJ	< 1.54	U	UJ	< 0.0616	U	UJ	< 0.123	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.0620	U		< 0.0620	U		< 0.0620	U		< 1.55	U		< 0.0620	U		< 0.124	U	
SB-106	SB106-58-061923	58	6/19/2023	< 0.692	U		< 0.692	U		< 0.692	U		< 17.3	U		< 0.692	U		1.45		
SB-106	SB106-68-061923	68	6/19/2023	< 0.0019	U		< 0.0019	U		< 0.0019	U		< 0.0466	U		< 0.0019	U		< 0.0037	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.0523	U		< 0.0523	U		< 0.0523	U		< 1.31	U		< 0.0523	U		< 0.105	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.446	U		< 0.446	U		< 0.446	U		< 11.2	U		< 0.446	U		< 0.893	U	
SB-107	SB107-39-061723	39	6/17/2023	< 0.379	U		1.92			< 0.379	U		< 9.48	U		< 0.379	U		< 0.759	U	
SB-107	SB107-58-061723	58	6/17/2023	< 0.125	U		< 0.125	U		< 0.125	U		< 3.13	U		< 0.125	U		< 0.251	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.452	U	UJ	< 0.452	U	UJ	< 0.452	U	UJ	< 11.3	U	UJ	< 0.452	U	UJ	< 0.904	U	UJ
SB-107	SB107-78-061723	78	6/17/2023	< 0.0481	U		< 0.0481	U		< 0.0481	U		< 1.2	U		< 0.0481	U		< 0.0962	U	

Attachment 2
Area C Soil Analytical Results

Location	Sample ID	Depth	Sample Date	o-Xylene			Xylenes, Total			Gasoline Range Organics			Diesel Range Organics			Kerosene		
				Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals	Result (mg/kg)	Lab Quals	AECOM Quals
SB-103	SB103-38-051723	38	5/17/2023	< 0.115	U		< 0.231	U		45			789			< 83.3	U	UJ
SB-103	SB103-43-051723	43	5/17/2023	< 0.0974	U		< 0.195	U		15.4			86.2			< 84.3	U	UJ
SB-103	SB103-58-051723	58	5/17/2023	< 0.0041	U		< 0.0081	U		< 0.508	U		< 13.4	U		< 5.72	U	
SB-103	SB103-68-051323	68	5/17/2023	< 1.07	U		< 2.14	U		789			29.5			< 20.7	U	UJ
SB-103	SB103-77-052423	77	5/24/2023	< 0.0038	U		< 0.0075	U		< 0.469	U		< 27.3	U		< 11.7	U	
SB-104	SB104-42-062023	42	6/20/2023	1.36			6			108			17.1			< 6.28	U	
SB-104	SB104-57-062023	57	6/20/2023	< 4.63	U		< 9.25	U		< 578	U		< 14.9	U		7.02	#	
SB-104	SB104-57-062023-DUP	57	6/20/2023	< 4.25	U		< 8.5	U		< 531	U		20.6			16.8	#	
SB-104	SB104-65-062023	65	6/20/2023	< 0.12	U		0.29			< 15	U		< 14.4	U		< 5.78	U	
SB-104	SB104-78-062023	78	6/20/2023	< 0.122	U	UJ	< 0.243	U	UJ	< 15.2	U		< 13.0	U		< 5.42	U	
SB-105	SB105-40-062023	40	6/20/2023	< 0.92	U		< 1.84	U		185			206			206	#	
SB-105	SB105-55-062023	55	6/20/2023	< 0.121	U		< 0.243	U		209			< 15.1	U		< 6.69	U	
SB-105	SB105-67-062023	67	6/20/2023	< 0.104	U	UJ	< 0.207	U	UJ	< 13	U		< 14.3	U		< 10.8	U	
SB-105	SB105-73-062023	73	6/20/2023	< 0.0038	U		< 0.0076	U		< 0.477	U		< 13.9	U		< 5.66	U	
SB-106	SB106-39-061923	39	6/19/2023	< 0.116	U		< 0.232	U		< 14.5	U		< 15.6	U		< 6.31	U	
SB-106	SB106-45-061923	45	6/19/2023	< 0.123	U	UJ	< 0.246	U	UJ	< 15.4	U		46.1			< 154	U	UJ
SB-106	SB106-45-061923-DUP	45	6/19/2023	< 0.124	U		< 0.248	U		19			47.8			< 146	U	UJ
SB-106	SB106-58-061923	58	6/19/2023	< 1.38	U		< 2.77	U		1120			< 17.0	U		< 188	U	UJ
SB-106	SB106-68-061923	68	6/19/2023	< 0.0037	U		< 0.0075	U		< 0.466	U		< 12.2	U		< 5.80	U	
SB-106	SB106-77-061923	77	6/19/2023	< 0.105	U		< 0.209	U		< 13.1	U		< 12.9	U		< 5.69	U	
SB-107	SB107-15-061723	15	6/17/2023	< 0.893	U		< 1.79	U		< 112	U		5040			< 164	U	UJ
SB-107	SB107-39-061723	39	6/17/2023	< 0.759	U		< 1.52	U		122			519			1240	#	
SB-107	SB107-58-061723	58	6/17/2023	< 0.251	U		< 0.501	U		< 31.3	U		< 16.5	U		< 6.64	U	
SB-107	SB107-67-061723	67	6/17/2023	< 0.904	U	UJ	< 1.81	U	UJ	< 113	U		< 15.5	U		< 6.48	U	
SB-107	SB107-78-061723	78	6/17/2023	< 0.0962	U		< 0.192	U		< 12	U		< 13.2	U		< 5.93	U	

Notes:

Detections and estimated detections are depicted in bold font

Result of <#.### Indicates the analyte was not detected above the given RL

Lab Qualifiers

U = Compound analyzed for but not detected above the reporting limit (RL)

= flagged due to non-exact match to applicable hydrocarbon standard

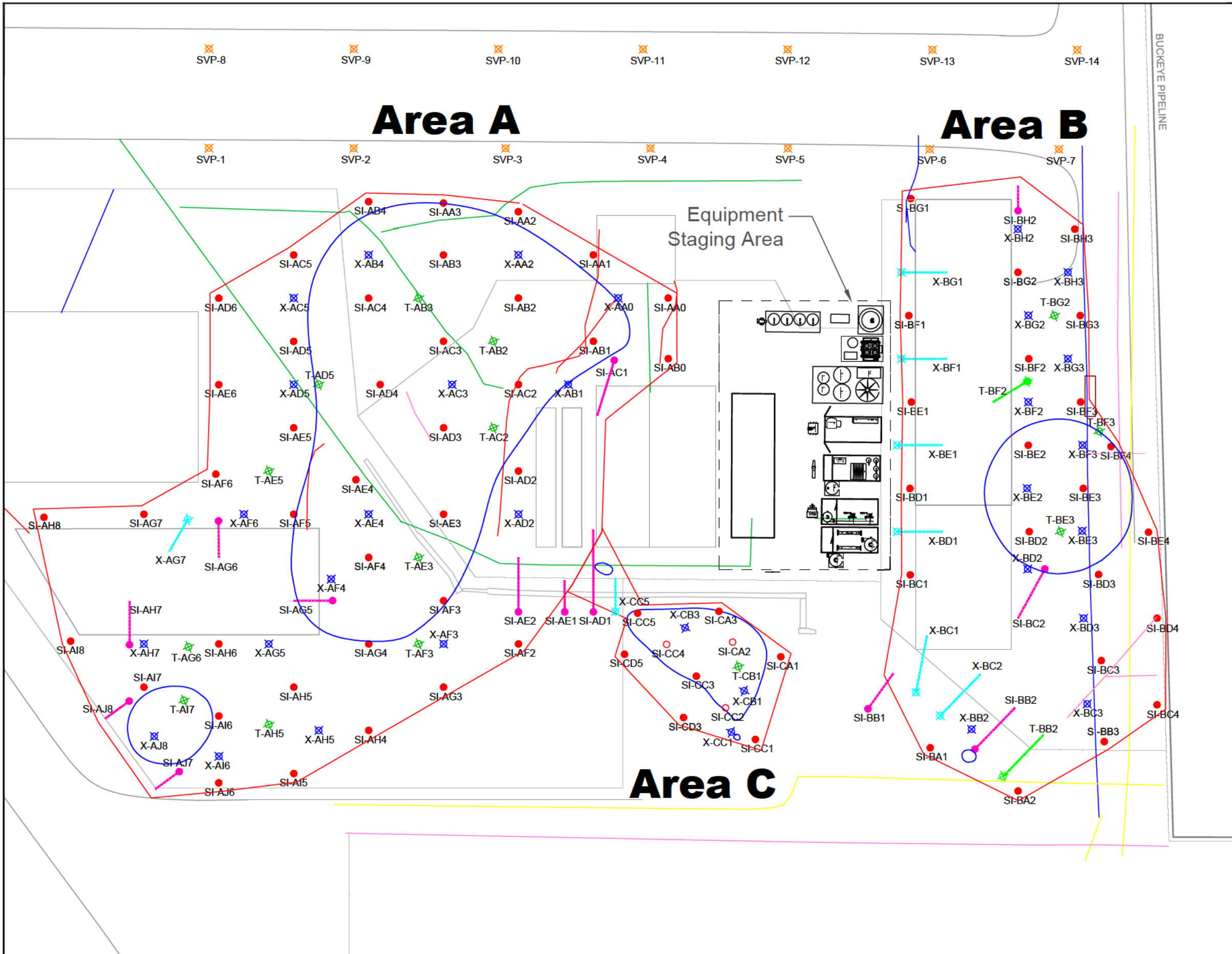
AECOM Qualifiers

J = Estimated detection

UJ = Estimated non-detect

Attachment 3

Revised and New Figures Associated with Area C



LEGEND

AREA A

- Steam Injection Well [39]
- Angled Steam Injection Well [9]
- ⊗ Multiphase Extraction Well [17]
- ⊗ Angled MPE Well [1]
- ⊗ Temperature Sensor Well [10]
- Thermal Influence (28,885 sq. ft)

AREA B

- Steam Injection Well [22]
- Angled Steam Injection Well [4]
- ⊗ Multiphase Extraction Well [12]
- ⊗ Angled MPE Well [6]
- ⊗ Temperature Sensor Well [3]
- ⊗ Angled Temp. Sensor Well [2]
- Thermal Influence (15,698 sq. ft)

AREA C

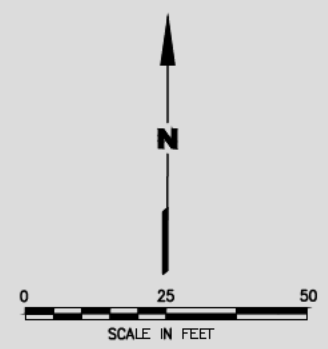
- Steam Injection Well [7]
- Shallow Steam Injection Well [3]
- ⊗ Multiphase Extraction Well [3]
- ⊗ Angled MPE Well [1]
- ⊗ Temperature Sensor Well [1]
- Thermal Influence (3,098 sq. ft)

General

- ⊗ Vapor Monitoring Well [14]
- July 2023 Benzene TTZ
- Buckeye Pipeline
- Gas
- Water
- Sewer
- Electrical
- Unknown Buried Line
- Existing Fence

NOTES:

1. STEAM WELLS REQUIRE MIN. 4" BORING.
2. EXTRACTION WELLS REQUIRE MIN. 8" BORING.
3. SENSOR WELLS REQUIRE MIN. 4" BORING.
4. PIPELINE LOCATION PROVIDED BY AECOM.
5. VAPOR MONITORING POINTS TO BE INSTALLED BY OTHERS.



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REV.	DATE (D/M/Y)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
C8	2023/09/07	UPDATED WELL COUNTS	CW	CW	CC
C7	2023/07/14	ADDED AREA C ANGLED X WELL	JS	JS	CC
C6	2023/07/13	AREA C REVISED	JS	JS	CC
C5	2023/07/07	AREA C ADDED	JS	JS	CC
A2	2023/05/13	REVISED DRAFT FOR DISCUSSION	JS	JS	CC
A1	2023/05/22	DRAFT FOR DISCUSSION	JS	JS	CC
REV.	DATE (D/M/Y)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
APEGA PERMIT NUMBER: P09178					

SEE Well Field Layout

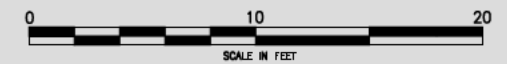
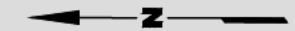
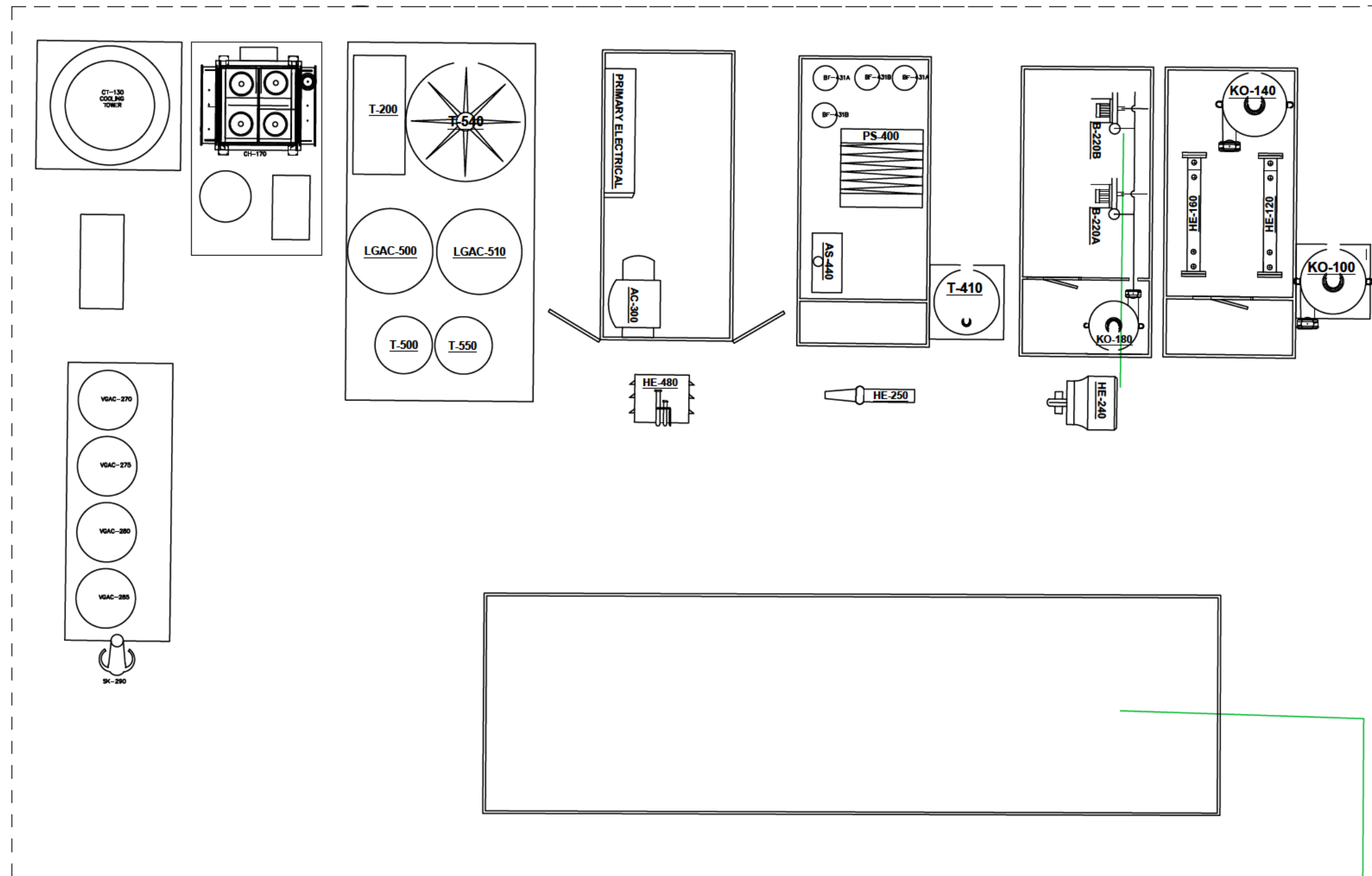
AECOM

PROJECT: Roxana Public Works Yard
 Roxana, Illinois

SHEET: **WFL-01**

NOTES:

1. EXACT LOCATION OF EQUIPMENT TO BE DETERMINED BASED ON SITE CONDITIONS DETERMINED DURING INSTALLATION.



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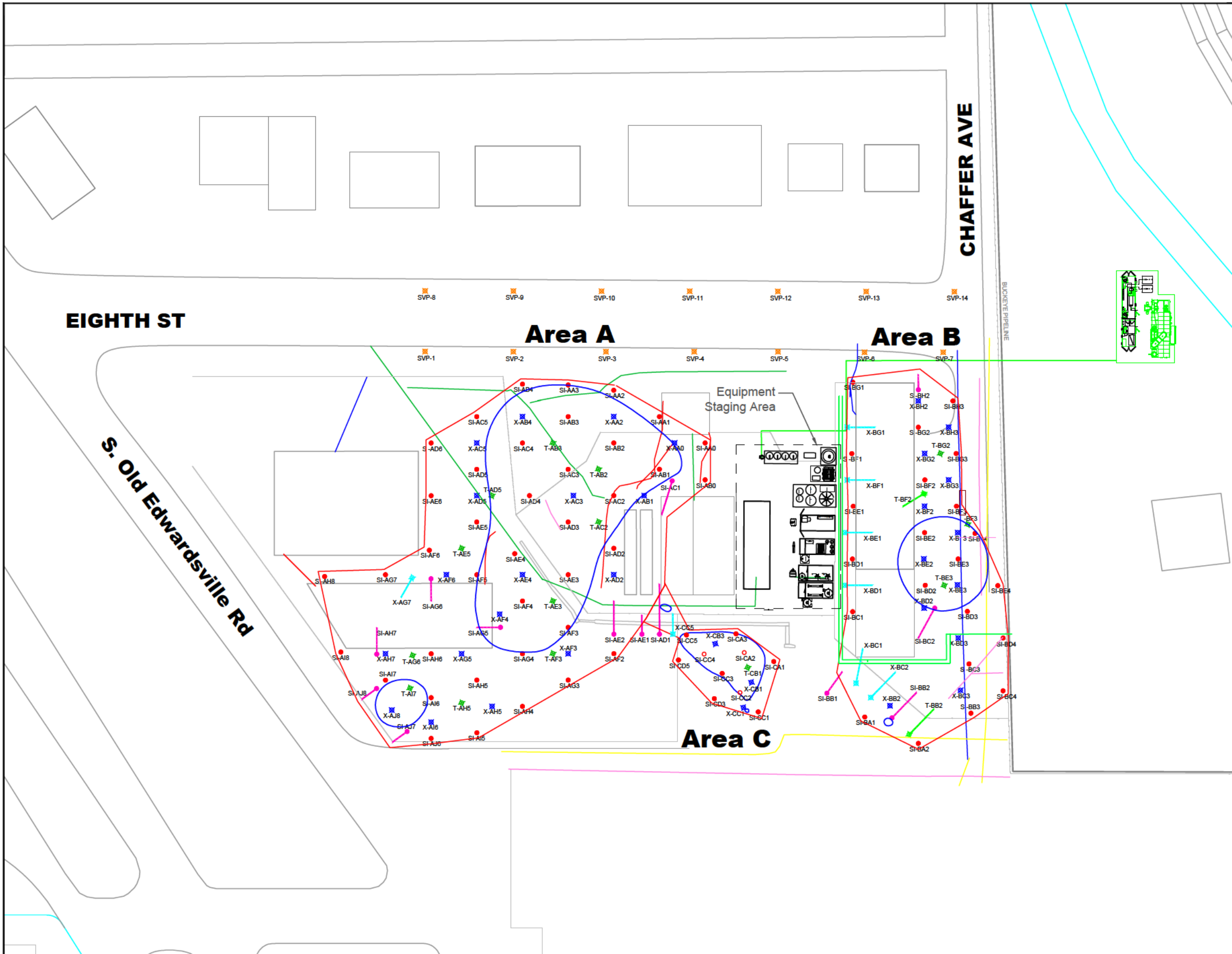
LPE	DATE

REV.	DATE (DDMMYY)	DESCRIPTION	DRAWN BY	ORGI/ENGR	APPROVED BY/DIST
C6	2023/09/08	UPDATED TITLE	CW	CW	-
C4	2023/09/07	UPDATED TITLE	CW	CW	CC
C3	2023/07/12	Layout update	DN	JS	-
C2	2023/10/28	100% RDR ADDENDUM	JS	JS	CC
C1	2023/01/07	100% DESIGN	JS	CC	CC
B4	2021/12/02	FINALIZE TREATMENT AREA B	JS	CC	CC
APEGA PERMIT NUMBER: P00178					

TITLE: **SEE Equipment Layout**
 CLIENT: **AECOM**
 SCALE: NOT TO SCALE

PROJECT: **Roxana Public Works Yard
 Roxana, Illinois**

SHEET: **EQL-01**



LEGEND

AREA A

- Steam Injection Well [39]
- Angled Steam Injection Well [9]
- ⊗ Multiphase Extraction Well [17]
- ⊗ Angled MPE Well [1]
- ⊗ Temperature Sensor Well [10]
- Thermal Influence (28,885 sq. ft)

AREA B

- Steam Injection Well [22]
- Angled Steam Injection Well [4]
- ⊗ Multiphase Extraction Well [12]
- ⊗ Angled MPE Well [6]
- ⊗ Temperature Sensor Well [3]
- ⊗ Angled Temp. Sensor Well [2]
- Thermal Influence (15,698 sq. ft)

AREA C

- Steam Injection Well [7]
- Shallow Steam Injection Well [3]
- ⊗ Multiphase Extraction Well [3]
- ⊗ Angled MPE Well [1]
- ⊗ Temperature Sensor Well [1]
- Thermal Influence (3,098 sq. ft)

General

- Buckeye Pipeline
- ⊗ 5 ft Pipeline Drilling Offset
- ⊗ Vapour Monitoring Well [14]
- ⊗ 8" Conveyance Piping to RTO

NOTES:

1. STEAM WELLS REQUIRE MIN. 4" BORING.
2. EXTRACTION WELLS REQUIRE MIN. 8" BORING.
3. SENSOR WELLS REQUIRE MIN. 4" BORING.
4. PIPELINE LOCATION PROVIDED BY AECOM.
5. VAPOR MONITORING POINTS TO BE INSTALLED BY OTHERS.

N

0 50 100
SCALE IN FEET



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LPE	C6	2023/09/07	UPDATED WELL COUNTS	CW	CW	CC
	C4	2023/07/17	QUANTITY CHANGE	DN	JS	-
	C3	2023/07/12	LAYOUT UPDATE	DN	-	-
	C2	2022/10/28	100% RDR ADDENDUM	JS	JS	CC
	C1	2022/01/07	100% DESIGN	JS	CC	CC
	B6	2021/12/02	FINALIZE TREATMENT AREA B	JS	CC	CC
DATE	REV.	DATE (DDMMYY)	DESCRIPTION	DRAWN BY	ORGI/ENGR	Approved Dist
			APEGA PERMIT NUMBER: P00178	SCALE: NOT TO SCALE		

TITLE:	SEE Equipment Layout
CLIENT:	AECOM

PROJECT: **Roxana Public Works Yard
Roxana, Illinois**

SHEET: **EQL-02**

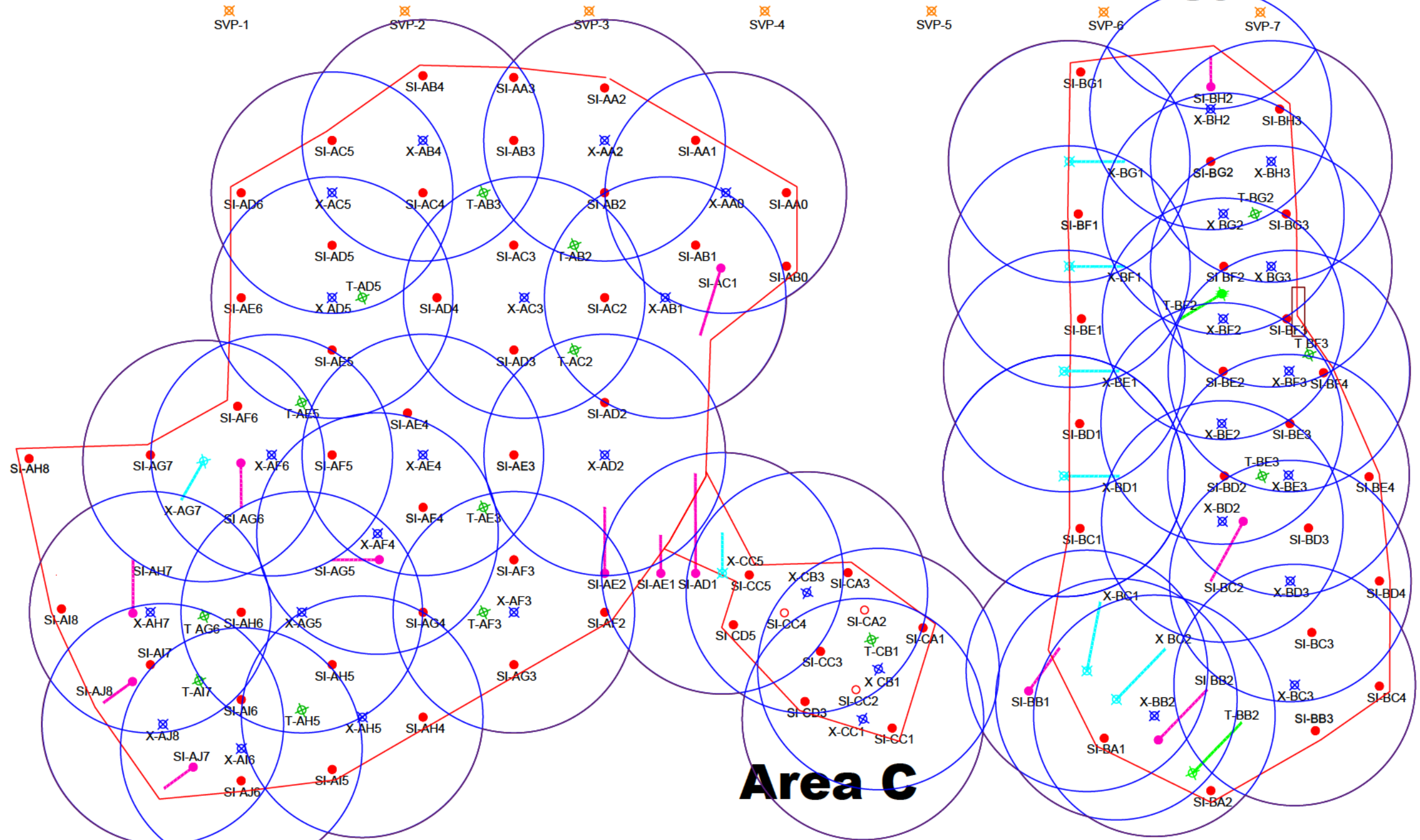
SVP-8 SVP-9 SVP-10 SVP-11 SVP-12 SVP-13 SVP-14

SVP-1 SVP-2 SVP-3 SVP-4 SVP-5 SVP-6 SVP-7

Area A

Area B

Area C

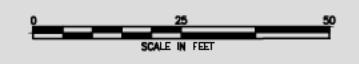


LEGEND

- AREA A**
- Steam Injection Well [39]
 - Angled Steam Injection Well [9]
 - ⊠ Multiphase Extraction Well [17]
 - ⊠ Angled MPE Well [1]
 - ★ Temperature Sensor Well [10]
 - ★ Angled Temp. Sensor Well [2]
 - ▭ Thermal Influence (28,885 sq. ft)
- AREA B**
- Steam Injection Well [22]
 - Angled Steam Injection Well [4]
 - ⊠ Multiphase Extraction Well [12]
 - ⊠ Angled MPE Well [6]
 - ★ Temperature Sensor Well [3]
 - ★ Angled Temp. Sensor Well [2]
 - ▭ Thermal Influence (15,698 sq. ft)
- AREA C**
- Steam Injection Well [7]
 - Shallow Steam Injection Well [3]
 - ⊠ Multiphase Extraction Well [3]
 - ⊠ Angled MPE Well [1]
 - ★ Temperature Sensor Well [1]
 - ▭ Thermal Influence (3,098 sq. ft)
- ⊠ Vapor Monitoring Well [14]
- Radius of Capture per MPE Well (72,350 sq. ft)

NOTES:

1. STEAM WELLS REQUIRE MIN. 4" BORING.
2. EXTRACTION WELLS REQUIRE MIN. 8" BORING.
3. SENSOR WELLS REQUIRE MIN. 4" BORING.
4. PIPELINE LOCATION PROVIDED BY AECOM.
5. VAPOR MONITORING POINTS TO BE INSTALLED BY OTHERS.



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REV.	DATE (MM/YY)	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
C2	2023/09/08	UPDATED TITLE BLOCK	CW	CW	-
C1	2023/09/07	FOR 100% DESIGN	CW	CW	CC
A1	2023/09/06	DRAFT FOR DISCUSSION	CW	CW	CC

DATE: _____

APEGA PERMIT NUMBER: P09173

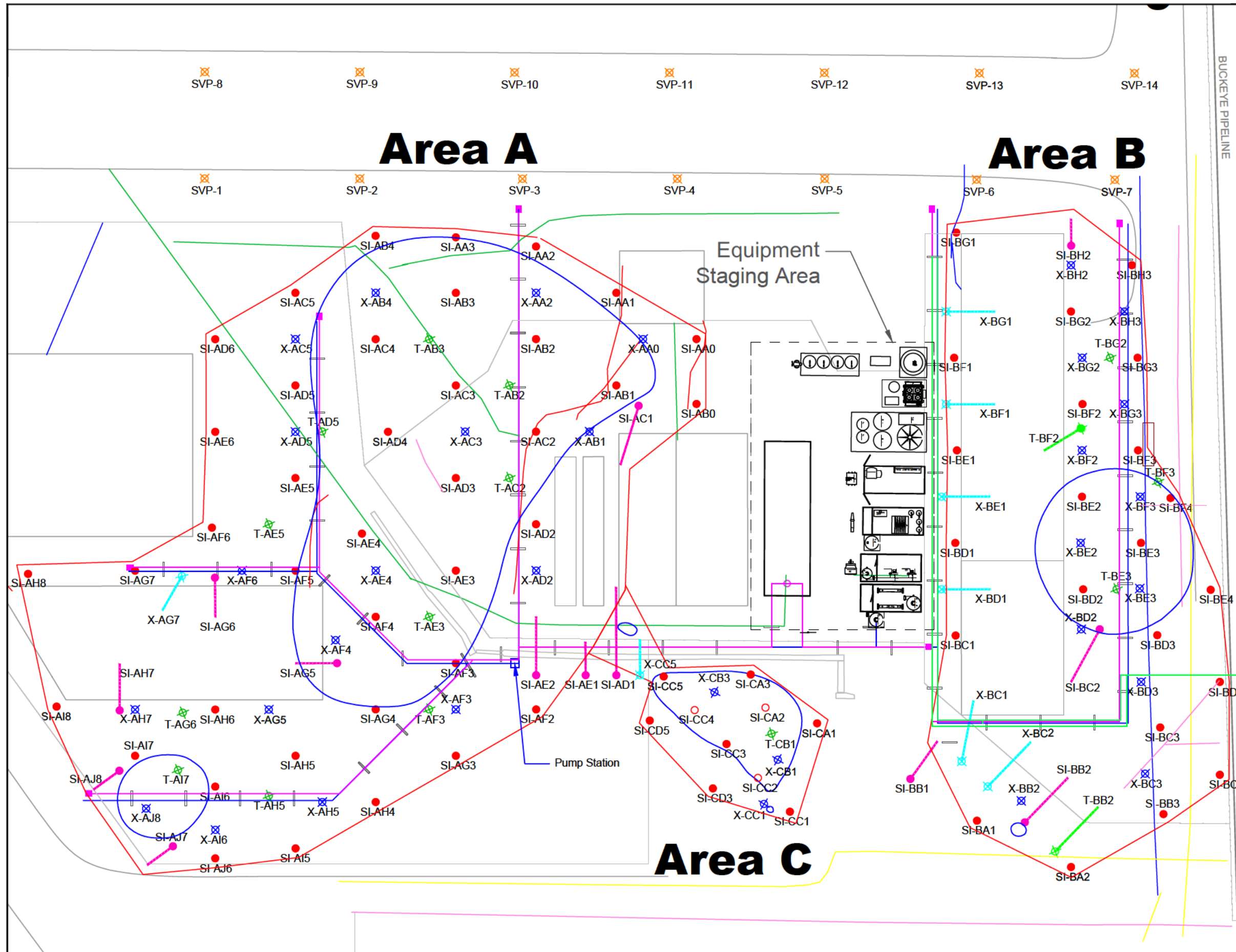
SCALE: NOT TO SCALE

TITLE: **SEE Radius Of Capture**

AECOM

PROJECT: **Roxana Public Works Yard
 Roxana, Illinois**

SHEET: **ROC-01**



LEGEND

AREA A

- Steam Injection Well [39]
- Angled Steam Injection Well [9]
- ⊠ Multiphase Extraction Well [17]
- ⊠ Angled MPE Well [1]
- ⊠ Temperature Sensor Well [10]
- Thermal Influence (28,885 sq. ft)

AREA B

- Steam Injection Well [22]
- Angled Steam Injection Well [4]
- ⊠ Multiphase Extraction Well [12]
- ⊠ Angled MPE Well [6]
- ⊠ Temperature Sensor Well [3]
- ⊠ Angled Temp. Sensor Well [2]
- Thermal Influence (15,698 sq. ft)

AREA C

- Steam Injection Well [7]
- Shallow Steam Injection Well [3]
- ⊠ Multiphase Extraction Well [3]
- ⊠ Angled MPE Well [1]
- ⊠ Temperature Sensor Well [1]
- Thermal Influence (3,098 sq. ft)

General

- Buckeye Pipeline
- ⊠ 5 ft Pipeline Drilling Offset
- ⊠ Vapor Monitoring Well [14]
- Vapour Extraction Piping
- Steam Piping
- Pipe Stands [57]
- Steam Traps [8]
- 8" Conveyance Piping to RTO

NOTES:

1. STEAM WELLS REQUIRE MIN. 4" BORING.
2. EXTRACTION WELLS REQUIRE MIN. 8" BORING.
3. SENSOR WELLS REQUIRE MIN. 4" BORING.
4. PIPELINE LOCATION PROVIDED BY AECOM.
5. VAPOR MONITORING POINTS TO BE INSTALLED BY OTHERS.

N

0 25 50
SCALE IN FEET



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 ELECTROMAGNETIC SYSTEMS AND SERVICES
 FOR THE ENERGY AND ENVIRONMENTAL INDUSTRIES
 4895 - 358 STREET SE
 CALGARY, AB T2B 3M9 CANADA
 WWW.MCMILLAN-MCGEE.COM
 PH: 403.569.5100, FX: 403.272.7201

REV.	DATE (DDMMYY)	DESCRIPTION	DRAWN BY	ORGI/ENGR	APPROVED BY	SCALE
C6	2023/09/07	UPDATED WELL COUNTS	CW	CW	CC	
C6	2023/07/17	QUANTITY CHANGE	DN	JS	-	
C4	2023/07/11	ADD AREA C	DN	JS	-	
C3	2023/03/16	ADD RTO PIPE BOUNDARY	JS	JS	-	
C2	2022/10/28	100% RDR ADDENDUM	JS	JS	CC	
C1	2022/01/07	100% DESIGN	JS	CC	CC	
APEGA PERMIT NUMBER: P09178						

SEE Piping Layout
 AECOM

PROJECT: **Roxana Public Works Yard
 Roxana, Illinois**

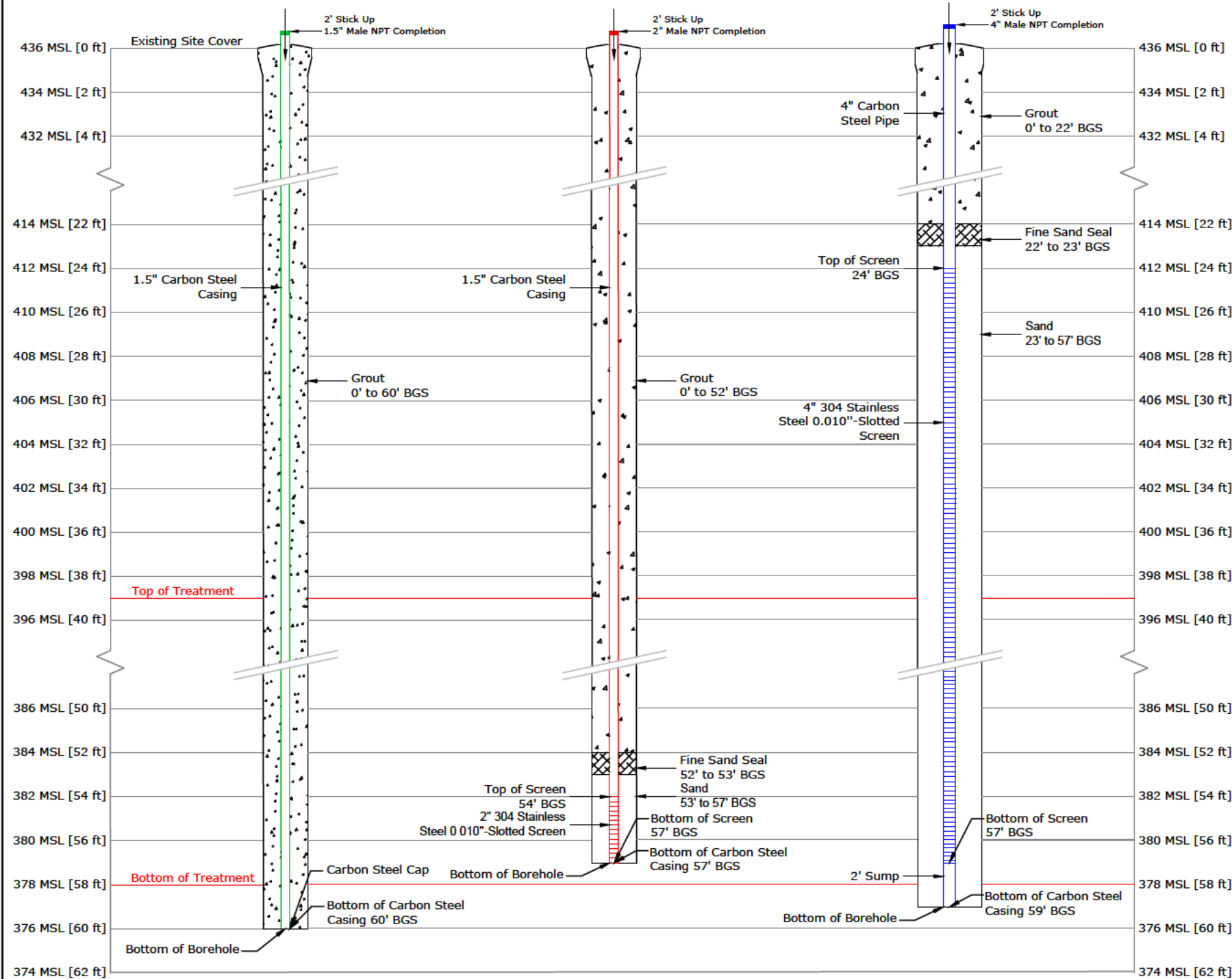
SHEET: **PIL-01**

AREA A

DIGITAM™ TEMPERATURE SENSOR WELL QUANTITY - 10

STEAM INJECTION WELL QUANTITY - 39

MULTIPHASE EXTRACTION WELL QUANTITY - 17



GENERAL NOTES:

1. MATERIAL TYPES
 - A. GROUT
 - HIGH TEMPERATURE PORTLAND TYPE 1 OR EQUIVALENT (NO BENTONITE)
 - B. SAND
 - FINE SAND SEAL: 40/60 SILICA SAND
 - STEAM INJECTION/EXTRACTION WELLS: 20/40 SILICA SAND
2. STEAM INJECTION WELLS
 - A. MINIMUM 4" DIAMETER BOREHOLE
 - B. 2" SCHEDULE 40 CARBON STEEL CASING
 - C. NOMINAL 2" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
3. TEMPERATURE WELLS
 - A. MINIMUM 4" DIAMETER BOREHOLE
 - B. 1.5" SCHEDULE 40 CARBON STEEL CASING
 - C. THREADS CAN BE NPT OR FLUSH JOINT
 - D. STICKUP MUST BE MALE NPT
 - E. ALL JOINTS TO BE TIGHTENED WITH PIPE WRENCH USING PIPE THREAD COMPOUND AND PTFE TAPE
4. MULTIPHASE EXTRACTION WELLS
 - A. MINIMUM 8" DIAMETER BOREHOLE
 - B. 4" SCHEDULE 40 CASING
 - C. NOMINAL 4" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
 - D. FITTINGS BETWEEN PIPE SECTIONS ARE 4 THREAD PER INCH (TPI) FLUSH THREADED UNLESS SPECIFIED OTHERWISE (IE M NPT OR PLUG)
 - E. 4" NPT FEMALE X WELD PLATE ENDS



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REV.	DATE (YR/MO/DO)	DESCRIPTION	CC	CC	CC
C2	2023/09/06	100% DESIGN - Well Count Adjusted	CW	CW	CC
C1	2022/01/07	100% DESIGN	JS	CC	CC
B2	2021/09/28	90% DESIGN	JS	CC	CC
B1	2021/08/27	60% DESIGN	JS	CC	CC
A1	2021/08/20	NOT FOR CONSTRUCTION	CC	CC	-

DATE: _____
DRAWN BY: _____
ORIG/ENGR/DIST: _____
APR 1978 PERMIT NUMBER: P09178
SCALE: NOT TO SCALE

TITLE: **SEE Well Completion Drawing**
CLIENT: **AECOM**

PROJECT: **Roxana Public Works Yard
Roxana, Illinois**

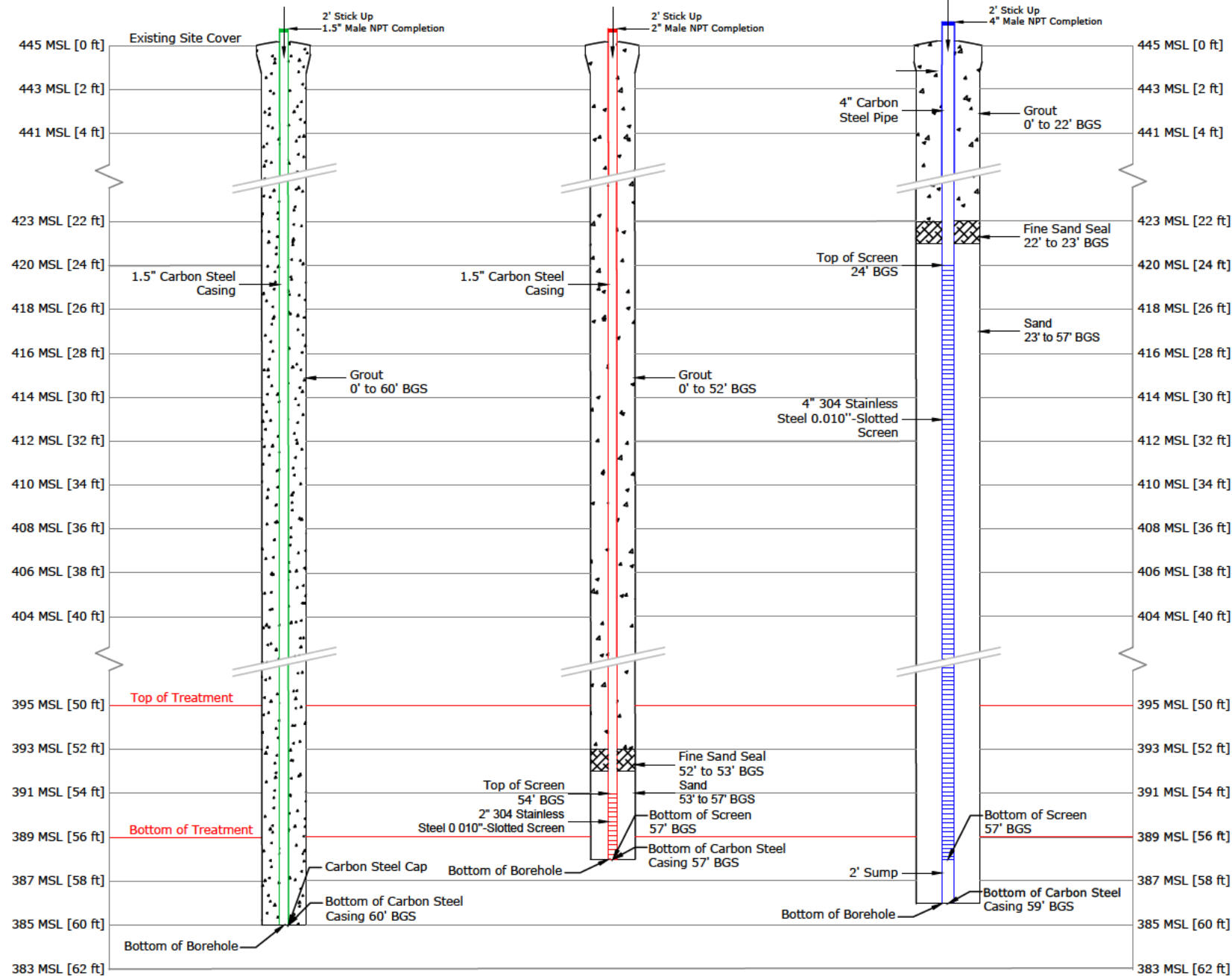
SHEET: **WCD-01**

AREA B

DIGITAM™ TEMPERATURE SENSOR WELL QUANTITY - 3

STEAM INJECTION WELL QUANTITY - 22

MULTIPHASE EXTRACTION WELL QUANTITY - 12



GENERAL NOTES:

1. MATERIAL TYPES
 - A. GROUT
 - HIGH TEMPERATURE PORTLAND TYPE 1 OR EQUIVALENT (NO BENTONITE)
 - B. SAND
 - FINE SAND SEAL: 40/60 SILICA SAND
 - STEAM INJECTION/EXTRACTION WELLS: 20/40 SILICA SAND
2. STEAM INJECTION WELLS
 - A. MINIMUM 4" DIAMETER BOREHOLE
 - B. 2" SCHEDULE 40 CARBON STEEL CASING
 - C. NOMINAL 2" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
3. TEMPERATURE WELLS
 - A. MINIMUM 4" DIAMETER BOREHOLE
 - B. 1.5" SCHEDULE 40 CARBON STEEL CASING
 - C. THREADS CAN BE NPT OR FLUSH JOINT
 - D. STICKUP MUST BE MALE NPT
 - E. ALL JOINTS TO BE TIGHTENED WITH PIPE WRENCH USING PIPE THREAD COMPOUND AND PTFE TAPE
4. MULTIPHASE EXTRACTION WELLS
 - A. MINIMUM 8" DIAMETER BOREHOLE
 - B. 4" SCHEDULE 40 CASING
 - C. NOMINAL 4" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
 - D. FITTINGS BETWEEN PIPE SECTIONS ARE 4 THREAD PER INCH (TPI) FLUSH THREADED UNLESS SPECIFIED OTHERWISE (IE M NPT OR PLUG)
 - E. 4" NPT FEMALE X WELD PLATE ENDS



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 PH: 403.569.5100, FX: 403.272.7201

REV.	DATE (YR/MO/DO)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
C2	2023/09/06	100% DESIGN - Well Count Adjusted	CW	CW	CC
C1	2022/01/07	100% DESIGN	JS	CC	CC
B3	2021/12/02	FINALIZE TREATMENT AREA B	JS	CC	CC
B2	2021/09/28	90% DESIGN	JS	CC	CC
B1	2021/08/27	60% DESIGN	JS	CC	CC
A1	2014/06/13	NOT FOR CONSTRUCTION	CC	CC	-

DATE: _____
 APEGA PERMIT NUMBER: P09178
 SCALE: NOT TO SCALE

SEE Well Completion Drawing

AECOM

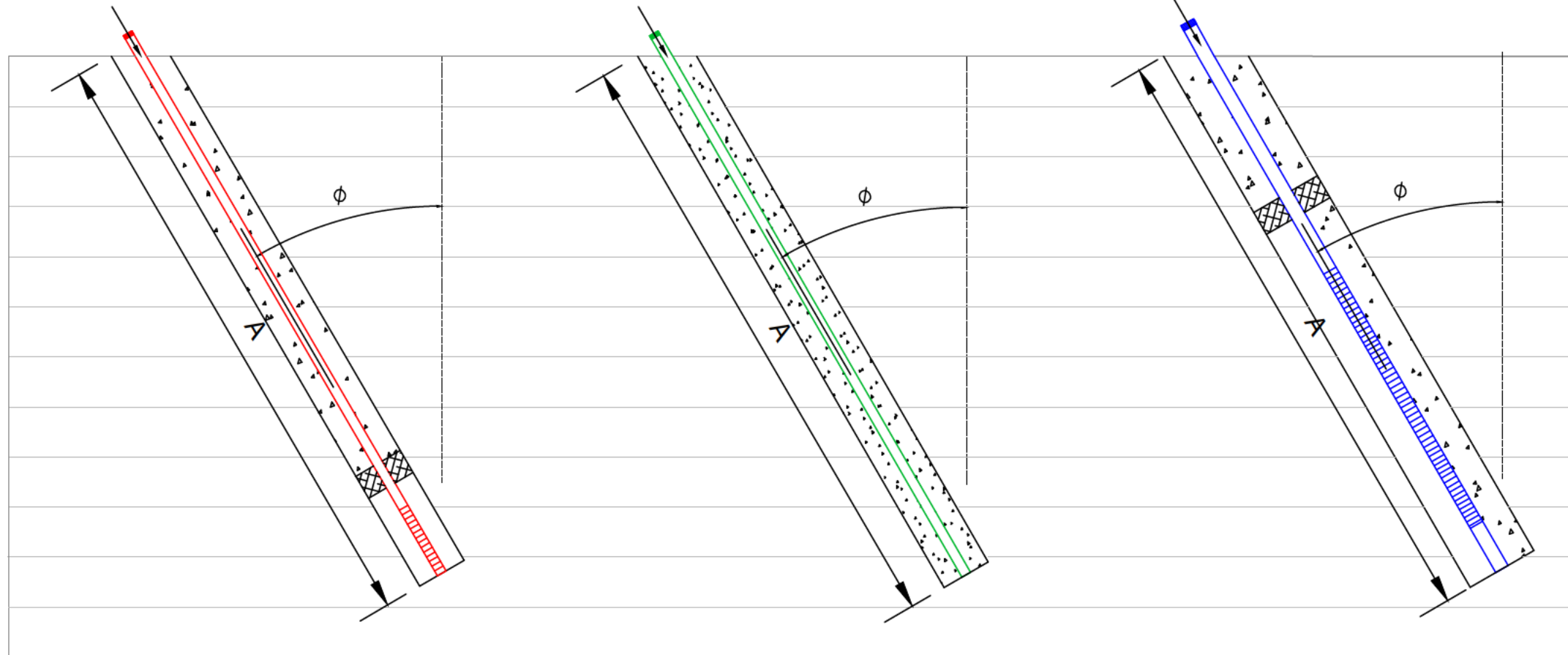
PROJECT:
**Roxana Public Works Yard
 Roxana, Illinois**

SHEET:
WCD-02

**ANGLED
STEAM INJECTION WELL
QUANTITY - 13**

**ANGLED DIGITAM™
TEMPERATURE SENSOR
WELL
QUANTITY - 2**

**ANGLED MULTIPHASE
EXTRACTION WELL
QUANTITY - 7**



GENERAL NOTES:

1. MATERIAL TYPES
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 - B. SAND
 - FINE SAND SEAL: 40/60 SILICA SAND
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2. STEAM INJECTION WELLS
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 - B. 2" SCHEDULE 40 CARBON STEEL CASING
 - C. NOMINAL 2" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
3. TEMPERATURE WELLS
 - A. MINIMUM 4" DIAMETER BOREHOLE
 - B. 1.5" SCHEDULE 40 CARBON STEEL CASING
 - C. THREADS CAN BE NPT OR FLUSH JOINT
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 - E. ALL JOINTS TO BE TIGHTENED WITH PIPE WRENCH USING PIPE THREAD COMPOUND AND PTFE TAPE
4. MULTIPHASE EXTRACTION WELLS
 - A. MINIMUM 8" DIAMETER BOREHOLE
 - B. 4" SCHEDULE 40 CASING
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 - D. FITTINGS BETWEEN PIPE SECTIONS ARE 4 THREAD PER INCH (TPI) FLUSH THREADED UNLESS SPECIFIED OTHERWISE (IE M NPT OR PLUG)
 - E. 4" NPT FEMALE X WELD PLATE ENDS

ANGLED WELL DETAILS

Well	φ	A	Well	φ	A	Well	φ	A	Well	φ	A
SI-AC1	19.33	60.41	SI-BB1	14.74	58.94	T-BB2	18.74	62.30	X-AG7	12.15	60.35
SI-AD1	26.57	63.73	SI-BB2	19.33	60.41	T-BF2	13.01	61.58	X-BC1	17.63	61.90
SI-AE1	10.73	58.01	SI-BC2	18.80	60.21				X-BC2	18.43	63.25
SI-AE2	18.34	60.05	SI-BH2	8.63	57.65				X-BD1	17.63	61.90
SI-AG5	13.30	58.57							X-BE1	17.63	61.90
SI-AG6	12.56	58.39							X-BF1	17.63	61.90
SI-AH7	15.73	59.21							X-BG1	17.63	61.90
SI-AJ7	10.17	57.91									
SI-AJ8	10.17	57.91									



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LPE	REV.	DATE (YR/MO/DO)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
	C2	2023/09/06	100% DESIGN - Well Count Adjusted	CW	CW	CC
	C1	2022/01/07	100% DESIGN	JS	CC	CC
	B4	2021/12/02	FINALIZE TREATMENT AREA B	JS	CC	CC
	B3	2021/10/26	UPDATE T-AG6 AND T-BF2	JS	CC	CC
	B2	2021/09/28	90% DESIGN	JS	CC	CC
	B1	2021/08/20	60% DESIGN	JS	CC	CC
	REV.	DATE	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY

DATE: _____
APEGA PERMIT NUMBER: P09178
SCALE: NOT TO SCALE

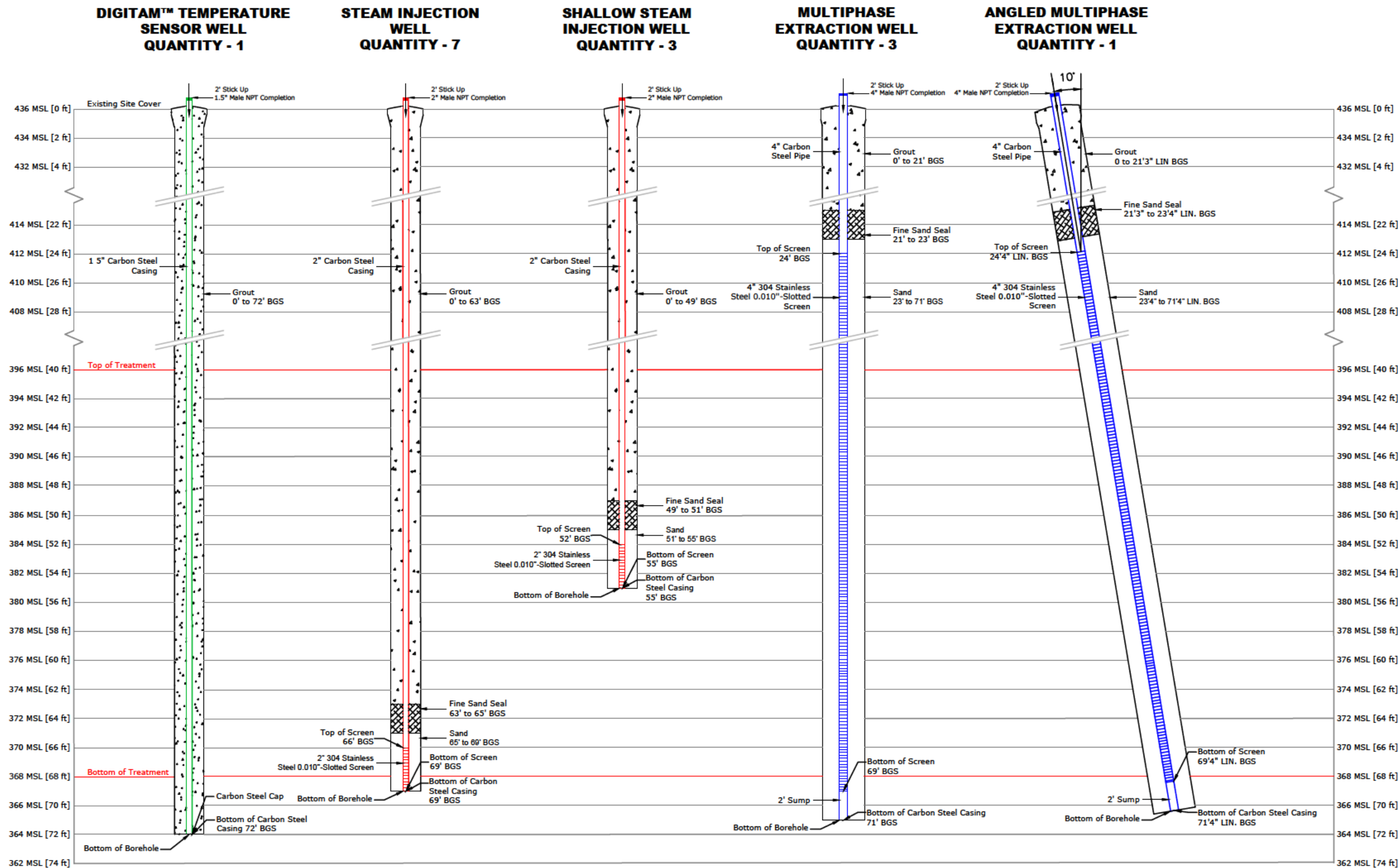
SEE Well Completion Drawing

AECOM

PROJECT: **Roxana Public Works Yard
Roxana, Illinois**

SHEET: **WCD-03**

AREA C



GENERAL NOTES:

- MATERIAL TYPES**
 - GROUT**
 - HIGH TEMPERATURE PORTLAND TYPE 1 OR EQUIVALENT (NO BENTONITE)
 - SAND**
 - FINE SAND SEAL: 40/60 SILICA SAND
 - STEAM INJECTION/EXTRACTION WELLS: 20/40 SILICA SAND
- STEAM INJECTION WELLS**
 - MINIMUM 4" DIAMETER BOREHOLE
 - 2" SCHEDULE 40 CARBON STEEL CASING
 - NOMINAL 2" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
- TEMPERATURE WELLS**
 - MINIMUM 4" DIAMETER BOREHOLE
 - 1.5" SCHEDULE 40 CARBON STEEL CASING
 - THREADS CAN BE NPT OR FLUSH JOINT
 - STICKUP MUST BE MALE NPT
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 - MINIMUM 8" DIAMETER BOREHOLE
 - 4" SCHEDULE 40 CASING
 - NOMINAL 4" DIAMETER WIRE-WRAPPED 304 STAINLESS STEEL 0.010"-SLOTTED SCREEN
 - FITTINGS BETWEEN PIPE SECTIONS ARE 4 THREAD PER INCH (TPI) FLUSH THREADED UNLESS SPECIFIED OTHERWISE (IE M NPT OR PLUG)
 - 4" NPT FEMALE X WELD PLATE ENDS



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REV.	DATE (YR/MO/DO)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
C2	2023/09/06	100% DESIGN - Well Count Adjusted	CW	CW	CC
C1	2023/07/20	FOR CONSTRUCTION	JS	JS	CC
A2	2023/07/17	SHALLOW SI AND ANGLED X WELLS	JS	JS	CC
A1	2023/07/11	NOT FOR CONSTRUCTION	EB	JS	-
REV.	DATE	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
APEGA PERMIT NUMBER: P09178					
DATE			SCALE: NOT TO SCALE		

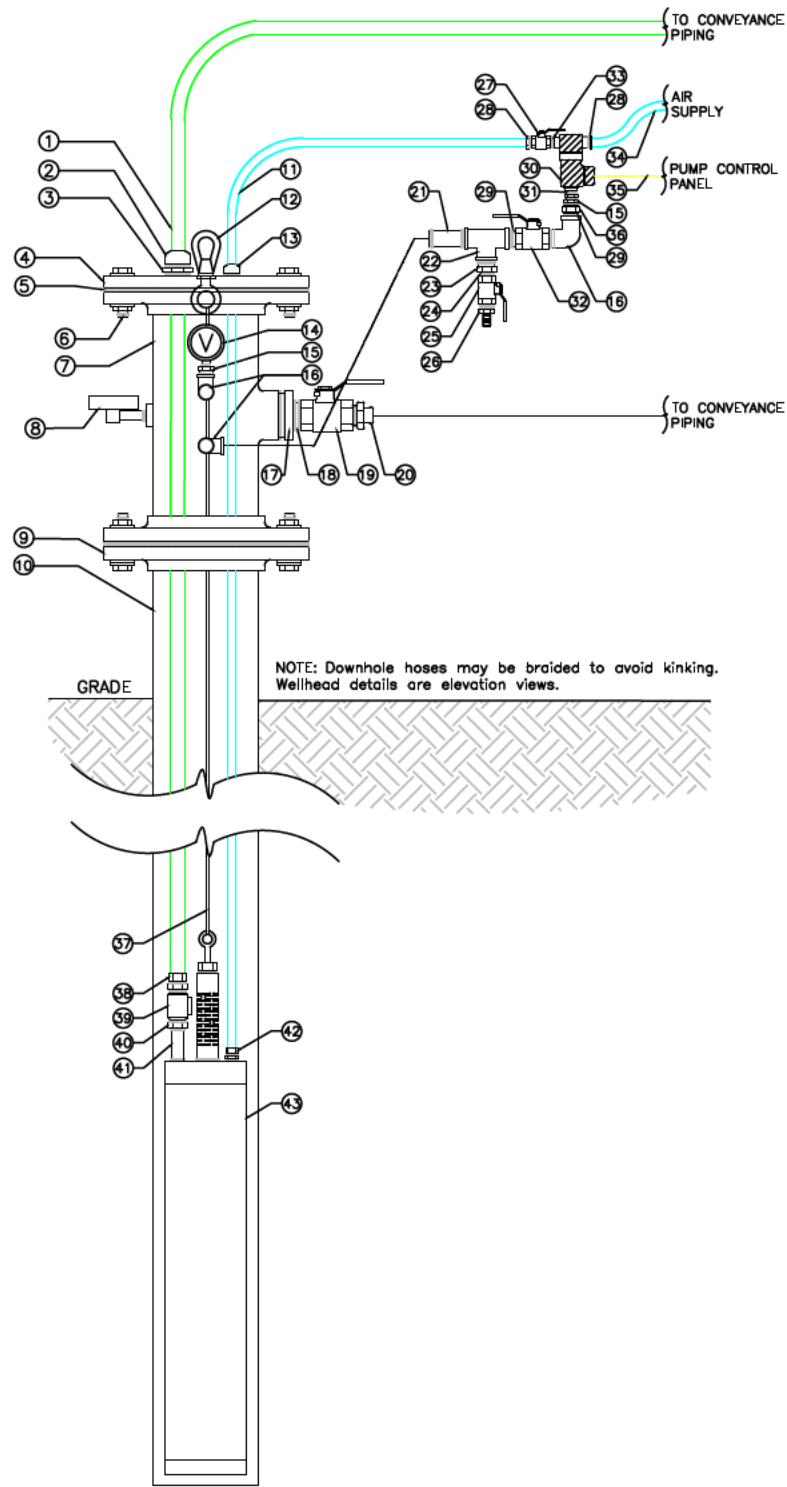
SEE Well Completion Drawing

AECOM

PROJECT:
Roxana Public Works Yard
Roxana, Illinois

SHEET:
WCD-04

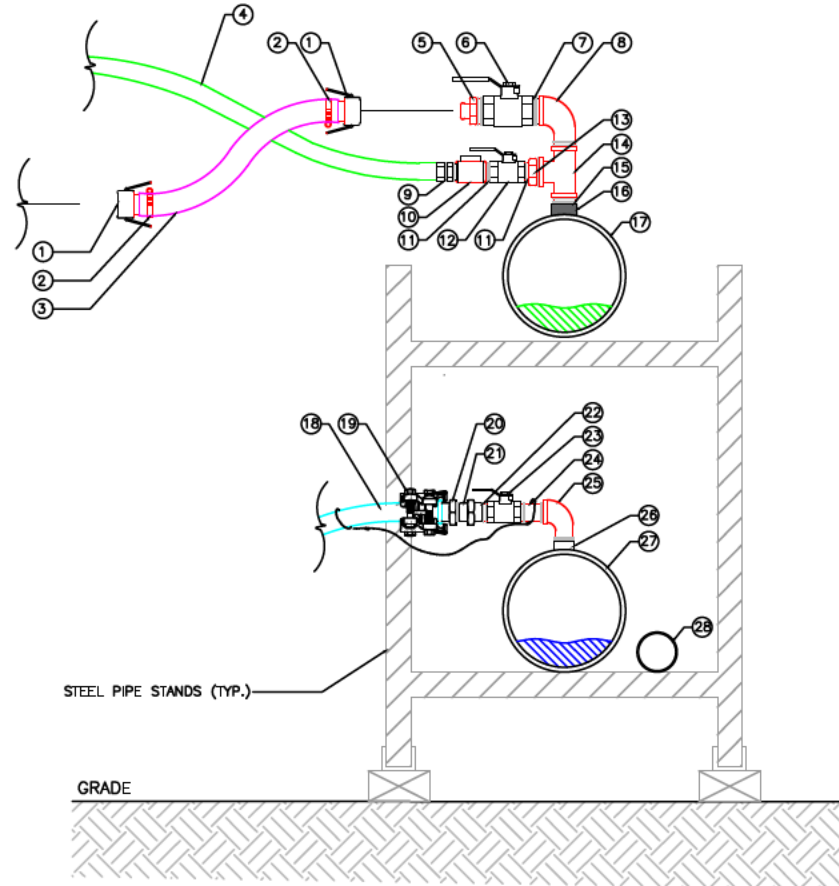
MULTIPHASE EXTRACTION WELL WITH DOWNHOLE PUMP



WELLHEAD COMPONENTS

1. 3/4" ID PTFE GROUNDWATER EXTRACTION LINE
2. 3/4" X 1" M NPT CORD GRIP, PVDF
3. 1" F NPT X 1-1/4" M NPT BUSHING, GALV
4. 4" Ø 150# WELL COVER PLATE, STEEL
5. 4" Ø 150# X 1/8" GASKET, VITON (TYP.)
6. 5/8" BOLT, LOCK WASHER & HEX NUT, ZINC (TYP.)
7. 4" Ø Mc² WELLHEAD X 150# FLANGE ENDS, STEEL
8. TEMPERATURE GAUGE 0-250°F X 1/2" M NPT
9. 4" Ø 150# FLANGE X 4" F NPT, STEEL
10. 4" Ø M NPT RISER STICKUP, CARBON STEEL
11. 1/4" ID PTFE COMPRESSED AIR INJECTION LINE
12. 1/2" LIFTING EYE ASSEMBLY, WITH GASKET
13. 3/8" X 3/4" M NPT CORD GRIP, PVDF
14. VACUUM GAUGE, 0-30" HG X 1/4" M NPT
15. 1/2" M NPT X 1/4" F NPT BUSHING, BRASS
16. 1/2" NPT STREET ELBOW, BRASS
17. 2" M NPT X 1-1/2" F NPT REDUCER BUSHING, GALV.
18. 1-1/2" NPT CLOSE NIPPLE, GALV.
19. 1-1/2" NPT BALL VALVE, BRASS
20. 1-1/2" M NPT X 1-1/2" MALE CAMLOCK (PART F), ALUM. ALLOY
21. 1/2" NPT X 3" LONG NIPPLE, GALV.
22. 1/2" NPT PIPE TEE, GALV.
23. 1/2" M NPT X 3/8" F NPT BUSHING, BRASS
24. 3/8" NPT CLOSE NIPPLE, GALV.
25. 3/8" NPT BALL VALVE, BRASS
26. 3/8" M NPT X 1/4" HOSE BARB, BRASS
27. 1/4" NPT 1/2 TURN BALL VALVE
28. 1/4" M NPT X 3/8" OD PUSH TO CONNECT FITTING
29. 1/2" NPT CLOSE NIPPLE, GALV.
30. 1/4" F NPT X 1/4" F NPT X 10-32 F STRAIGHT DIRECT ACTING THREE-WAY SOLENOID VALVE, NORMALLY CLOSED
31. 1/4" M NPT X 10-32 M STRAIGHT ADAPTER
32. 1/2" NPT BALL VALVE, BRASS
33. 1/4" NPT CLOSE NIPPLE, GALV.
34. 3/8" POLYURETHANE COMPRESSED AIR CONVEYANCE TUBING
35. SOLENOID CONTROL CABLE
36. 1/2" F NPT UNION
37. LOWERING TECHNORA ROPE
38. 1/2" M NPT X 3/4" COMPRESSION FITTING, BRASS
39. 1/2" SWING CHECK VALVE, BRASS
40. 1/2" M NPT X 3/8" F NPT BUSHING, BRASS
41. 3/8" X 3" NIPPLE, STAINLESS STEEL
42. 1/8" M NPT X 3/8" COMPRESSION FITTING, BRASS
43. PNEUMATIC PUMP COMPLETE WITH TOP LOADING SCREEN

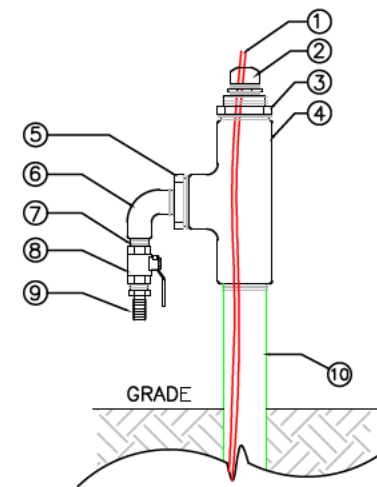
MULTIPHASE EXTRACTION WELL CONNECTION TO CONVEYANCE PIPING NETWORK



PIPING CONNECTION COMPONENTS

1. 1-1/2" F CAMLOCK X 1-1/2" HOSE BARB (PART C), ALUM. ALLOY
2. 1-1/2" HOSE CLAMP
3. 1-1/2" ID PARKER SERIES 7373T BLUE THUNDER CORRUGATED CHEMICAL SUCTION VAPOR EXTRACTION HOSE
4. 3/4" ID PTFE GROUNDWATER EXTRACTION HOSE
5. 1-1/2" M CAMLOCK X 1-1/2" M NPT (PART F), ALUM. ALLOY
6. 1-1/2" NPT BALL VALVE, BRASS
7. 1-1/2" NPT CLOSE NIPPLE, GALV.
8. 1-1/2" NPT STREET ELBOW, GALV.
9. 1/2" M NPT X 3/4" COMPRESSION FITTING, BRASS
10. 1/2" NPT SWING CHECK VALVE, BRASS
11. 1/2" NPT CLOSE NIPPLE, BRASS
12. 1/2" NPT BALL VALVE, BRASS
13. 1-1/2" M NPT X 1/2" F NPT REDUCER BUSHING, GALV.
14. 1-1/2" F NPT PIPE TEE, GALV.
15. 1-1/2" NPT CLOSE NIPPLE, GALV.
16. 1-1/2" F NPT COUPLER, CARBON STEEL
17. 4" TO 8" Ø PIPE HEADER, CARBON STEEL
18. 1" STEAM HOSE
19. 1" COLLAR LOCK BOLT CLAMP, PLATED DUCTILE IRON
20. 1" HAMMER LOCK ASSEMBLY, ZINC PLATED DUCTILE IRON
21. 1" F NPT UNION, SS
22. 1" NPT CLOSE NIPPLE, SS
23. 1" NPT BALL VALVE, SS
24. 1" M NPT 2" LONG NIPPLE
25. 1" NPT STREET ELBOW, GALV.
26. 1" F NPT WELDOLET, CARBON STEEL
27. 2" TO 3" Ø STEAM HEADER, CARBON STEEL
28. 1" Ø AIR SUPPLY LINE, CARBON STEEL

TEMPERATURE MONITORING POINT



TEMPERATURE COMPONENTS

1. TEMPERATURE SENSOR STRING, 3/8" STRING DIA.
2. 3/8" X 1" M NPT CORD GRIP, NYLON
3. 1-1/2" M NPT X 1" F NPT BUSHING, GALV.
4. 1-1/2" NPT PIPE TEE, GALV.
5. 1-1/2" M NPT X 3/8" F NPT BUSHING, GALV.
6. 3/8" NPT STREET ELBOW, GALV.
7. 3/8" NPT CLOSE NIPPLE, GALV.
8. 3/8" NPT BALL VALVE, BRASS
9. 3/8" M NPT X 1/4" HOSE BARB, BRASS
10. 1-1/2" M NPT CARBON STEEL RISER STICKUP

NOTE: Wellhead details are elevation views.



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PH: 403.569.5100, FX: 403.272.7201

REV.	DATE (MM/YY)	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
C3	2023/09/07	UPDATED TITLE BLOCK	CW	CW	
C2	2023/06/10	FINAL BASED ON MAT.REQ.	JS	JS	CC
C1	2022/01/07	100% DESIGN	JS	CC	CC
B3	2021/10/26	UPDATE VAPOR EXTRACTION HOSE	JS	CC	CC
B2	2021/09/28	90% DESIGN	JS	CC	CC
B1	2021/08/27	60% DESIGN	JS	CC	CC

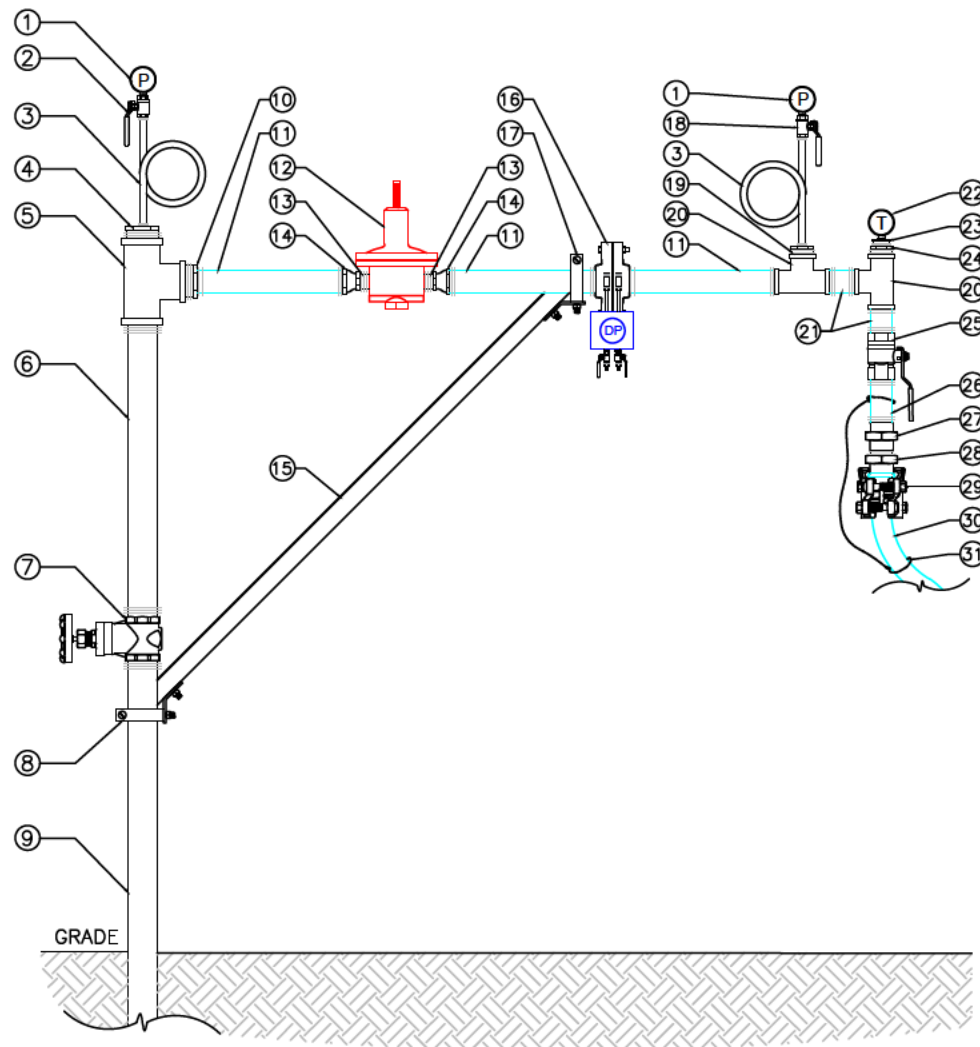
DATE: _____
AREGA PERMIT NUMBER: | P08178
SCALE: NOT TO SCALE

TITLE: **SEE Well Head Details**
CLIENT: **AECOM**

PROJECT: **Roxana Public Works Yard
Roxana, Illinois**

SHEET: **WHD-01**

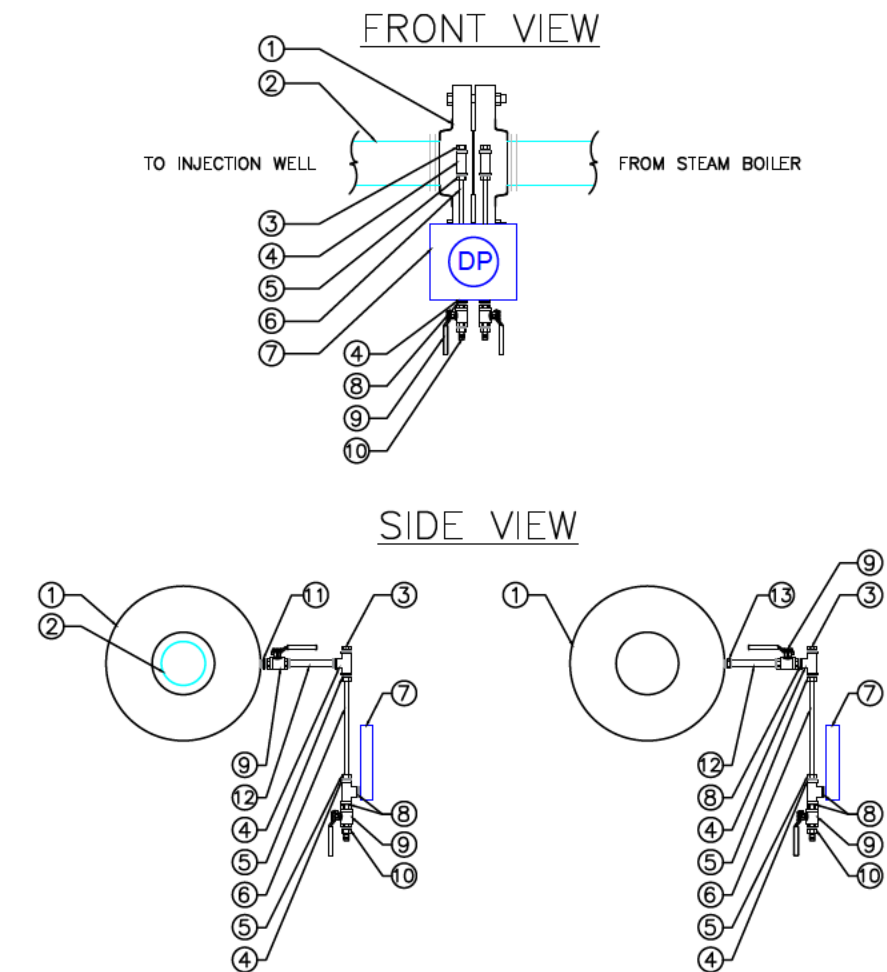
STEAM INJECTION WELL METERING STATION



WELLHEAD COMPONENTS

1. 1/4" M NPT 0-200 PSI DRY BOTTOM MOUNT PRESSURE GAUGE
2. 1/4" NPT FULL PORT BALL VALVE, BRASS
3. 1/4" M NPT PIGTAIL SYPHON, CARBON STEEL
 - 500 PSI PRESSURE RATING
 - 400°F TEMPERATURE RATING
4. 2" M NPT X 1/4" F NPT REDUCER BUSHING, BLACK STEEL
5. 2" NPT PIPE TEE, BLACK STEEL
6. 2" M NPT 2' LONG NIPPLE, BLACK STEEL
7. 2" F NPT GATE VALVE, BRASS
8. 2" CONDUIT HANGER AND 45° ANGLE BRACKET ASSEMBLY
9. 2" M NPT RISER STICKUP, CARBON STEEL
10. 2" M NPT X 1' F NPT REDUCER BUSHING, BLACK STEEL
11. 1" M NPT 1' LONG NIPPLE, BLACK STEEL
12. 1/2" F NPT STEAM PRESSURE REGULATOR, 10-30 PSI OUTLET PRESSURE, CAST IRON
13. 1/2" M NPT CLOSE NIPPLE, BLACK STEEL
14. 1" F NPT X 1/2" F NPT REDUCER COUPLING, BLACK STEEL
15. UNISTRUT BRACE
16. ORIFICE PLATE METERING ASSEMBLY:
 - #150 FF THREADED A105 CORNER TAP FLANGE (1/8" TAP), CARBON STEEL
 - DIFFERENTIAL PRESSURE GAUGE, 0-5 PSI DP
 - ECCENTRIC ORIFICE PLATE COMPLETE WITH WEEP HOLE (SIZED FOR 150 PSI SYSTEM)
17. 1" CONDUIT HANGER AND 45° ANGLE BRACKET ASSEMBLY
18. 1/4" NPT FULL PORT BALL VALVE, STAINLESS STEEL
19. 1" M NPT X 1/4" F NPT REDUCER BUSHING, BLACK STEEL
20. 1" NPT PIPE TEE, BLACK STEEL
21. 1" M NPT 2" LONG NIPPLE, BLACK STEEL
22. 1/2" M NPT 50-500°F TEMPERATURE GAUGE
23. 3/4" M NPT X 1/2" F NPT THERMOWELL, STAINLESS STEEL
24. 1" M x 3/4" F REDUCER BUSHING
25. 1" NPT FULL PORT BALL VALVE, STAINLESS STEEL
26. 1" M NPT 3-1/2" LONG NIPPLE, BLACK STEEL
27. 1" F NPT UNION, STAINLESS STEEL
28. 1" M NPT HAMMER LOCK ASSEMBLY, ZINC PLATED DUCTILE IRON
29. 1" COLLAR LOCK ASSEMBLY, PLATED DUCTILE IRON
30. 1" GREENLINE G572-100 EPDM STEAM HOSE
31. SAFETY LANYARD

ORIFICE PLATE METERING ASSEMBLY DETAILS



ORIFICE PLATE COMPONENTS

1. 1" F NPT #150 FF THREADED CORNER TAP FLANGE ASSEMBLY COMPLETE WITH ECCENTRIC ORIFICE PLATE
2. 1" M NPT 1' LONG NIPPLE, BLACK STEEL
3. 1/4" M NPT PLUG, BRASS
4. 1/4" NPT PIPE TEE, BRASS
5. 1/4" M NPT X 1/4" COMPRESSION FITTING, BRASS
6. 1/4" COPPER TUBING, 1' LONG
7. 1/4" F NPT DIFFERENTIAL PRESSURE GAUGE, 0-5 PSI DP
8. 1/4" NPT CLOSE NIPPLE, BRASS
9. 1/4" NPT FULL PORT BALL VALVE, BRASS
10. 1/4" M NPT X 1/4" HOSE BARB, BRASS
11. 1/8" M NPT X 1/4" M NPT REDUCER COUPLING, BRASS
12. 1/4" M NPT 6" LONG NIPPLE, BRASS
13. 1/8" M NPT X 1/4" F NPT REDUCER COUPLING, BRASS



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PH: 403.569.5100, FX: 403.272.7201

REV.	DATE	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
C4	2023/09/08	UPDATED TITLE BLOCK	CW	CW	
C3	2023/08/07	UPDATED TITLE BLOCK	CW	CW	
C2	2023/06/16	FINAL BASED ON MAT. REQ.	JS	JS	CC
C1	2022/01/07	100% DESIGN	JS	CC	CC
B3	2021/10/26	UPDATE STEAM HOSE SPECS.	JS	CC	CC
B2	2021/09/28	90% DESIGN	JS	CC	CC
REV.	DATE	DESCRIPTION	DRAWN BY	CHKD BY	APPROVED BY
	(DD/M/YY)				

APEGA PERMIT NUMBER: P08178 SCALE: NOT TO SCALE

TITLE: **SEE Well Head Details**
CLIENT: **AECOM**

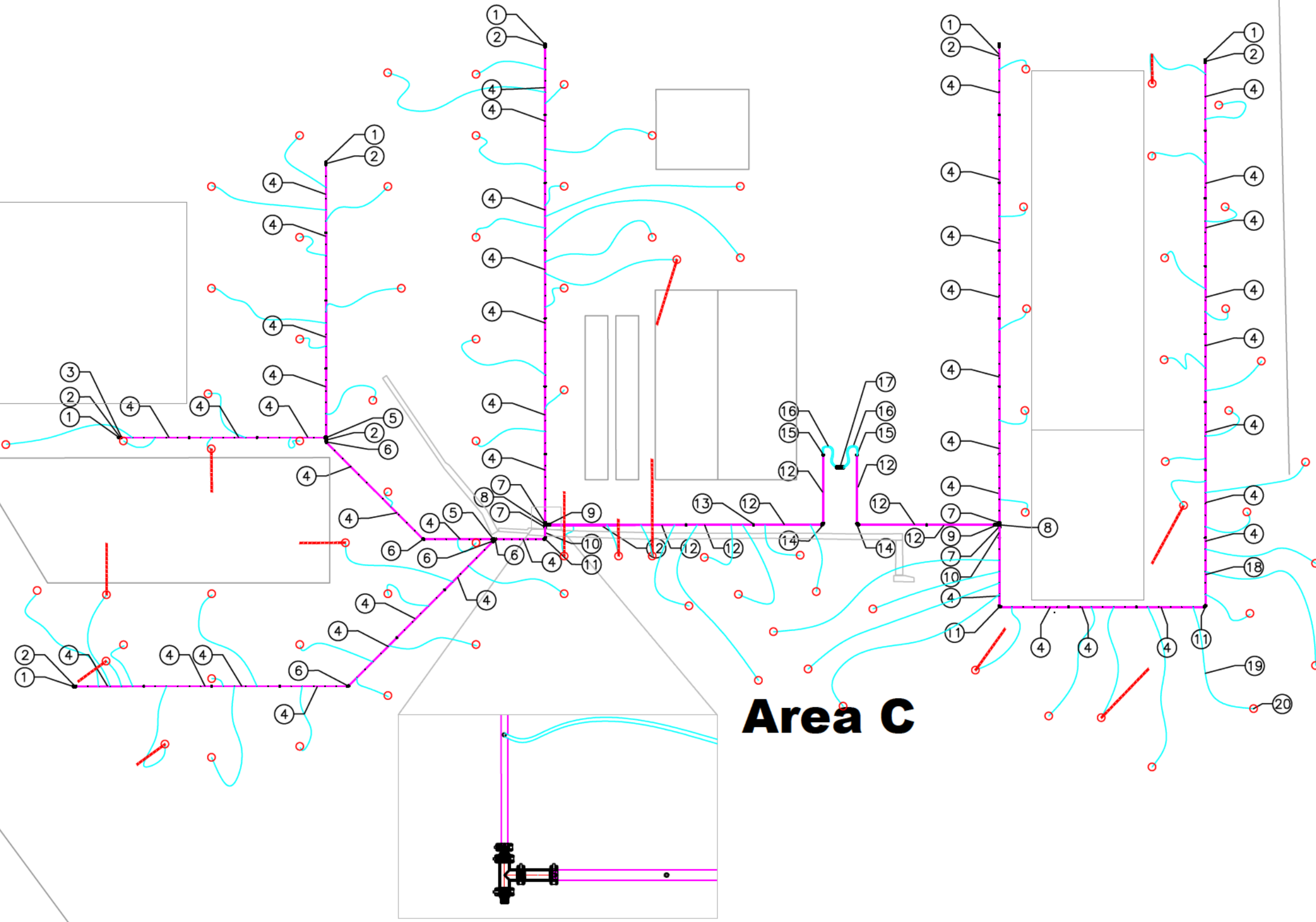
PROJECT: **Roxana Public Works Yard
Roxana, Illinois**

SHEET: **WHD-02**

Area A

Area B

Area C



STEAM PIPING COMPONENTS

1. 2" VICTAULIC CAPS, PART No. 860C
2. 2" VICTAULIC DRIP LEG, PART No. 892C, SEE SPD-02
3. 2" VICTAULIC COUPLING, USED AT EVERY 2" TO 2" CONNECTION POINT, PART No. 870
4. 2" CARBON STEEL PIPE, 20' SEGMENT COMPLETE WITH:
 - A. GROOVES COMPATIBLE WITH 2" VICTAULIC FITTINGS; AND
 - B. 5 EVENLY-SPACED 1" NPT THREADED WELDLET CONNECTIONS
5. 2" VICTAULIC TEE, PART No. 820C
6. 2" VICTAULIC 45 DEGREE ELBOW, PART No. 811C
7. 2" x 3" VICTAULIC CONCENTRIC REDUCER, PART No. 850C
8. 3" VICTAULIC TEE, PART No. 820C
9. 3" VICTAULIC DRIP LEG, PART No. 892C SEE SPD-02
10. 2" CARBON STEEL PIPE, 3' SEGMENT COMPLETE WITH:
 - A. GROOVES COMPATIBLE WITH 2" VICTAULIC FITTINGS
11. 2" VICTAULIC 90 DEGREE ELBOW, PART No. 890C
12. 3" CARBON STEEL PIPE, 20' SEGMENT COMPLETE WITH:
 - A. GROOVES COMPATIBLE WITH 3" VICTAULIC FITTINGS; AND
 - B. 5 EVENLY-SPACED 1" NPT THREADED WELDLET CONNECTIONS
13. 3" VICTAULIC COUPLING, USED AT EVERY 3" TO 3" CONNECTION POINT, PART No. 870
14. 3" VICTAULIC 90 DEGREE ELBOW, PART No. 890C
15. 3" VICTAULIC 150# FLANGE ADAPTER NIPPLE, PART No. 845FC
16. 3" STEAM HOSE COMPLETE WITH 150# FLANGE ON BOTH ENDS
17. 3" TEE, FLANGED, DETAILS AND CONNECTION TO BOILER TBD
18. 1" THICK OWENS CORNING INSULATION, 3' LENGTH, TO COVER ALL 2" AND 3" PIPING
19. 1" GREENLINE G572-100 EPDM STEAM HOSE, VARIBALE LENGTHS
20. STEAM INJECTION WELLHEAD CONNECTION, SEE WHD-02



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LPE	C2	2023/10/12	UPDATE WITH 3D INFORMATION	JS	JS	CC
	C1	2023/01/07	100% DESIGN	JS	CC	CC
	C6	2023/09/07	UPDATE TITLE BLOCK	CW	CW	
	C6	2023/07/18	LOCATIONS UPDATE	DN		
	C4	2023/07/17	ADDITIONAL WELLS	DN		
	C3	2023/07/10	AREA C ADDITION	DN		
DATE	REV.	DATE (D/M/Y)	DESCRIPTION	DRAWN BY	ORGI/ENGR	Approved Dist
			APEGA PERMIT NUMBER: P09178			

TITLE:	Steam Piping Details
CLIENT:	AECOM
PROJECT:	Roxana Public Works Yard Roxana, Illinois
SHEET:	SPD-01

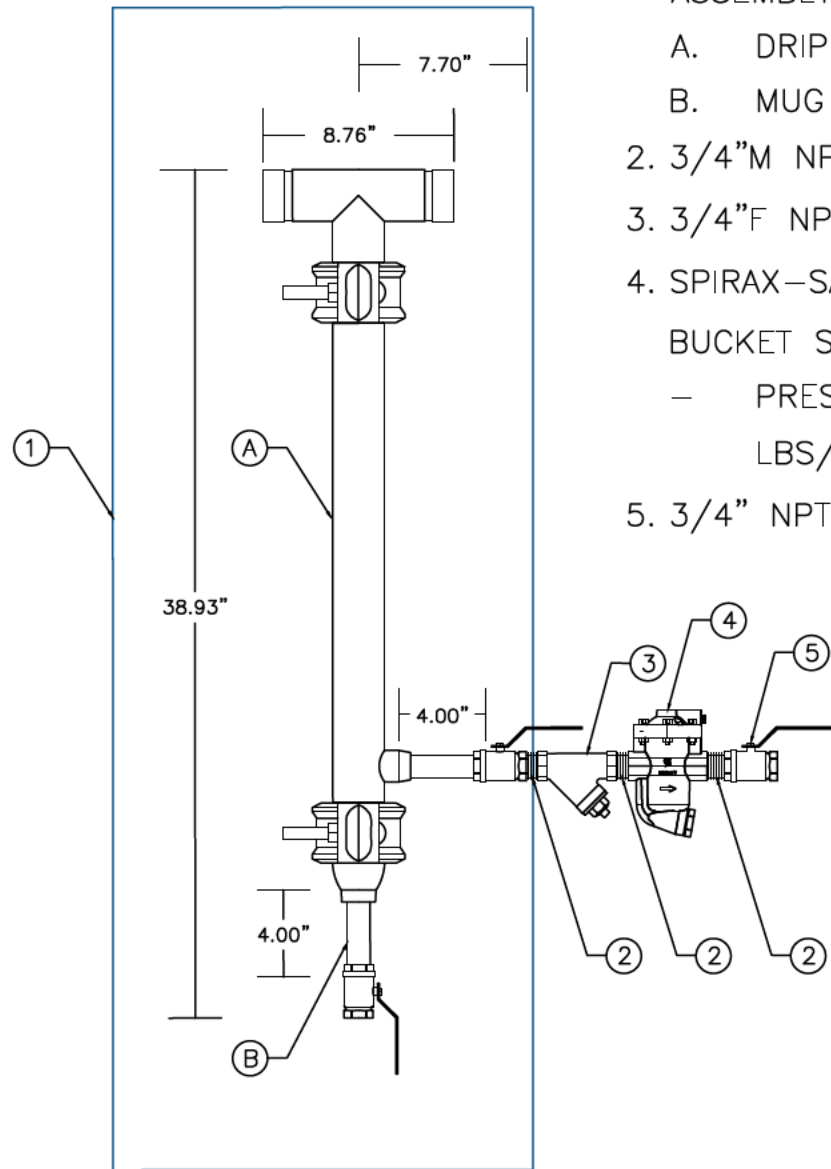
DATE	SCALE	NOT TO SCALE
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PROJECT:	Roxana Public Works Yard Roxana, Illinois
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SHEET:	SPD-01
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2" DRIP LEG AND STEAM TRAP COMPONENTS

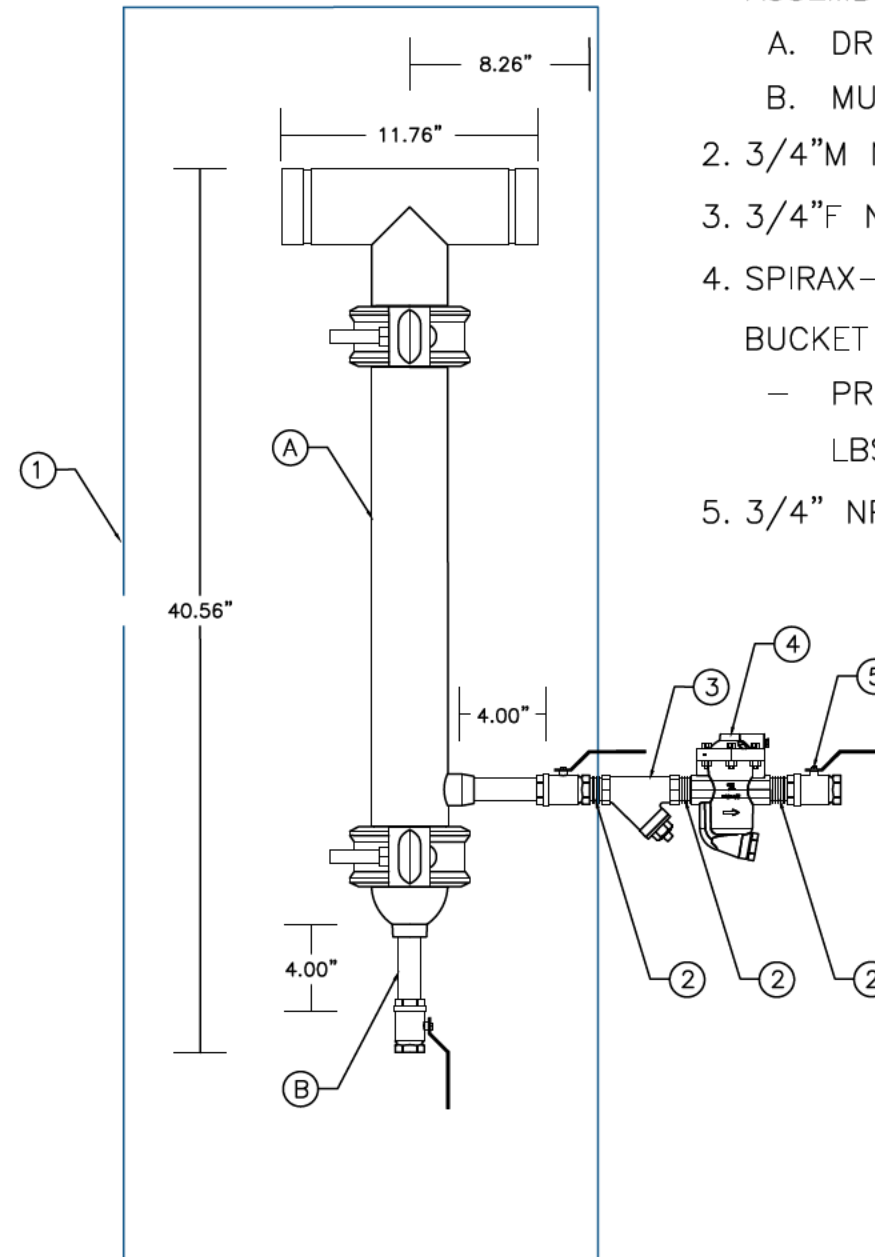
1. 2" VICTAULIC No. 892C SCHEDULE 40
AUTOMATIC WARM UP IN-LINE DRIP LEG
ASSEMBLY
- A. DRIP LEG
- B. MUG TRAP
2. 3/4" M NPT CARBON STEEL NIPPLE
3. 3/4" F NPT CARBON STEEL Y-STRAINER
4. SPIRAX-SARCO H34/7 3/4" INVERTED
BUCKET STEAM TRAP
- PRESSURE RATED TO 175 PSI AT 165
LBS/H OF CONDENSATE
5. 3/4" NPT BALL VALVE, BRASS



2" VICTAULIC DRIP LEG
ASSEMBLY

3" DRIP LEG AND STEAM TRAP COMPONENTS

1. 3" VICTAULIC No. 892C SCHEDULE 40
AUTOMATIC WARM UP IN-LINE DRIP LEG
ASSEMBLY
- A. DRIP LEG
- B. MUD TRAP
2. 3/4" M NPT CARBON STEEL NIPPLE
3. 3/4" F NPT CARBON STEEL Y-STRAINER
4. SPIRAX-SARCO H34/7 3/4" INVERTED
BUCKET STEAM TRAP
- PRESSURE RATED TO 175 PSI AT 165
LBS/H OF CONDENSATE
5. 3/4" NPT BALL VALVE, BRASS

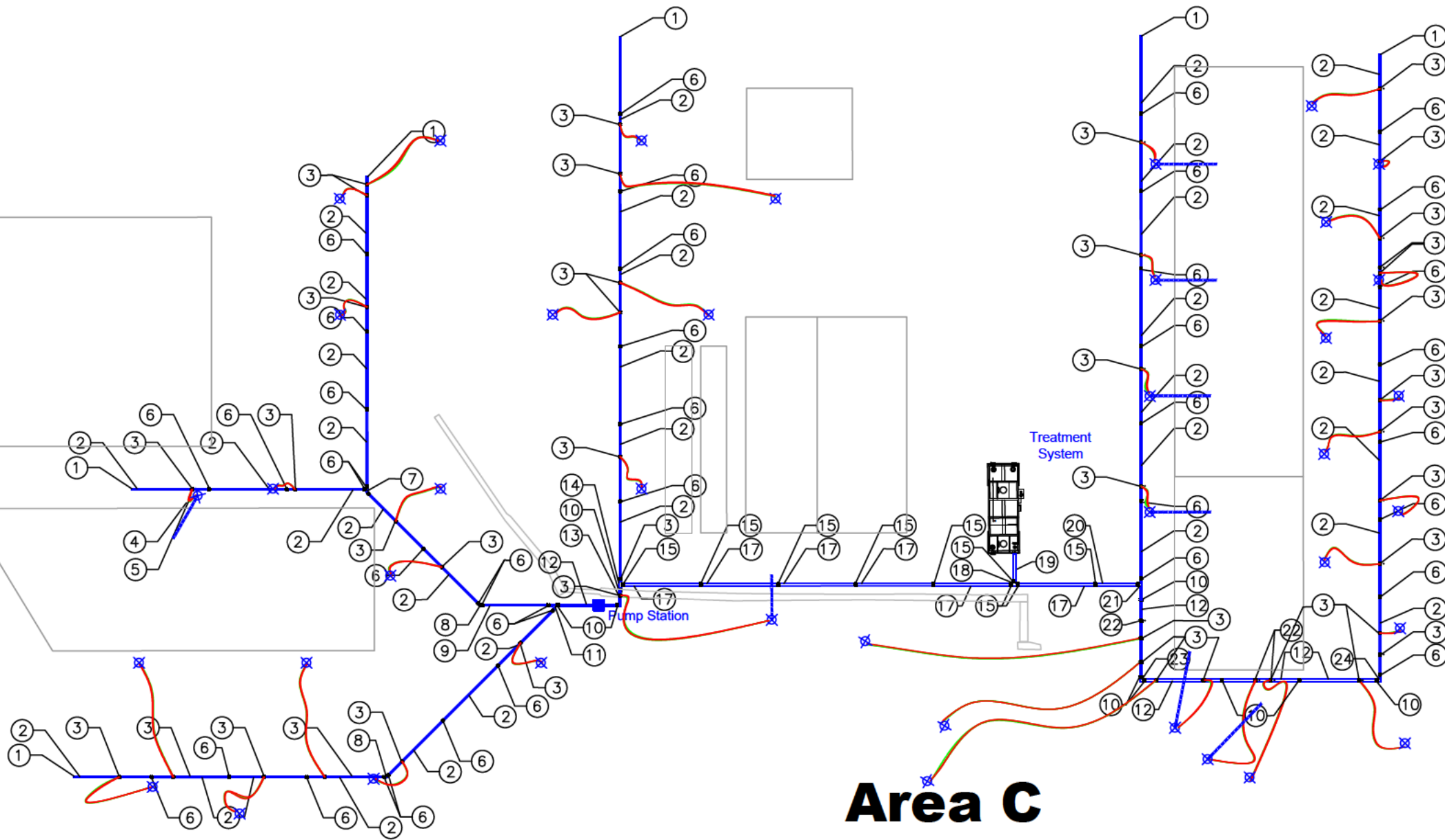


3" VICTAULIC DRIP LEG
ASSEMBLY

Area A

Area B

Area C



EXTRACTION PIPING COMPONENTS

1. 4" CARBON STEEL PIPE CAP
2. 4" CARBON STEEL PIPE, 20' LENGTH
3. 4" PIPE SADDLE WITH 1/2" CONNECTION POINT
4. 1/2" PTFE GROUNDWATER EXTRACTION LINE TO EXTRACTION WELLHEAD, VARIABLE LENGTH
5. 1-1/2" PARKER SERIES 7373T BLUE THUNDER CORRUGATED CHEMICAL SUCTION HOSE VAPOR EXTRACTION LINE TO EXTRACTION WELLHEAD, VARIABLE LENGTH
6. 4" DRESSER COUPLING WITH VITON GASKETS
7. CUSTOM WELDED 4" TEE COMPLETE WITH 45 DEGREE ELBOW
8. CUSTOM WELDED 4" 45 DEGREE ELBOW
9. 4" CARBON STEEL PIPE, 17' LENGTH
10. 6" DRESSER COUPLING WITH VITON GASKETS
11. CUSTOM WELDED TEE COMPLETE WITH 45 DEGREE ELBOW
12. 6" CARBON STEEL PIPE, 20' LENGTH
13. CUSTOM WELDED 6" ELBOW
14. CUSTOM WELDED TEE
15. 8" DRESSER COUPLING WITH VITON GASKETS
16. 8" CARBON STEEL PIPE, 15' LENGTH
17. 8" CARBON STEEL PIPE, 20' LENGTH
18. CUSTOM WELDED TEE
19. 8" CARBON STEEL PIPE, 7' LENGTH
20. 8" CARBON STEEL PIPE, 11' LENGTH
21. CUSTOM WELDED TEE
22. 6" PIPE SADDLE
23. CUSTOM WELDED 6" ELBOW
24. CUSTOM WELDED ELBOW



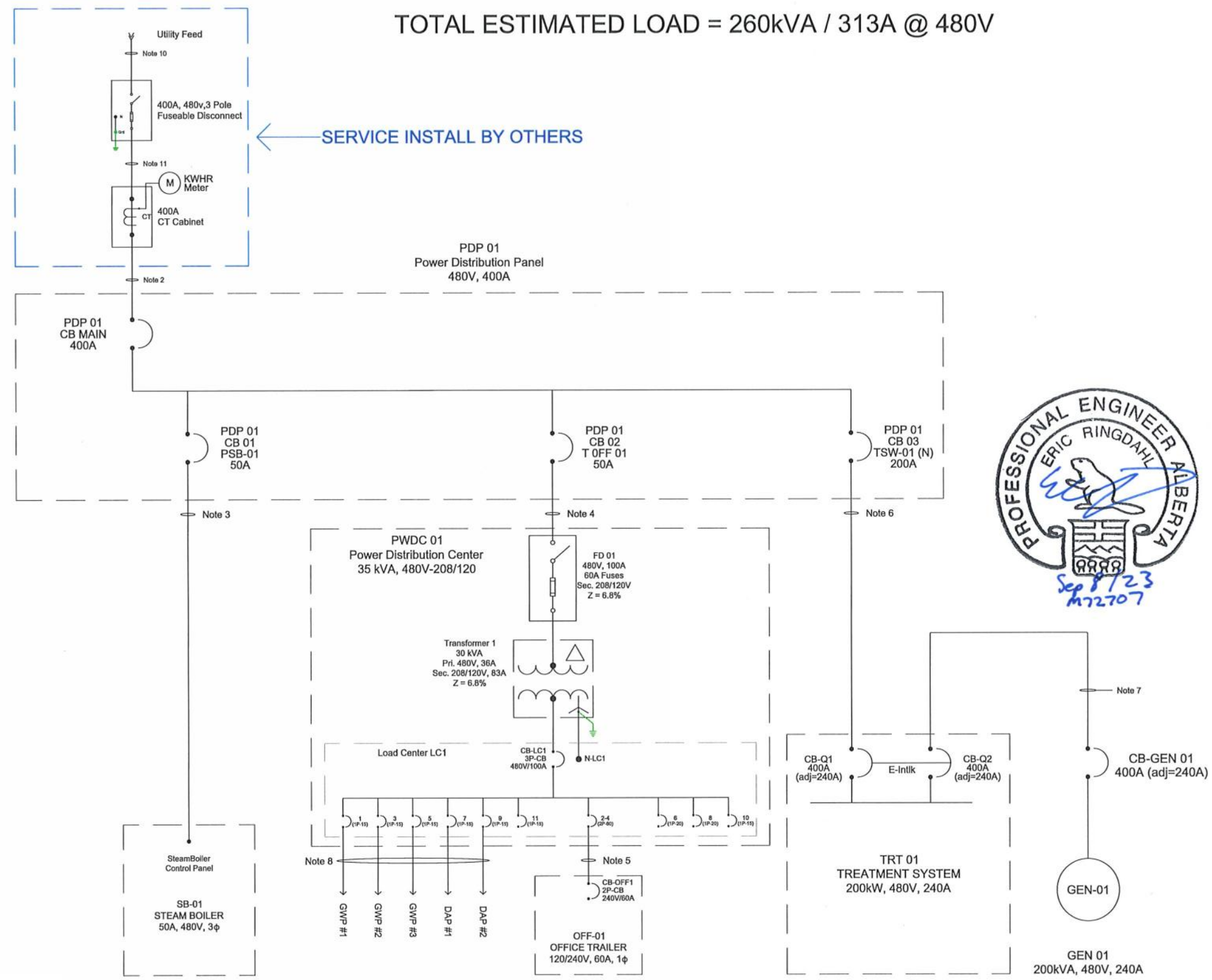
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LPE	C2	2022/10/13	UPDATE WITH 3D INFORMATION	JS	JS	CC
	C1	2022/01/07	100% DESIGN	JS	CC	CC
	C6	2023/09/07	UPDATE TITLE BLOCK	DW	DW	
	C6	2023/07/18	LOCATIONS UPDATE	DN		
	C4	2023/07/17	ADDITIONAL WELLS	DN		
	C3	2023/07/10	AREA C ADDITION	DN		
DATE	REV.	DATE (DD/M/YY)	DESCRIPTION	DRAWN BY	ENGR	Approved Dist
			APEGA PERMIT NUMBER: P09173			

TITLE:	Extraction Piping Details
CLIENT:	AECOM
SCALE:	NOT TO SCALE

PROJECT:	Roxana Public Works Yard Roxana, Illinois
SHEET:	EPD-01

TOTAL ESTIMATED LOAD = 260kVA / 313A @ 480V



General Notes

- Construction and material shall comply with applicable Federal, State, local building codes and the National Electrical Code (NEC).
- Cable from Metering Cabinet to PDP 01 (CB Main): Two (2) 3C-250 kcmil c/w #2 AWG AL Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from PDP 01 (CB 01) to SB-01 Control Panel: One (1) 3C-#4 AWG c/w #6 AWG AL Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from PDP 01 (CB 02) to PWDC - FD01: One (1) 3C-#4 AWG c/w #6 AWG AL Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from PWDC - LC1 to Office trailer OFF-01: One (1) 3C-#4 AWG c/w #6 AWG AL Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from PDP 01 (CB 03) to Treatment System (CB Q1) : One (1) 3C-250 kcmil c/w #2 AWG AL Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from GEN-01 to Treatment System (CB Q2): One (1) 3C-250 kcmil c/w #2 AWG Cu Ground (STR AL NUAL Alcan Type ACWU90 XLPE INS AIA BLK PVC JKT 600V 90C HL CSA C22.2 NO.51, above ground install).
- Cable from each Ground Water Panel (GWP) and Data Acquisition Panel (DAP) from Load Center LC1 to be one 2c #14 AWG CU Teck cable c/w a #14 AWG Cu ground (XLPE/PVC/AIA/PVC). Above ground install.
- All electrical equipment shall be grounded in accordance with NEC.
- Service conductors from Utility feed connection to 400A fused weateproof (NEMA 3R) disconnect: Two (2) parallel runs of the following; Four (4) 3/0 AWG Cu conductors in conduit. (MATERIAL AND INSTALLATION BY OTHERS).
- Service conductors from 400A fused disconnect to Meter cabinet: Two (2) parallel runs of the following; Four (4) 3/0 AWG Cu conductors in conduit. (MATERIAL AND INSTALLATION BY OTHERS).
- SERVICE EQUIPMENT (DISCONNECT, METERING CABINET, CABLE and CONDUITS) MATERIAL AND INSTALLATION BY OTHERS.

PERMIT TO PRACTICE
McMILLAN-McGEE CORP
 RM SIGNATURE: *[Signature]*
 RM APEGA ID #: 187182
 DATE: Sep 8 2023
PERMIT NUMBER: P009178
 The Association of Professional Engineers and Geoscientists of Alberta (APEGA)



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REV.	DATE (YY/MM/DD)	DESCRIPTION	DRAWN	DRG/ ENGR	APPR/ DIST
C2	2023/09/30	100% DESIGN	DP	CC	ER
C1	2022/01/07	100% DESIGN	DP	CC	CC
B1	2021/09/28	90% DESIGN	DP	CC	CC
A1	2021/08/26	DRAFT FOR REVIEW	DP	CC	CC
DATE		APEGA PERMIT NO. P09178		SCALE: NOT TO SCALE	

TITLE: **ELECTRICAL SINGLE LINE**
 CLIENT: **AECOM**

PROJECT: **Roxana Public Works Yard
 Roxana, Illinois**

SHEET: **ESL-01**