Appendix N
Alternative Final Cover Demonstration

Streamline Alternative Final Cover Demonstration East Regional Landfill

1.0 Introduction

This document demonstrates the suitability of the "streamlined" approach contained in the *Final Guidance for Water Balance Covers in Colorado* ([Guidance], Colorado Department of Public Health and Environment, March 2013) for the East Regional Landfill (ERL). ERL is proposing this alternative to provide a consistent, technically-based final cover that can be uniformly constructed over the entire filled area. This Alternative Final Cover (AFC) system will replace the approved final cover system as described below.

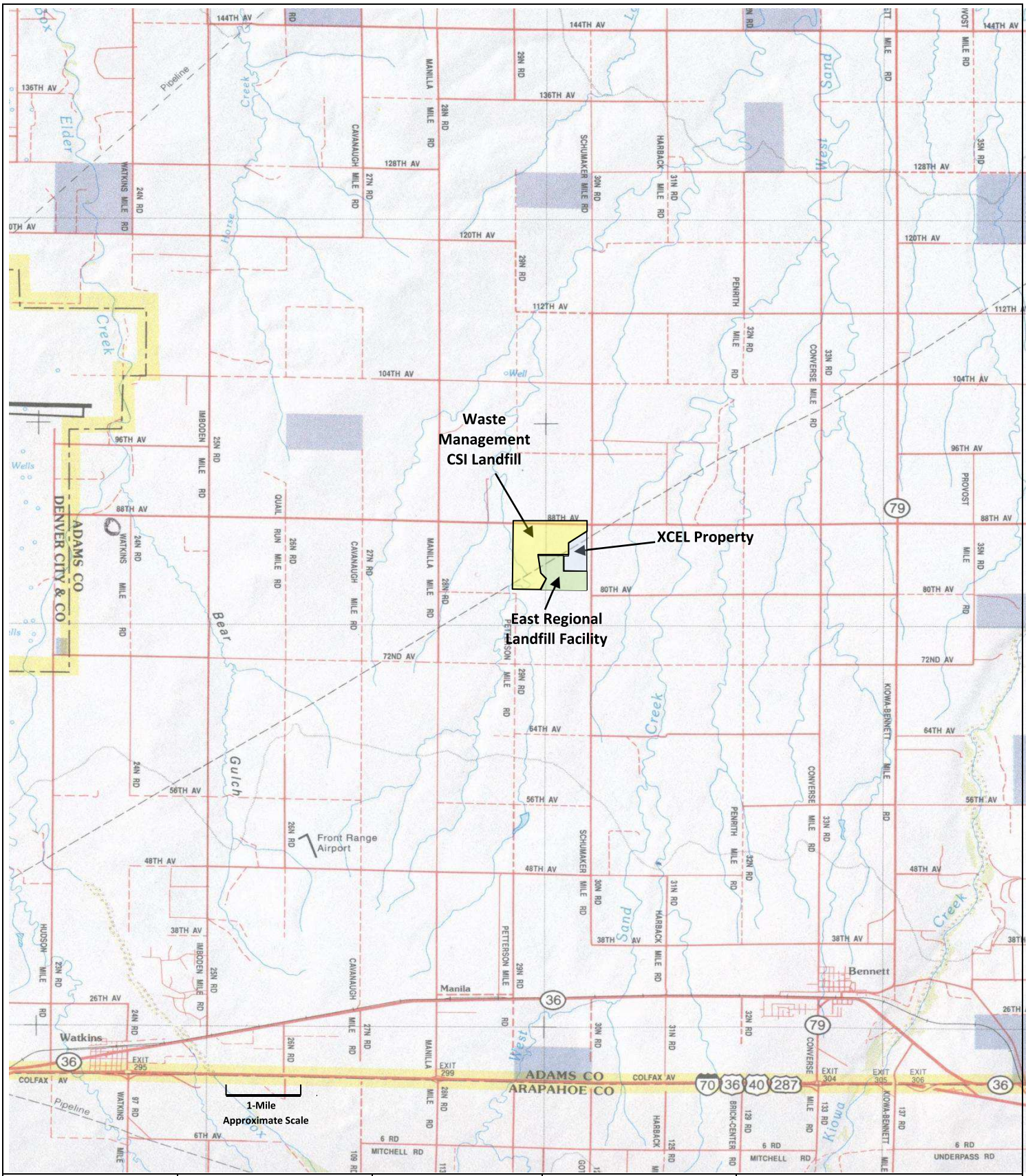
ERL is a municipal solid waste disposal facility located in Bennett, Colorado (Figure 1). The landfill is situated in an area of relatively-flat topography. The area covered under the CD consists of approximately 164 acres, of which approximately 142 acres are designated for actual waste disposal that will require construction of a cap. The remaining portions of the site consist of buffer and landscape areas, stormwater controls, and support facilities.

The property to the immediate north and west is owned by Waste Management that will eventually be incorporated into its industrial waste landfill. The property to the north east is owned by XCEL Energy and is currently permitted for fly-ash disposal; however, the land remains undeveloped with no construction or operations ever completed on it. The property to the south consists of 35-acre rural residential parcels.

DOTY and Associates completed an Engineering Design and Operations Plan (EDOP) for the Landfill in June 2006. The original EDOP included a final cover consisting of a monolithic, lightly-compacted, vegetated evapotranspirative cover. The DOTY EDOP proposed the following:

1. The cap would primarily consist of excess excavated materials with silty-sandy-clay and clayey-sand textures.
2. They would be placed as loosely as possible over the intermediate cover with in-place densities estimated to range between 80 to 90 percent of the Standard Proctor maximum dry density.
3. Their moisture contents at placement would be equal to or less than the Standard Proctor optimum.
4. The final evapotranspirative cover thickness would be a minimum of 4 feet, but might range up to 8 feet, depending on soil quantities.
5. After placement of the final cover, the top six inches would be raked and then planted with a seed mixture recommended by the local office of the National Resources Conservation Service. The mixture would include both cool and warm weather species.

A demonstration relative to the adequacy of the above described evapotranspirative cover was to be made to CDPHE and Adams County/Tri-County Health in an updated closure plan.



Proj: Five Part	Drawn by: CJA	AEC	AMERICAN ENVIRONMENTAL CONSULTING, LLC	**FIGURE 1** **GENERAL FACILITY LOCATION** **EAST REGIONAL LANDFILL FACILITY**
Date: May 22, 2012	Reviewed by: MAM			
File: SWMP Fig 1				

2.0 Demonstration

The ERL is located in Ecozone 3 as shown in Figure 2.2.1-1 of the Guidance (Attachment 1). Figure 2.2.1-4 of the Guidance is a United States Department of Agriculture (USDA) Soil Textural Triangle that provides design criteria for water balance covers specific to landfill facilities located in Ecozone 3 (also included in Attachment 1). Four zones are present in Figure 2.2.1-4 based upon differing soil textures. Each zone has a resulting minimum cover thickness of either 2.5 feet, 3.0 feet, 3.5 feet or 4.0 feet.

Fourteen facility samples collected between 2007 and 2014 were subjected to hydrometer testing that produced suitable particle size distributions for classification. The resulting distributions are summarized below.

Sample Identifier	Sample Testing Date	Sample Origin	% Clay (<0.002mm)	% Silt (0.002-0.05mm)	% Sand (>0.05mm)	Figure 2.2.1-4 Min Water Storage Layer Thickness (feet)
FPSS-06	10/07	Soil Liner Stockpile	38	28	34	2.5
FPSS-07	11/07	Soil Liner Stockpile	39	34	27	2.5
FP Gen-4	9/09	Cell 10 Excavation Stockpile	23	17	60	3.5
FP Gen-5	9/09	Cell 10 Excavation	34	24	42	2.5
FP SAND S-2	9/09	Cell 10 Excavation Stockpile	22	16	62	3.5
FP SAND N-3	11/09	Cell 10 Excavation Stockpile	33	16	51	3.0
FP SAND COMP 4	10/09	Cell 10 Excavation Stockpile	29	16	55	3.0
FP SAND COMP 5	11/09	Cell 10 Excavation Stockpile	28	19	53	3.0
FP SAND COMP 6	6/10	Cell 10 Excavation Stockpile	19	21	60	3.5
FP SAND COMP 7	6/10	Cell 10 Excavation Stockpile	23	18	59	3.5
TP-2	1/11	Cell 10 Excavation Stockpile	34	26	40	2.5
TP-3	1/11	Cell 10 Excavation Stockpile	33	24	43	2.5
TP-3 2014	2/14	Module 2 Footprint	18	14	68	3.5
TP-4 2014	2/14	Module 3 Footprint	22	18	60	3.5

Note: All samples had less than 15 percent retained on the #10 (2mm sieve)

The laboratory data sheets are in Attachment 2. The U.S.D.A. particle-size definitions for sand, silt, and clay were used to plot the results on the U.S.D.A. soil textural triangle as required in the Guidance. The soil samples included in this demonstration fall into the USDA Textural Triangle for Ecozone 3 within three of the four water storage layer thicknesses boundaries as shown in Figures 2, Figure 3 and Figure 4.

FIGURE 2 - SAMPLES THAT FALL WITHIN THE 2.5 FOOT MINIMUM THICKNESS - EAST REGIONAL LANDFILL

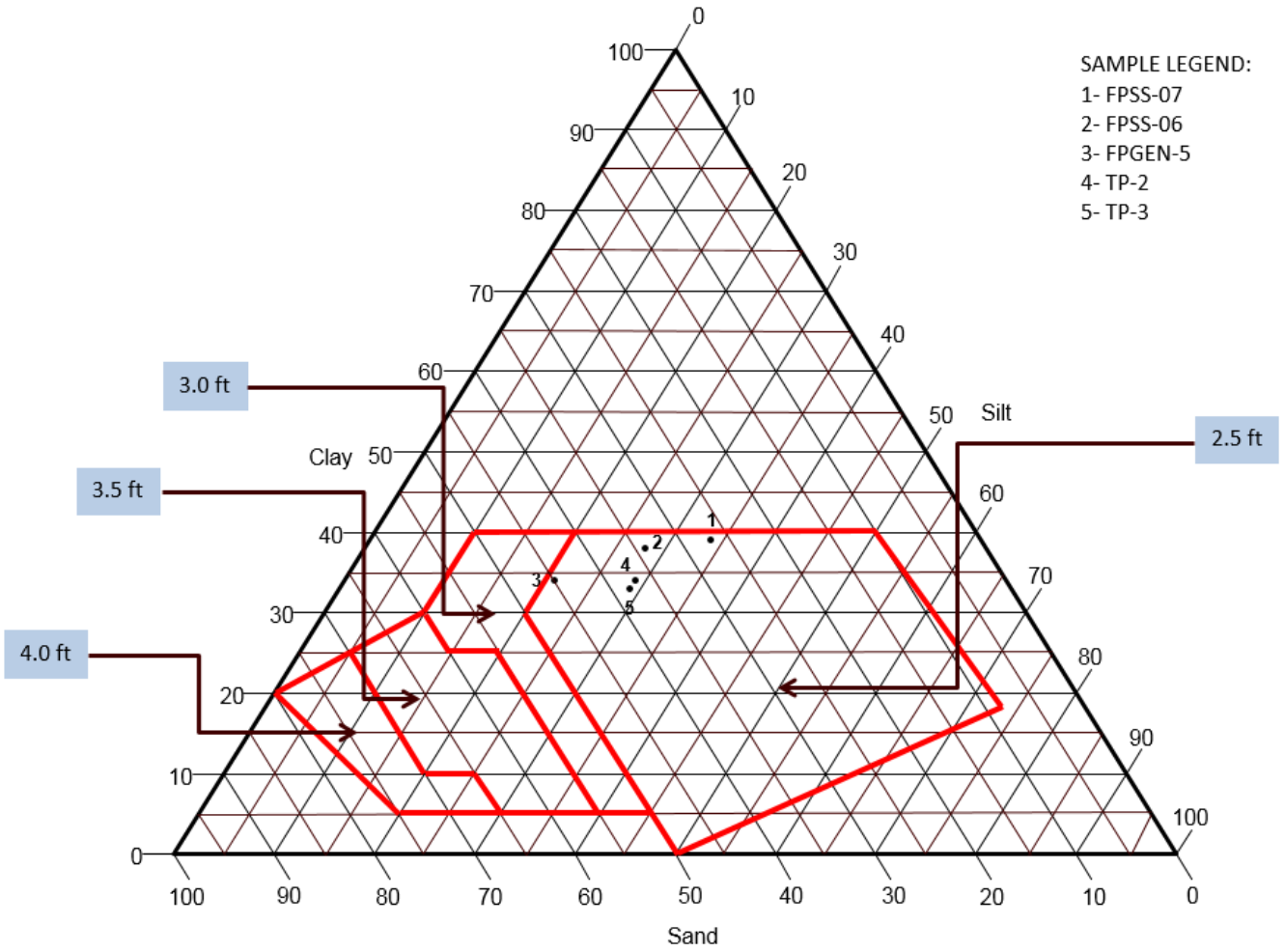


FIGURE 3 - SAMPLES THAT FALL WITHIN THE 3.0 FOOT MINIMUM THICKNESS - EAST REGIONAL LANDFILL

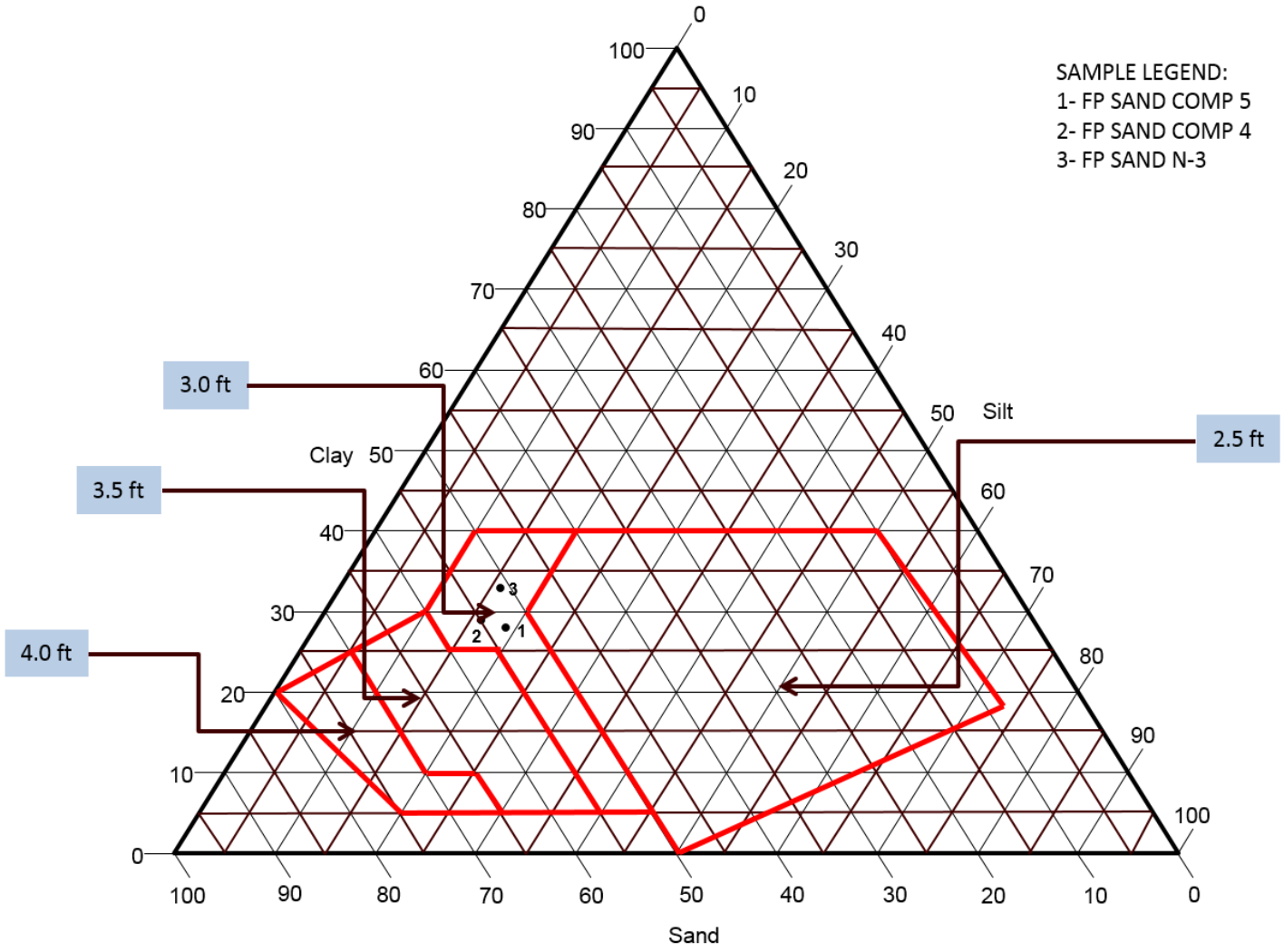
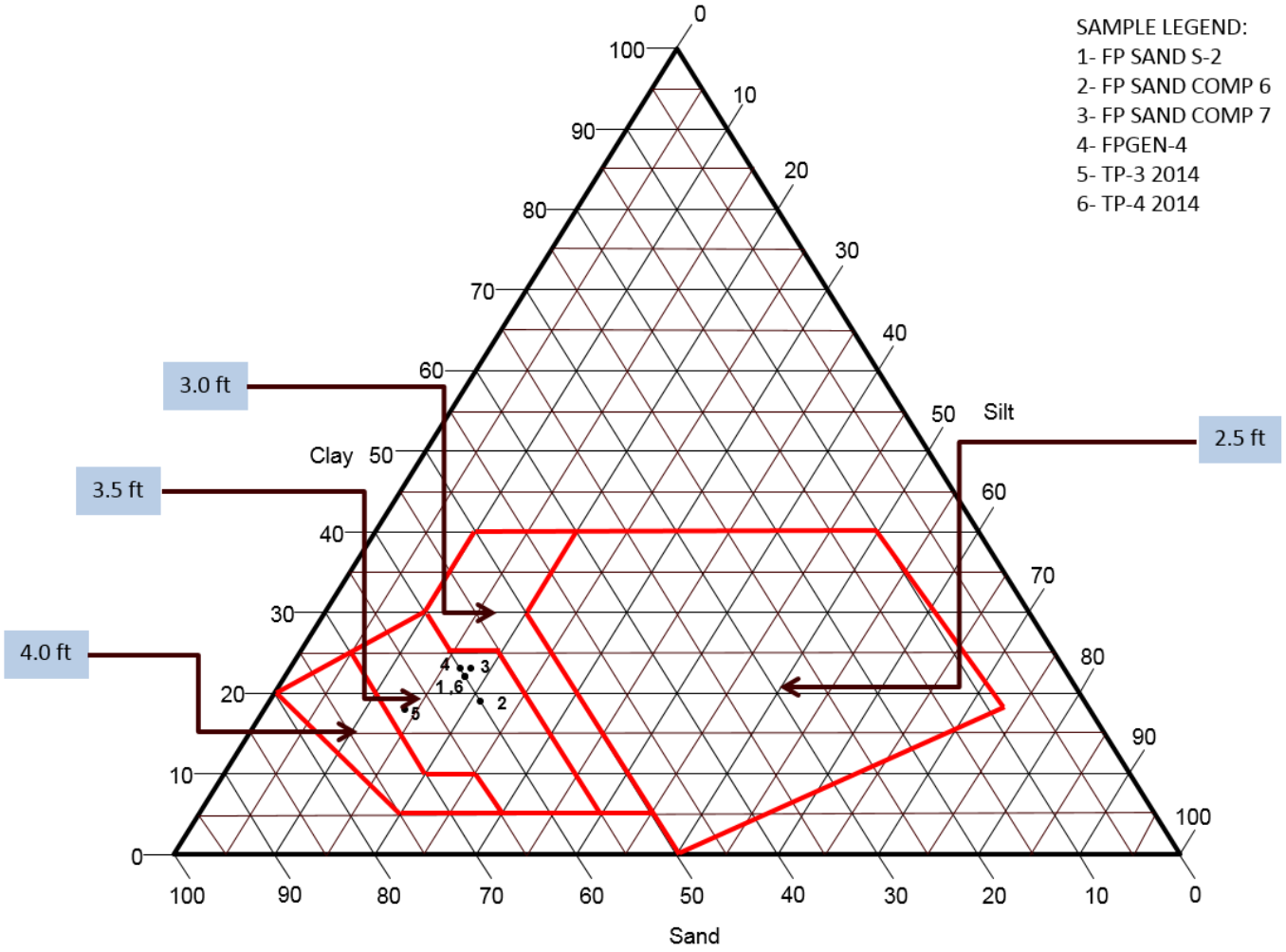


FIGURE 4 - SAMPLES THAT FALL WITHIN THE 3.5 FOOT MINIMUM THICKNESS - EAST REGIONAL LANDFILL



The 14 soil samples fell into the three thickness domains as follows:

- Samples within the 2.5 feet AFC thickness domain of Figure 2.2.1-4 included FPSS-06, FPSS-07, FP Gen-5, TP-2 and TP-3. Samples FPSS-06 and FPSS-07 were collected in 2007 from previously excavated soils that were stockpiled and used for cohesive soil liner during the Cell-10 construction event. Sample FP Gen-5 was collected during the 2009 Cell-10 excavation activities. Samples TP-2 and TP-3 were collected in 2009 from the Cell-10 excavation stockpile that remains on site, and that is periodically use as a source of daily cover as well an excavation stockpile.

- Samples within the 3.0 feet AFC thickness domain of Figure 2.2.1-4 included FP Sand Comp 4, FP Sand Comp 5 and FP Sand N-3. All three samples were collected during the 2009 Cell-10 construction event from the Cell-10 excavation stockpile.

- Samples within the 3.5 feet AFC thickness domain of Figure 2.2.1-4 included FPGen-4, FP-Sand S-2, FP Sand Comp 6, FP Sand Comp 7, TP-3 2014 and TP-4 2014. Samples FPGen-4 and FP-Sand S-2 were collected in 2009 from materials stockpiled during the 2007 Cell-10 excavation. The FP Sand Comp 6 and FP Sand Comp-7 samples were collected in 2010 from the Cell-10 excavation stockpile. Samples TP-3 2014 and TP-4 2014 correspond to 2014 samples collected from test pits within the Module 2 and Module 3 footprint.

Important facts established by the above testing include:

1. All of the samples subjected to hydrometer testing plot within the boundaries of Figure 2.2.1-4, indicating general suitability for use as an AFC cover at the ERL Facility at a minimum thickness of 3.5 feet;
2. None of the samples included greater than 15 percent particles retained 2 mm (#10 sieve) in diameter so they meet the size criteria in bullets one and two of Section 2.2.1 of the Guidance; and
3. The fact that all of the samples tested fell within the acceptable-use area, even though they were collected from disparate source areas and depths, demonstrates an acceptable degree of material homogeneity.

It should be noted that additional samples throughout the site's history have been tested for the percentage of materials retained on the #200 sieve but were not subjected to hydrometer testing so they were not included in this demonstration although the gradation for these samples in the greater than #200 sieve range is similar to the above samples.

3.0 Summary

The soil samples evaluated for this demonstration ranged in texture from sandy clay to silty clayey sand. They all plotted within the acceptable range of Figure 2.2.1-4; however they fell into the 2.5 foot, 3.0 foot and 3.5 foot thickness domains. Based upon this demonstration, ERL proposes to install a 3.5-foot-thick AFC cap.

Plate 4 of the EDOP shows the proposed top of final cover contours for the closed site. These contours were generated for the approved 2011 re-designed grades. The approved EDOP final cover system on the currently-active landfill is 4-foot thick while the proposed AFC is 3.5-feet thick. Both cover systems will overlie the minimum 0.5 foot daily or 1.0 foot intermediate cover that will serve as a foundation layer. ERL proposes to retain the top of cover grades and elevations from the approved EDOP as shown on Plate 4, and it will have to provide minimum of 3.5 vertical feet of AFC cover and a minimum of 0.5-foot of daily or 1.0 foot of intermediate cover foundation soil between the tops of the final grade and the refuse. The upper approximate six-inches of the AFC will be considered a vegetative layer to support revegetation, and it may require amendments in accordance with recommendations from a qualified revegetation expert.

ERL anticipates initiating closure in phases as needed. ERL will complete the following activities as part of each of the cell closing phases during the construction process:

1. Complete regrading, as necessary to smooth the contours at that time to simplify AFC placement and grading;
2. Verify that a minimum of either 0.5 feet of daily cover or 1.0 feet of intermediate cover that form the foundation layer is present over the entire landfill area;
3. Resurvey the area and generate suitable construction drawings for the top of the intermediate cover/foundation layer and the top of the AFC; and
4. Provide copies of the drawings to CDPHE prior to construction for comparison to the as-built conditions submitted in the CQAP report.

Revegetation will be completed using the plan generated by the Natural Resources Conservation Service (NRCS) as included in the EDOP and the CQAP.

surface water control plan for the landfill is included in Appendix E of the EDOP.

ATTACHMENT 1

GUIDANCE DOCUMENT FIGURES

Figure 2.2.1-1 – Colorado Ecozones and Active Municipal Solid Waste Landfills

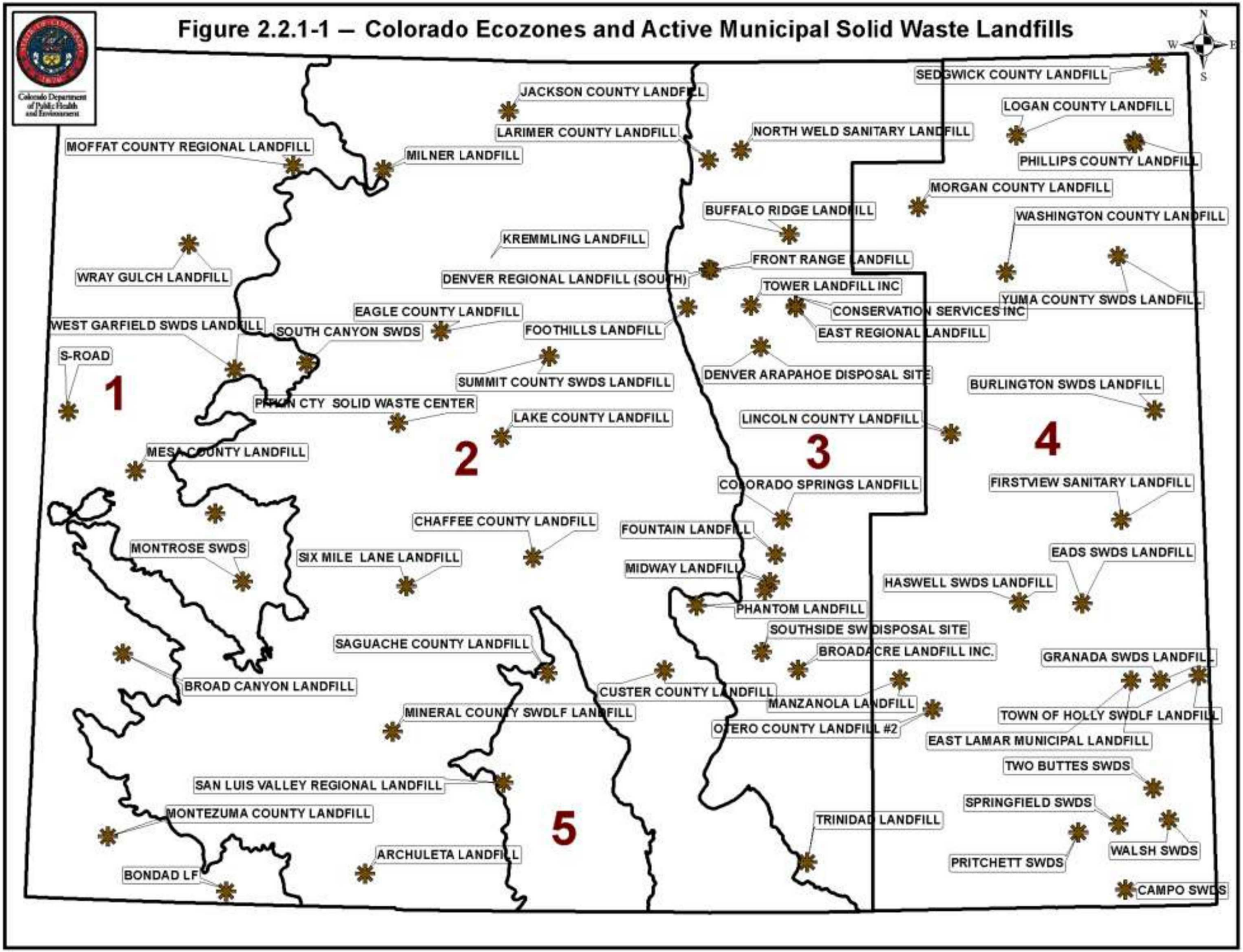
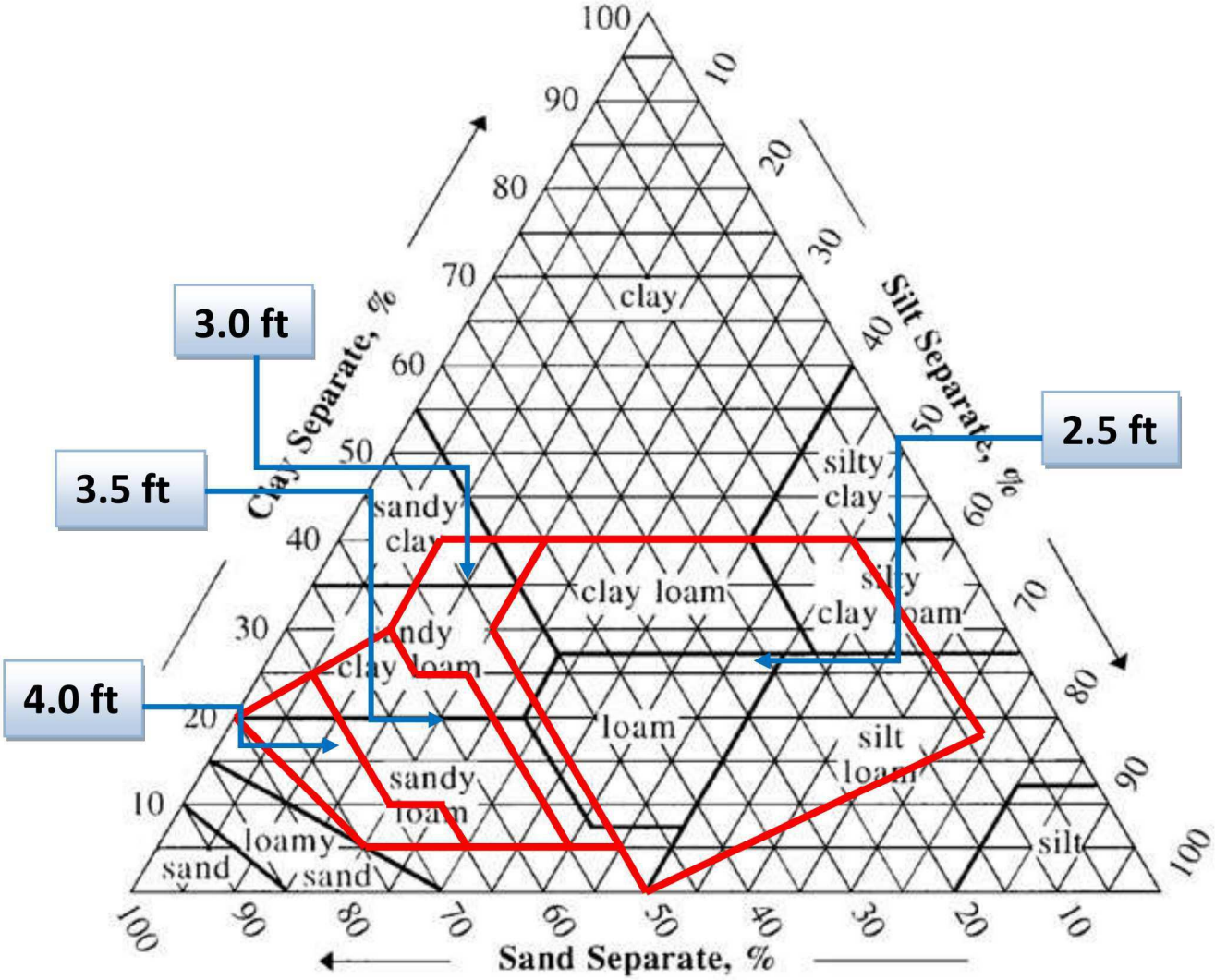


Figure 2.2.1-4
Water Storage Layer Thicknesses for
Ecozone 3



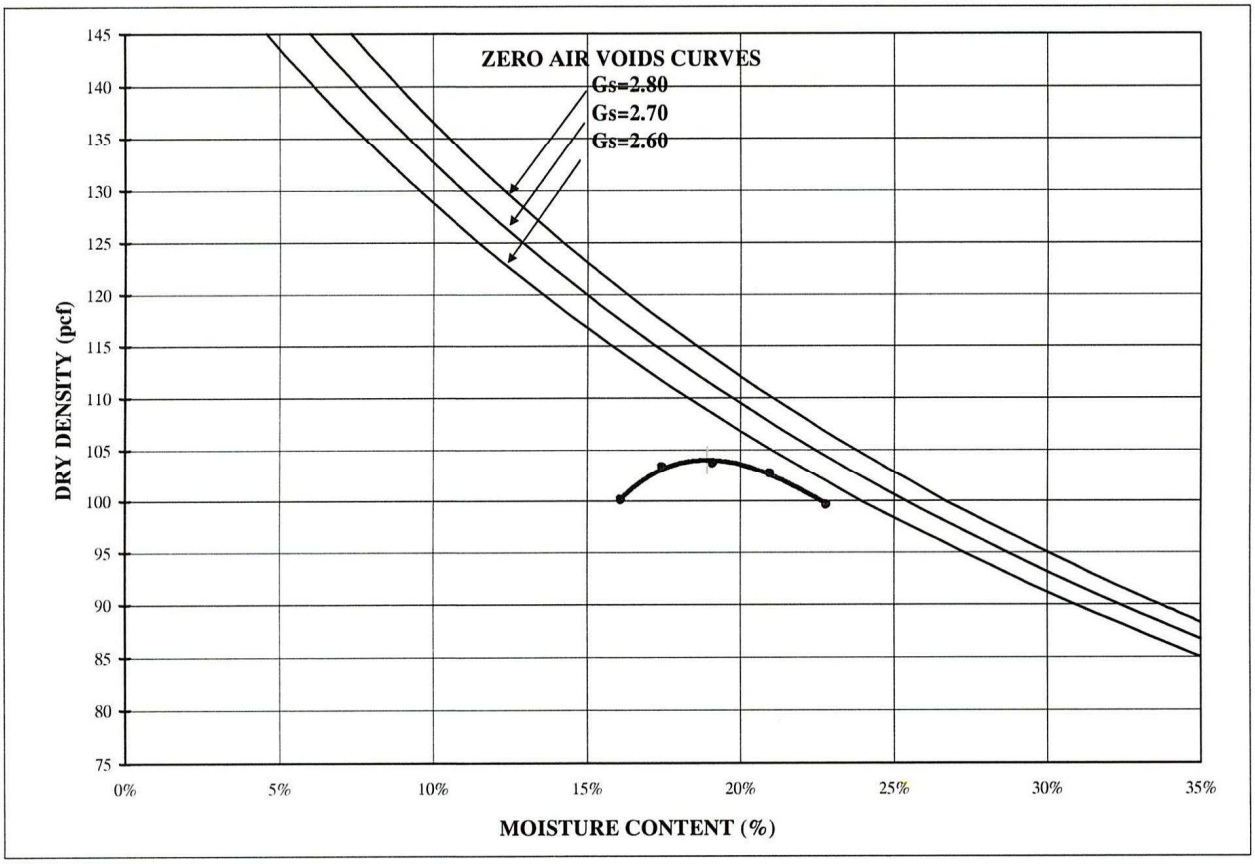
ATTACHMENT 2

SOILS LABORATORY DATA

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **073-815323**
SAMPLE ID: **FPSS-06** DEPTH: **--** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	100.1	16.1%
2	103.3	17.4%
3	103.7	19.1%
4	102.7	21.0%
5	99.7	22.8%

Maximum Dry Density (pcf)	**104.0**
Optimum Moisture (%)	**18.9**
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	**--**
% Passing # 4 sieve	**99.1**
% Passing 3/8" sieve	**99.3**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Dark yellowish brown sandy lean clay

USCS CL

TECH	DS
DATE	10/26/07
REVIEW	MB

October-07

073-815323

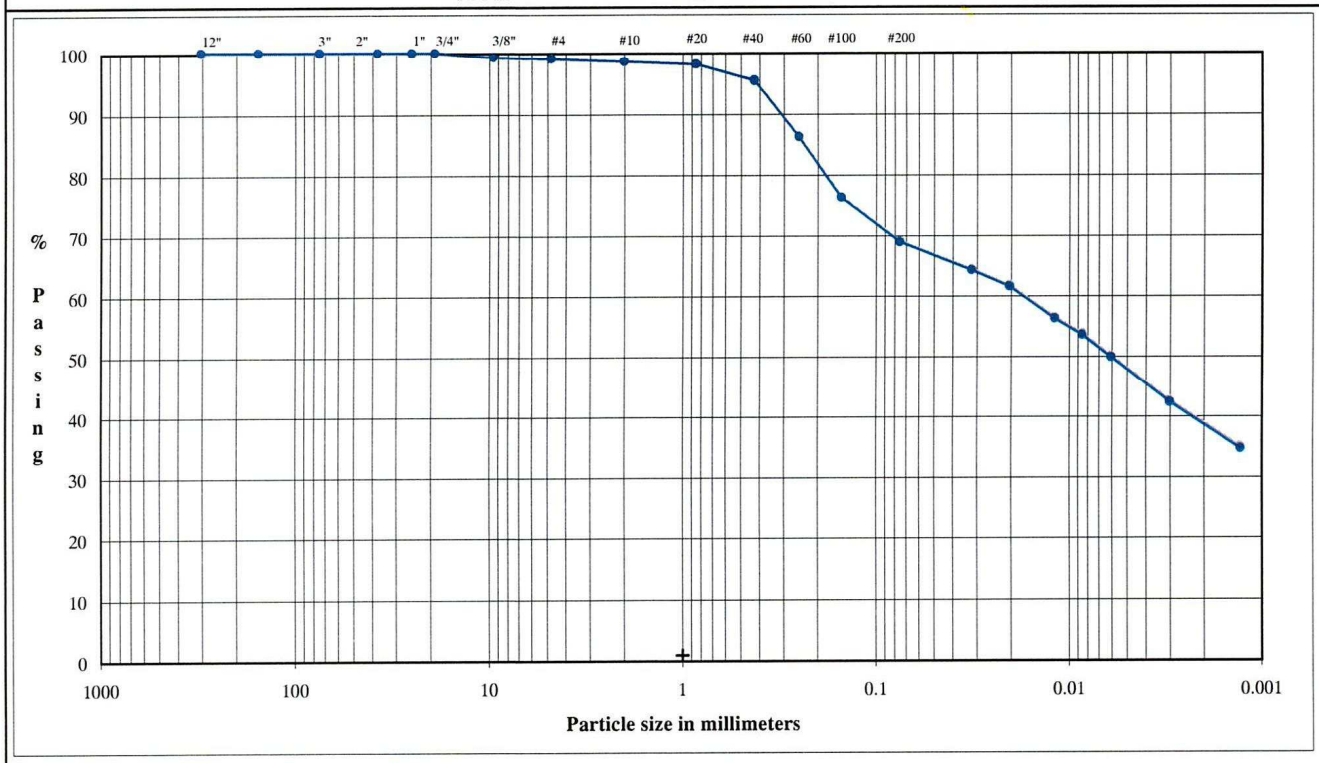
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**

SAMPLE ID: **FPSS-06** Depth (ft): **--**

TYPE: **Pail**



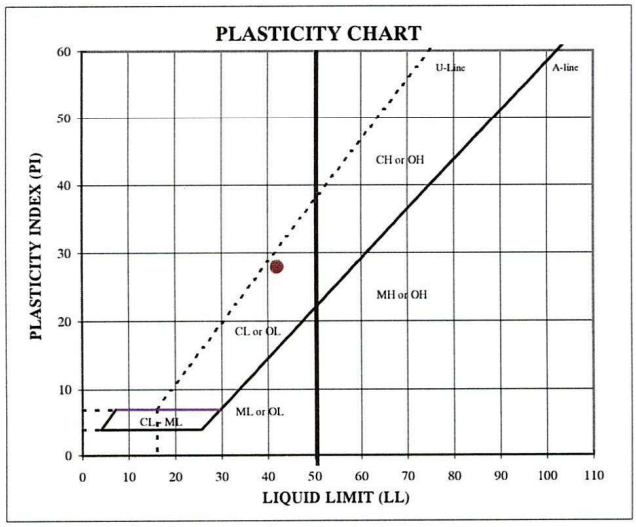
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
12.0"	304.8	**100.0**	Cobbles	**0.00**
6.0"	154.2	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**99.3**		
#4	4.8	**99.1**	Fine Gravel	**0.93**
#10	2.00	**98.6**	Coarse Sand	**0.48**
#20	0.85	**98.2**		
#40	0.43	**95.6**	Medium Sand	**3.04**
#60	0.25	**86.3**		
#100	0.15	**76.4**		
#200	0.075	**69.2**	Fine Sand	**26.38**

Hydrometer Analysis

(mm)	%Finer		
0.032	**64.6**		
0.020	**61.9**		
0.012	**56.6**	Fines	
0.009	**53.9**	Silt or Clay	**69.17**
0.006	**50.2**		
0.003	**42.8**		
0.001	**35.1**		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	**42**	**14**	**28**	**2.70**

DESCRIPTION: Dark yellowish brown sandy lean clay

USCS: CL

TECH	TES
DATE	10/25/2007
REVIEW	MB

November-07

073-815323

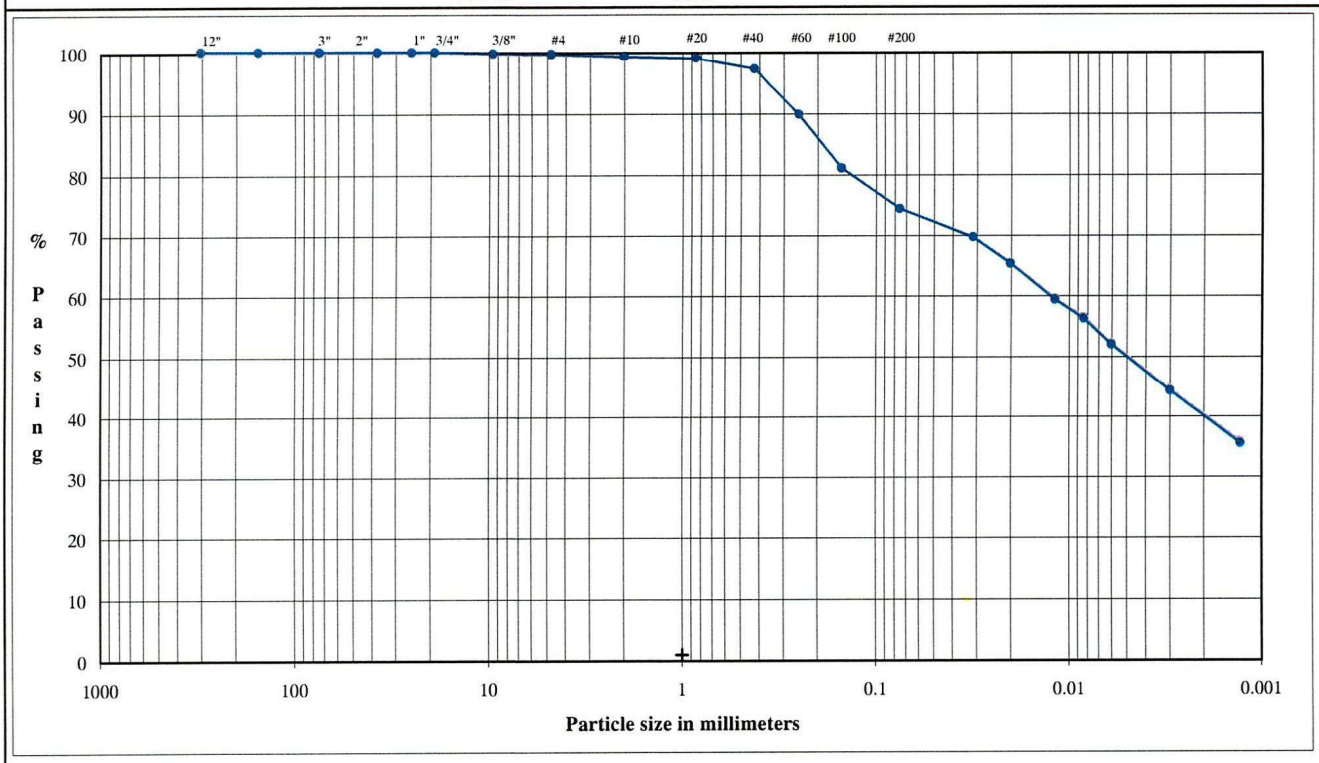
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**

SAMPLE ID: **FPSS-07** Depth (ft): --

TYPE: **Pail**



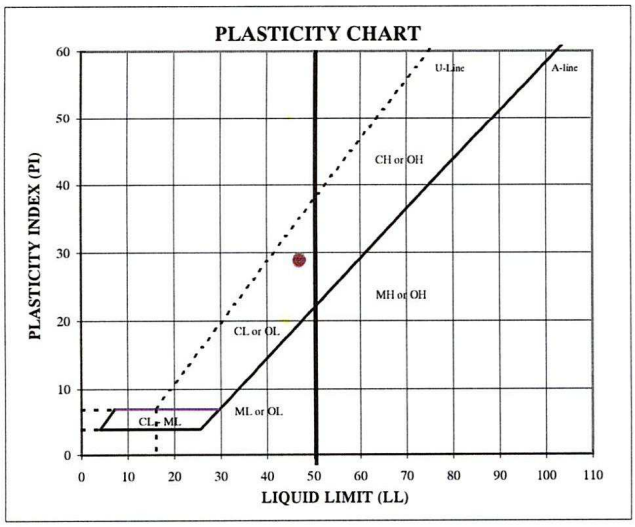
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
12.0"	304.8	**100.0**	Cobbles	**0.00**
6.0"	154.2	**100.0**		
6.0"	154.2	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**99.8**		
#4	4.8	**99.7**	Fine Gravel	**0.29**
#10	2.00	**99.3**	Coarse Sand	**0.37**
#20	0.85	**99.1**		
#40	0.43	**97.3**	Medium Sand	**2.06**
#60	0.25	**89.8**		
#100	0.15	**81.2**		
#200	0.075	**74.5**	Fine Sand	**22.79**

Hydrometer Analysis

(mm)	%Finer		
0.031	**69.8**		
0.020	**65.5**		
0.012	**59.7**	Fines	
0.008	**56.6**	Silt or Clay	**74.49**
0.006	**52.3**		
0.003	**44.6**		
0.001	**36.0**		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	**47**	**18**	**29**	**2.70**

DESCRIPTION: Light olive brown lean clay with sand

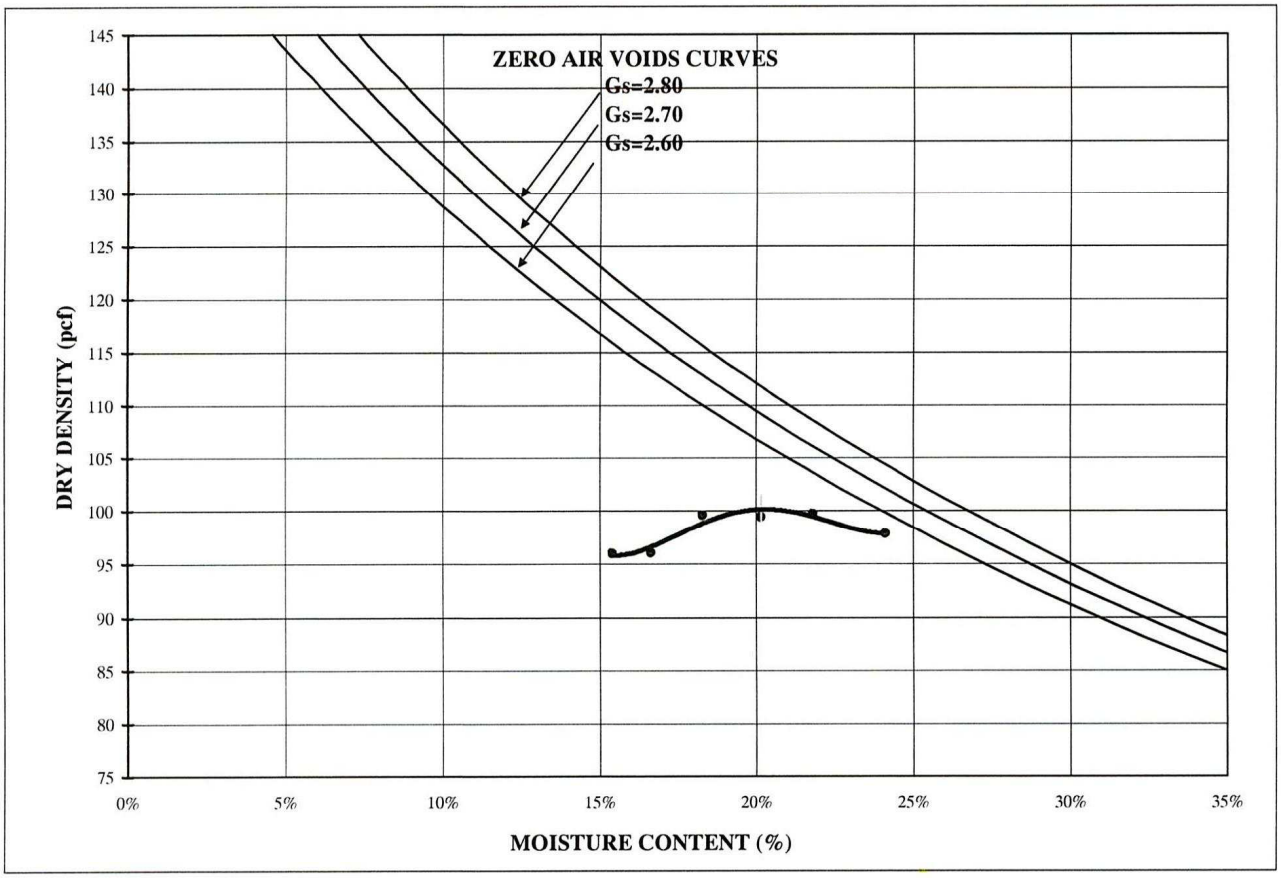
USCS: CL

TECH	TES
DATE	11/14/2007
REVIEW	MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **073-815323**
SAMPLE ID: **FPSS-07** DEPTH: **--** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	95.9	15.4%
2	96.1	16.6%
3	99.6	18.3%
4	99.4	20.2%
5	99.7	21.8%
6	97.8	24.1%

Maximum Dry Density (pcf)	**100.2**
Optimum Moisture (%)	**20.2**
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	**--**
% Passing # 4 sieve	**99.7**
% Passing 3/8" sieve	**99.8**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Light olive brown lean clay with sand

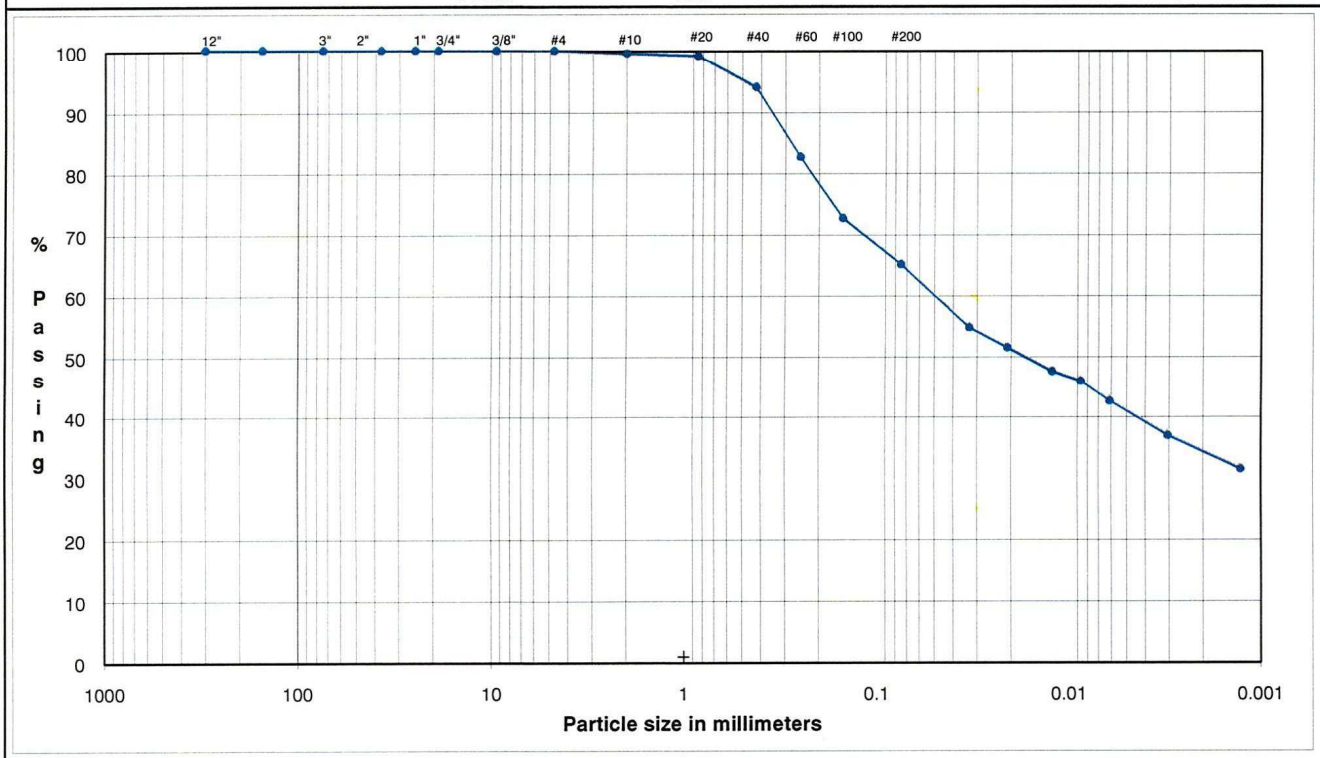
USCS CL

TECH	DS
DATE	11/16/07
REVIEW	CA

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **TP-2** Depth (ft): **1-6**
TYPE: **Pail**



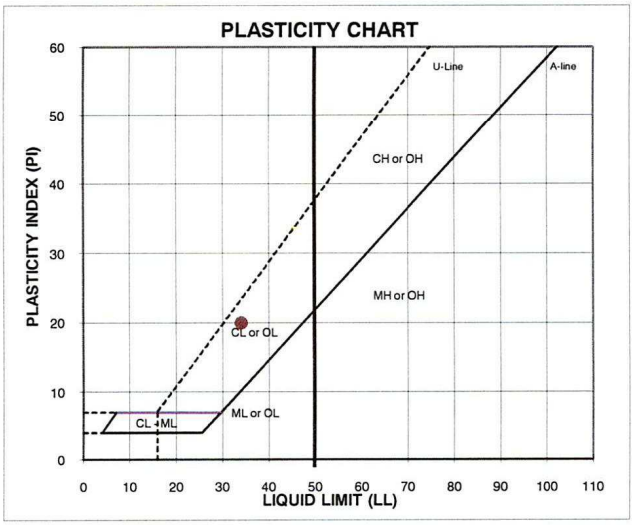
COBBLES	GRAVEL: Coarse	GRAVEL: Fine	SAND: Coarse	SAND: Medium	SAND: Fine	FINES: Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.00	**99.5**	Coarse Sand	**0.45**
#20	0.85	**99.1**		
#40	0.43	**94.1**	Medium Sand	**5.45**
#60	0.25	**82.8**		
#100	0.15	**72.9**		
#200	0.075	**65.4**	Fine Sand	**28.68**

Hydrometer Analysis

(mm)	%Finer		
0.033	**55.1**		
0.021	**51.8**		
0.012	**47.8**	Fines	
0.009	**46.2**	Silt or Clay	**65.43**
0.006	**42.9**		
0.003	**37.2**		
0.001	**31.7**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
--	**34**	**14**	**20**	**2.70**

DESCRIPTION: Olive brown sandy lean clay

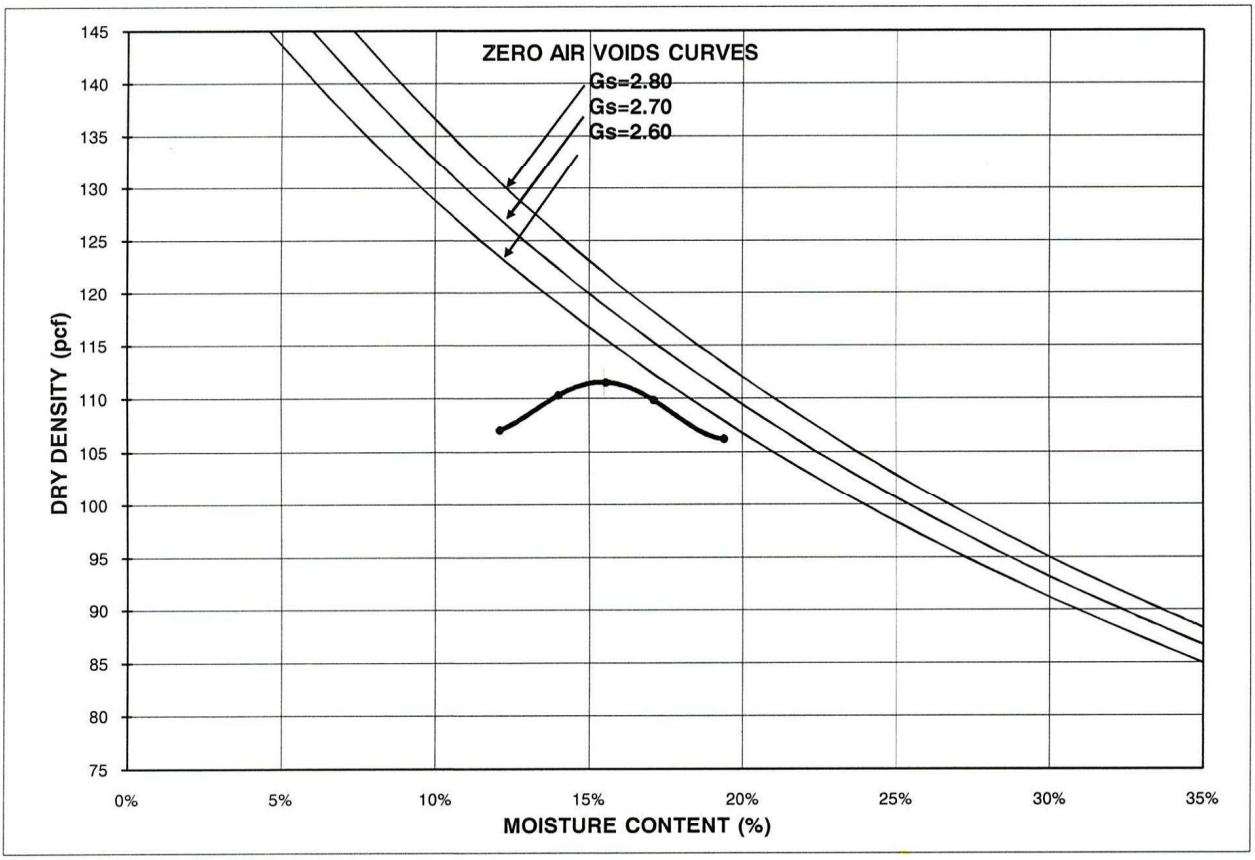
USCS: CL

TECH PRB
DATE 1/20/2011
REVIEW MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **103-816991**
SAMPLE ID: **TP-2** DEPTH: **1-6** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	107.0	12.1%
2	110.3	14.0%
3	111.5	15.6%
4	109.8	17.1%
5	106.2	19.4%

Maximum Dry Density (pcf)	**111.5**
Optimum Moisture (%)	**15.5**
Corrected Maximum Dry Density (pcf)	**--**
Corrected Optimum Moisture (%)	**--**
As-Received Moisture Content (%)	**--**
% Passing #4 sieve	**100.0**
% Passing 3/8" sieve	**100.0**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Olive brown sandy lean clay

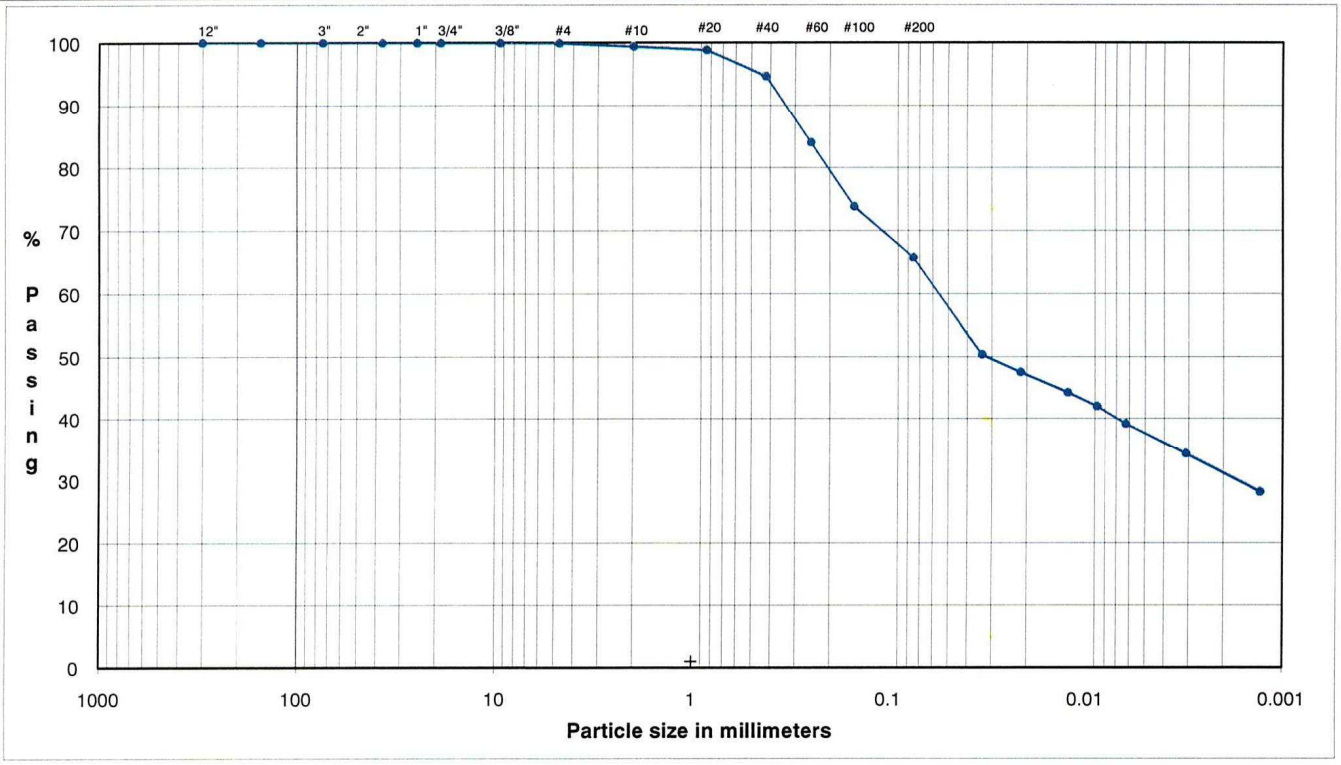
USCS CL

TECH	PA
DATE	1/31/2011
REVIEW	MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **TP-3** Depth (ft): **0-6**
TYPE: **Pail**



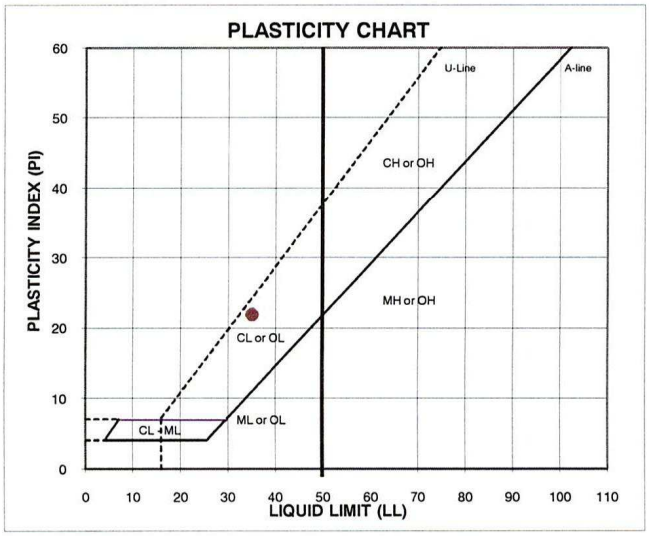
COBBLES	Coarse GRAVEL	Fine GRAVEL	Coarse SAND	Medium SAND	Fine SAND	Silt or Clay FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.00	**99.5**	Coarse Sand	**0.50**
#20	0.85	**99.0**		
#40	0.43	**94.8**	Medium Sand	**4.72**
#60	0.25	**84.1**		
#100	0.15	**73.9**		
#200	0.075	**65.8**	Fine Sand	**28.99**

Hydrometer Analysis

(mm)	%Finer		
0.033	**50.3**		
0.021	**47.5**		
0.012	**44.2**	Fines	
0.009	**42.0**	Silt or Clay	**65.79**
0.006	**39.2**		
0.003	**34.4**		
0.001	**28.3**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
--	**35**	**13**	**22**	**2.70**

DESCRIPTION: Olive brown sandy lean clay

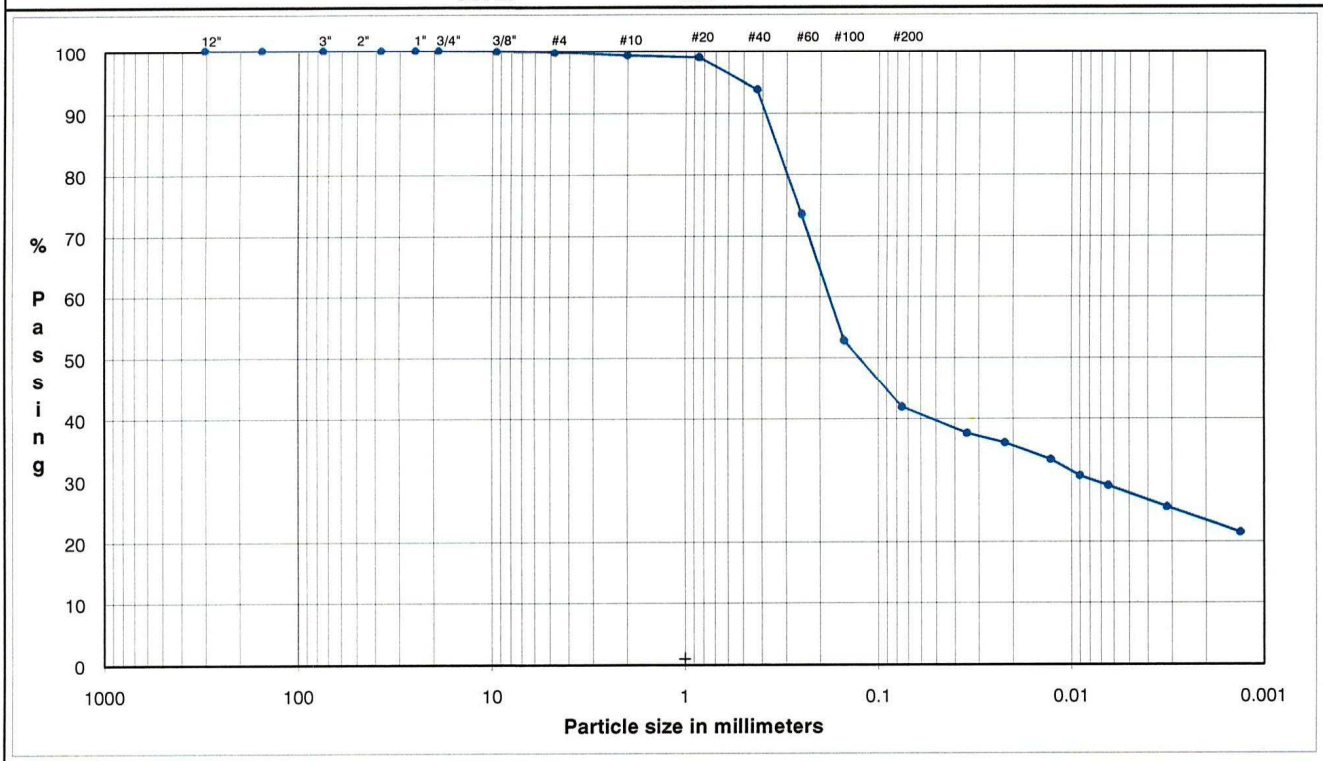
USCS: CL

TECH	PRB
DATE	1/20/2011
REVIEW	MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FPGEN-4** Depth (ft): --
TYPE: **Pail**



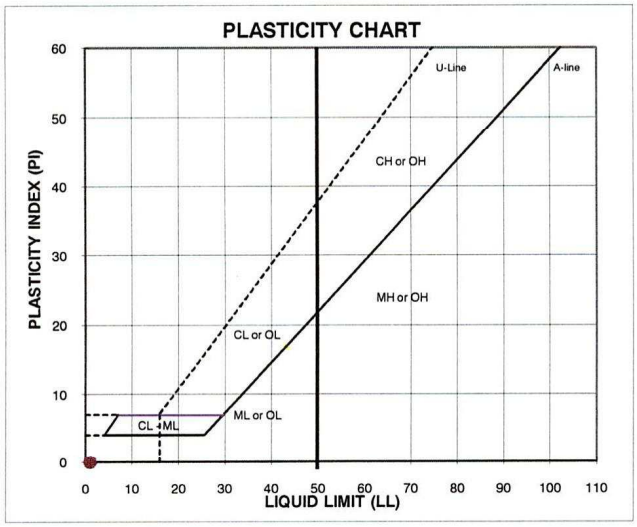
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**99.9**		
#4	4.8	**99.7**	Fine Gravel	**0.32**
#10	2.00	**99.2**	Coarse Sand	**0.46**
#20	0.85	**98.9**		
#40	0.43	**93.8**	Medium Sand	**5.40**
#60	0.25	**73.8**		
#100	0.15	**53.0**		
#200	0.075	**42.1**	Fine Sand	**51.76**

Hydrometer Analysis

(mm)	%Finer		
0.035	**37.8**		
0.022	**36.2**		
0.013	**33.5**	Fines	
0.009	**30.8**	Silt or Clay	**42.06**
0.006	**29.2**		
0.003	**25.7**		
0.001	**21.6**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
--	--	--	--	**2.70**

DESCRIPTION: Light olive brown

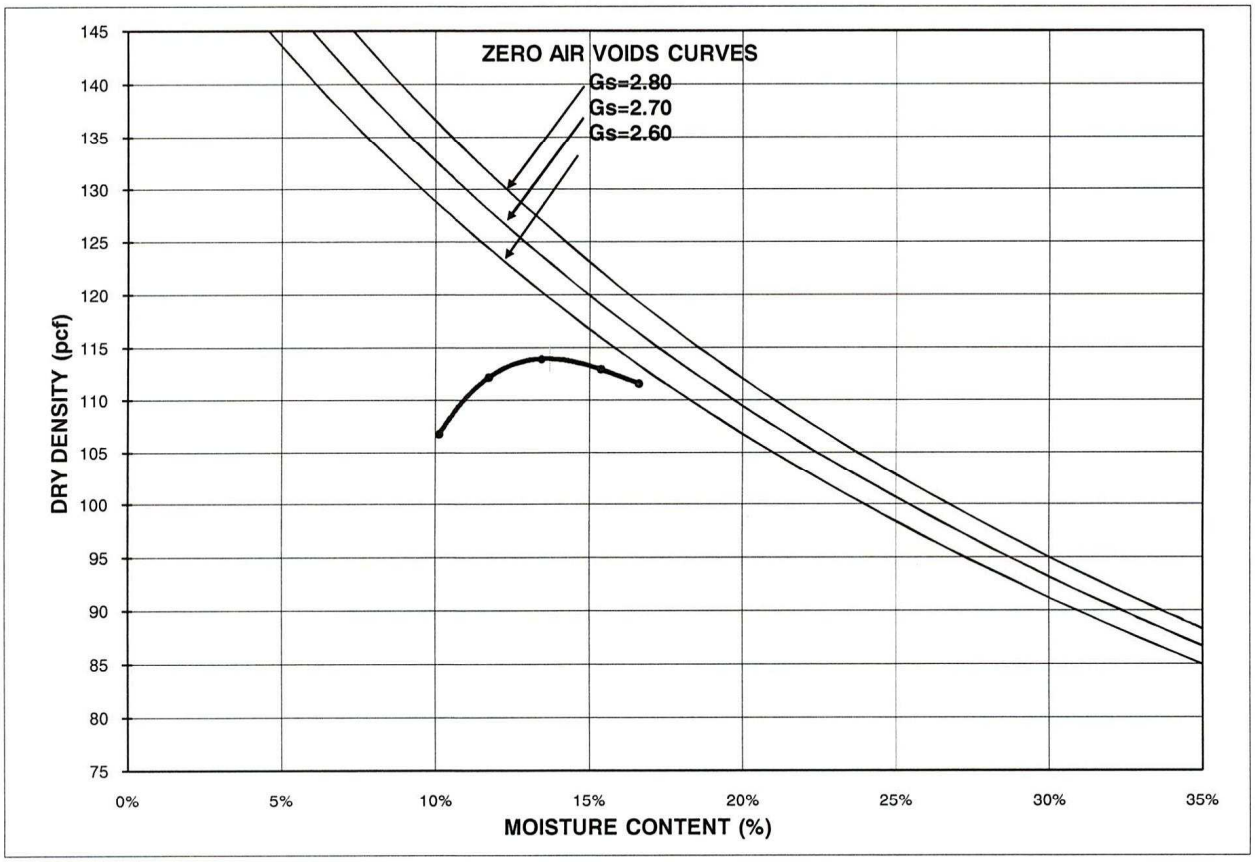
USCS: --

TECH	NRS
DATE	9/26/2009
REVIEW	MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **093-816271**
SAMPLE ID: **FPGEN-4** DEPTH: **--** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	106.8	10.1%
2	112.2	11.7%
3	113.9	13.4%
4	113.0	15.4%
5	111.6	16.6%

Maximum Dry Density (pcf)	**114.0**
Optimum Moisture (%)	**13.7**
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content (%)	**--**
% Passing #4 sieve	**99.7**
% Passing 3/8" sieve	**99.9**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Light olive brown

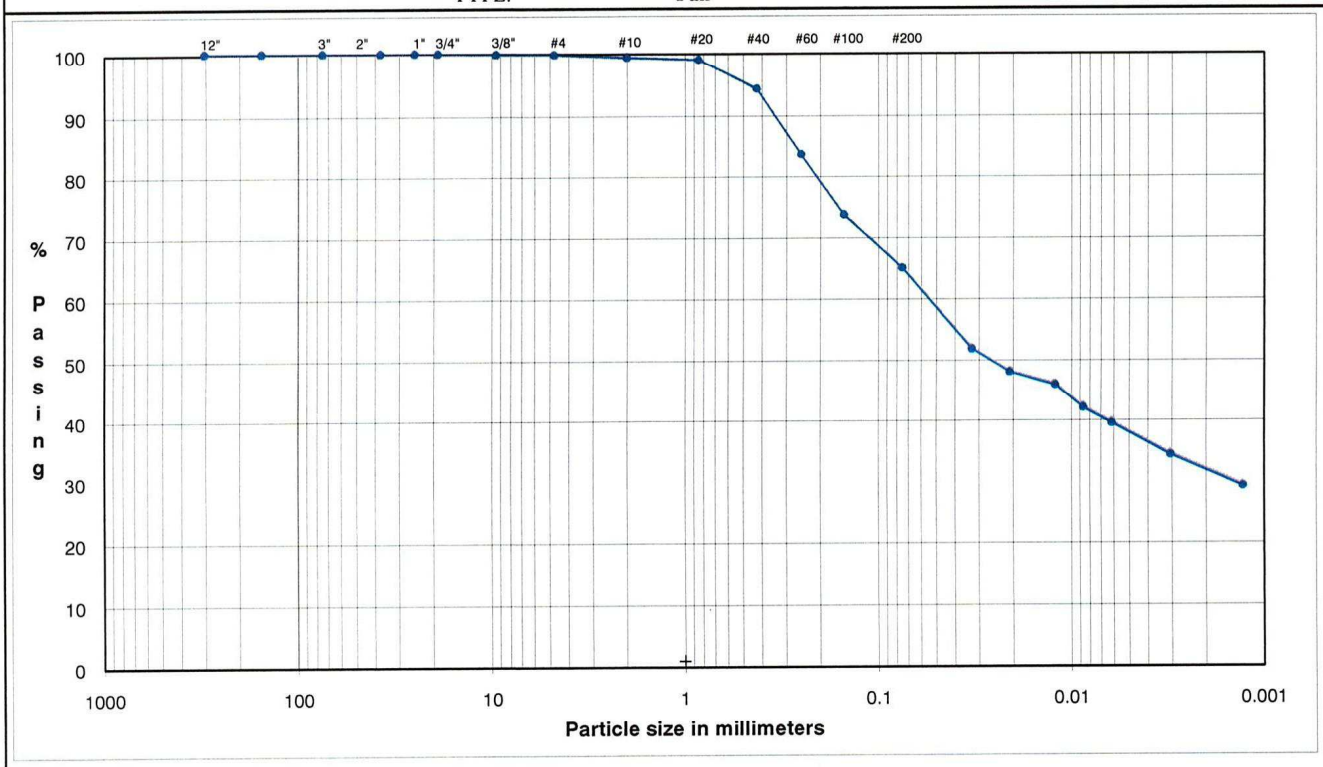
USCS --

TECH NRS
DATE 9-26-09
REVIEW MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FPGEN-5** Depth (ft): --
TYPE: **Pail**



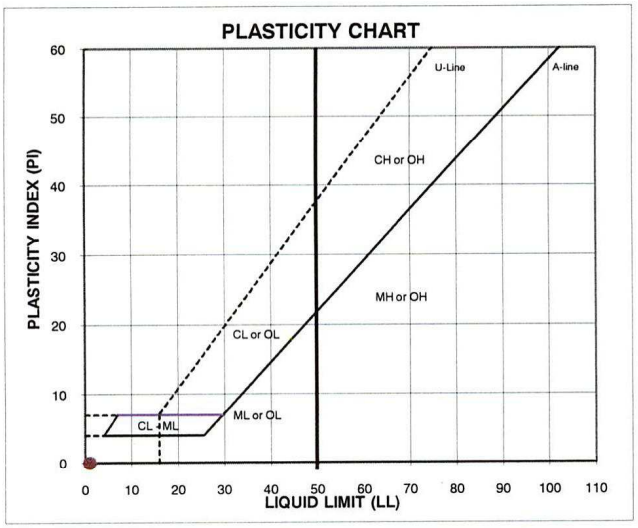
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**99.9**		
#4	4.8	**99.8**	Fine Gravel	**0.15**
#10	2.00	**99.4**	Coarse Sand	**0.48**
#20	0.85	**99.0**		
#40	0.43	**94.3**	Medium Sand	**5.05**
#60	0.25	**83.6**		
#100	0.15	**73.8**		
#200	0.075	**65.3**	Fine Sand	**29.00**

Hydrometer Analysis

(mm)	% Finer		
0.033	**52.2**		
0.021	**48.4**		
0.012	**46.3**	Fines	
0.009	**42.5**	Silt or Clay	**65.32**
0.006	**39.9**		
0.003	**34.7**		
0.001	**29.5**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
--	--	--	--	**2.70**

DESCRIPTION: Light yellowish brown

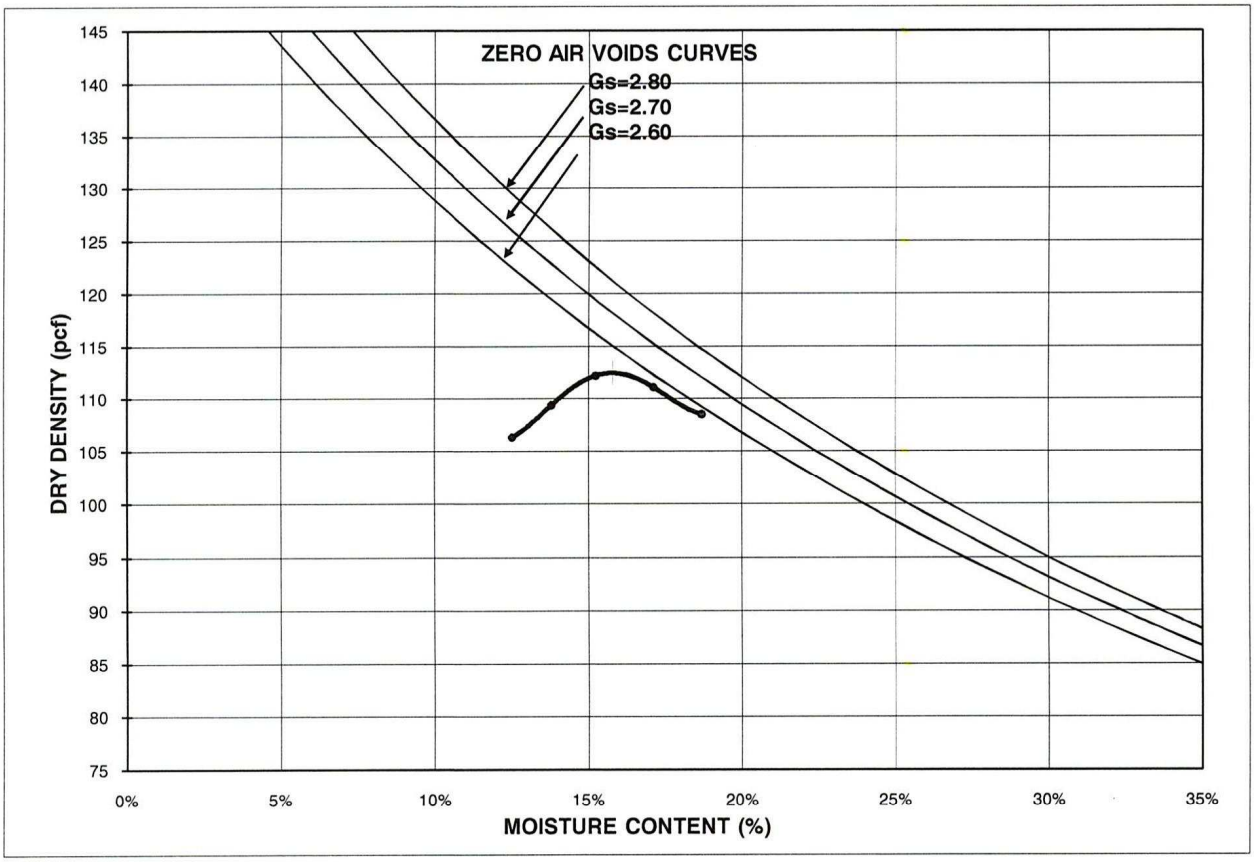
USCS: --

TECH	NRS
DATE	9/26/2009
REVIEW	MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **093-816271**
SAMPLE ID: **FPGEN-5** DEPTH: -- SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	106.3	12.5%
2	109.4	13.8%
3	112.2	15.2%
4	111.1	17.1%
5	108.5	18.7%

Maximum Dry Density (pcf)	**112.5**
Optimum Moisture (%)	**15.8**
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content (%)	--
% Passing #4 sieve	**99.8**
% Passing 3/8" sieve	**99.9**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Light yellowish brown

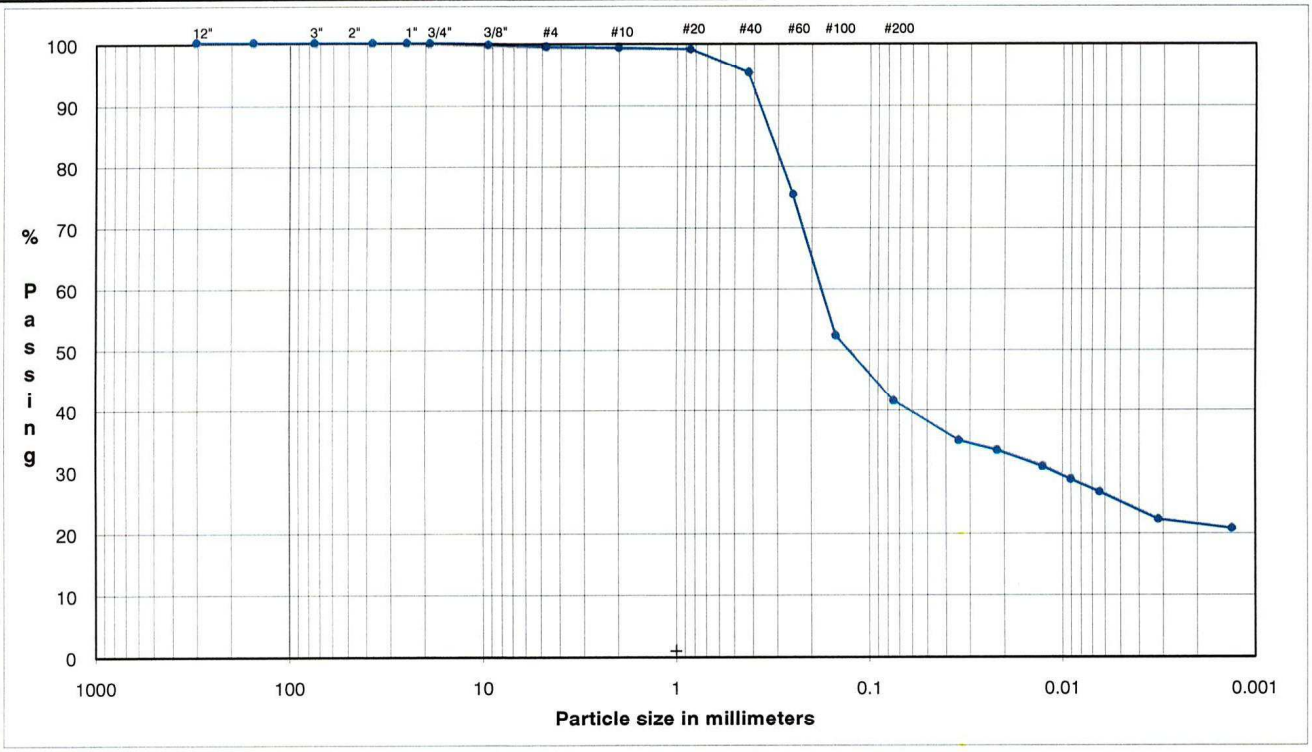
USCS --

TECH	NRS
DATE	9-26-09
REVIEW	MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FP Sand S-2** Depth (ft): --
TYPE: **Pail**



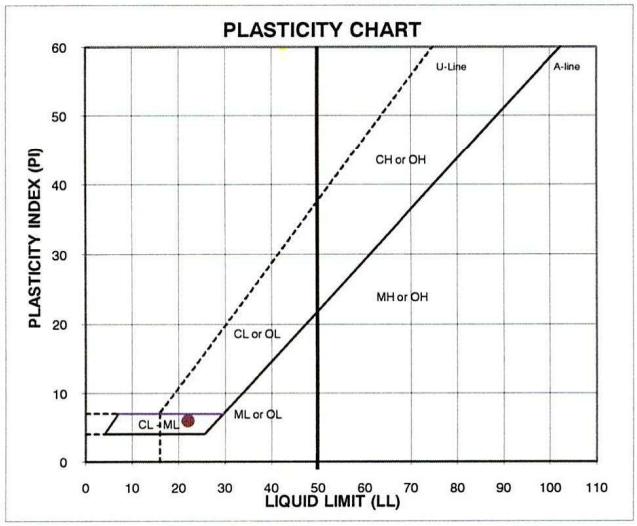
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.07**
0.75"	19.0	**99.9**		
0.375"	9.5	**99.7**		
#4	4.8	**99.4**	Fine Gravel	**0.56**
#10	2.00	**99.2**	Coarse Sand	**0.17**
#20	0.85	**99.0**		
#40	0.43	**95.3**	Medium Sand	**3.92**
#60	0.25	**75.6**		
#100	0.15	**52.7**		
#200	0.075	**41.8**	Fine Sand	**53.48**

Hydrometer Analysis

(mm)	%Finer		
0.034	**35.3**		
0.022	**33.7**		
0.013	**31.0**	Fines	
0.009	**29.0**	Silt or Clay	**41.80**
0.006	**26.9**		
0.003	**22.4**		
0.001	**21.0**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
--	**22**	**16**	**6**	**2.70**

DESCRIPTION: Olive yellow silty, clayey sand

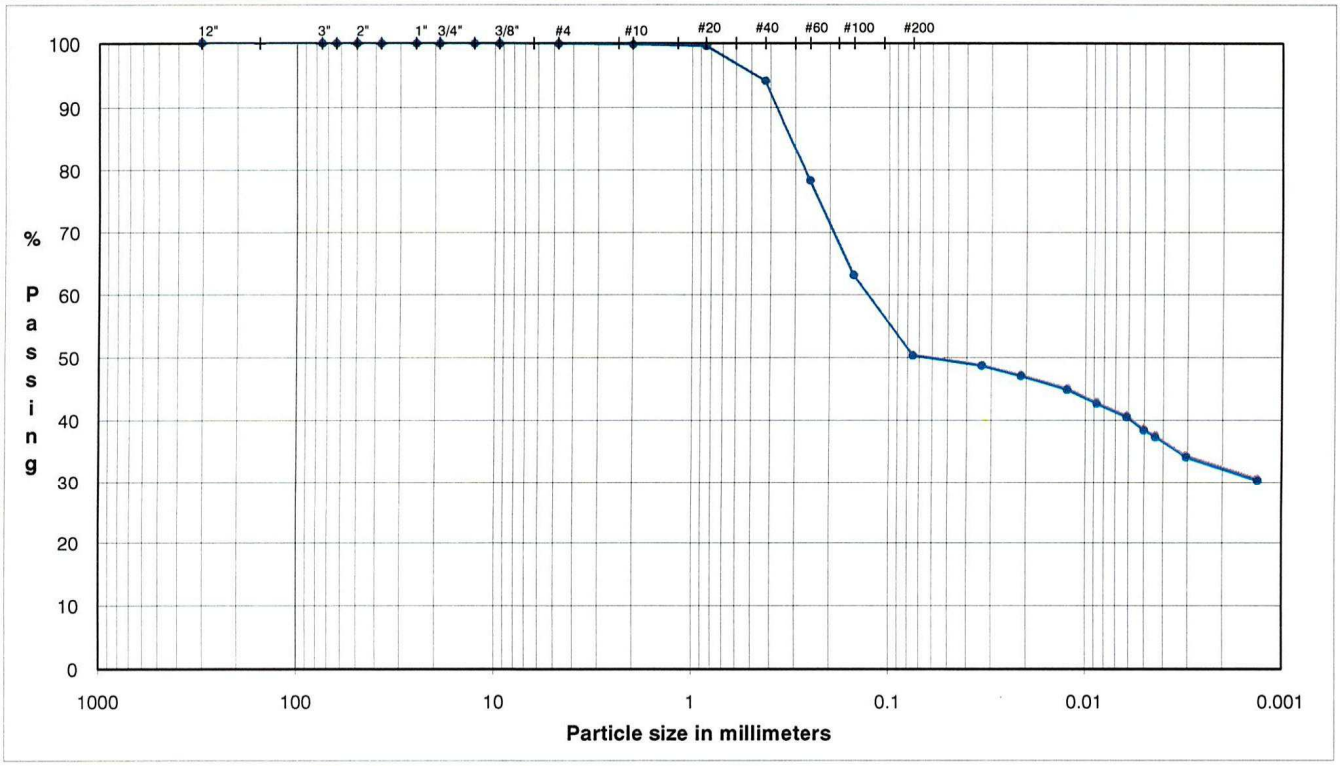
USCS: SC-SM

TECH NRS
DATE 9/26/2009
REVIEW MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FP Sand N-3** Depth: -
TYPE: **Pail**



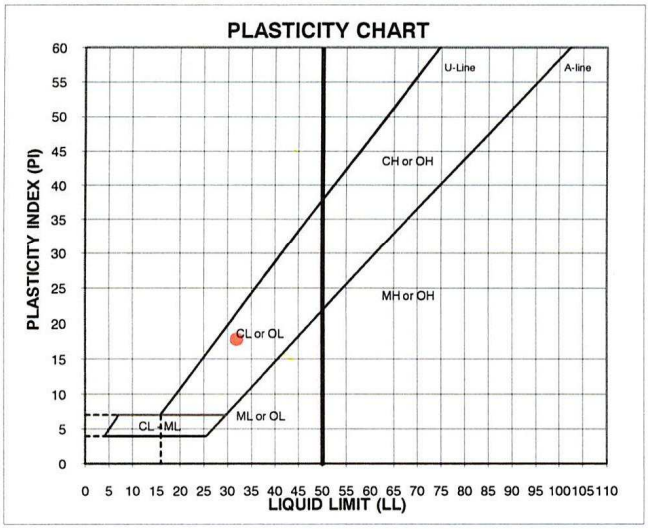
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
2.5"	63.5	**100.0**		
2.0"	50.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**		
0.75"	19.0	**100.0**	Coarse Gravel	**0.00**
0.50"	12.7	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.00	**99.9**	Coarse Sand	**0.13**
#20	0.85	**99.7**		
#40	0.43	**94.2**	Medium Sand	**5.68**
#60	0.25	**78.3**		
#100	0.15	**63.2**		
#200	0.075	**50.5**	Fine Sand	**43.65**

Hydrometer Analysis

(mm)	% Finer		
0.034	**48.9**		
0.021	**47.3**		
0.012	**45.2**	Fines	
0.0088	**43.0**	Silt or Clay	**50.53**
0.0061	**40.9**		
0.0050	**38.7**		
0.0044	**37.6**		
0.0031	**34.4**		
0.0013	**30.6**		



ATTERBERG LIMITS

Method -B (Dry preparation)

M_c	LL	PL	PI	SpG (assumed)
--	**32**	**14**	**18**	**2.70**

LL (oven-dried) / < 0.75 = ORGANIC (OL/OH)

DESCRIPTION: Yellowish brown sandy lean clay

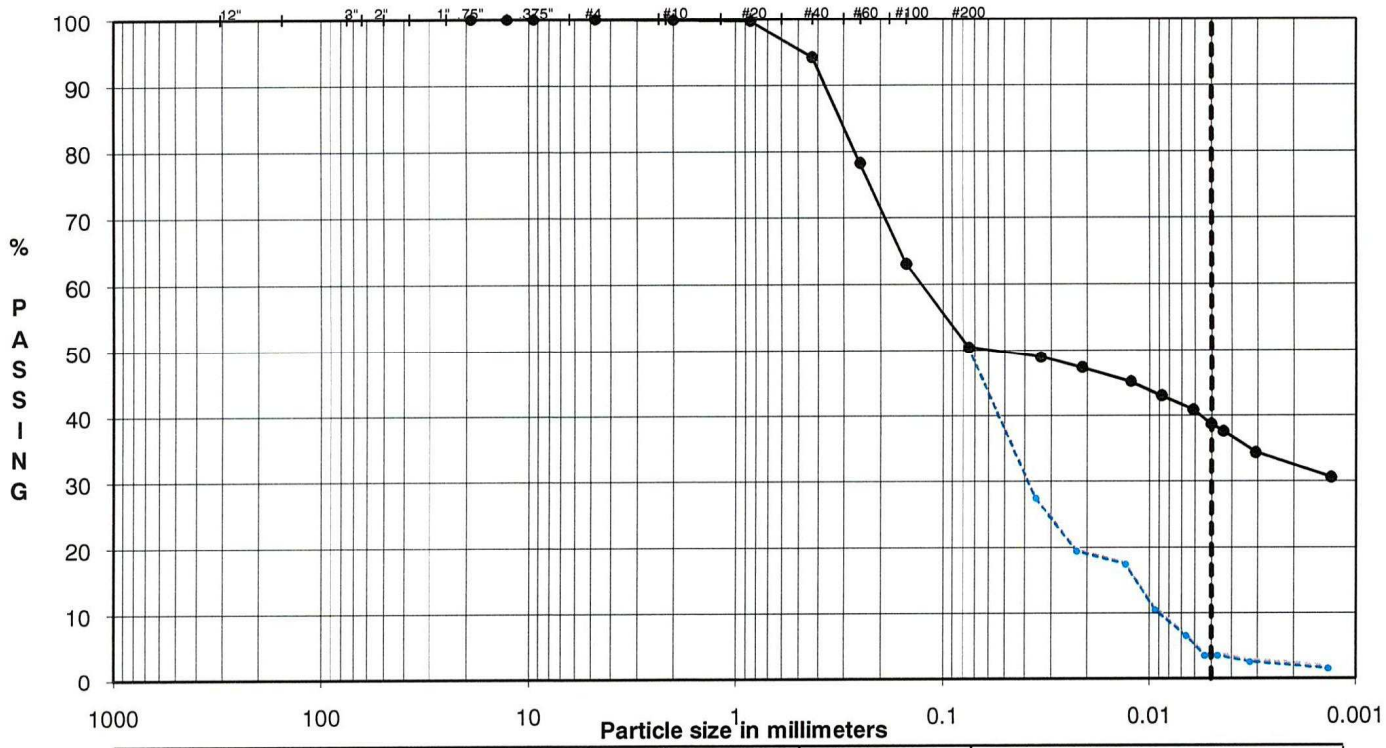
Cu =	8.6	>	6
Cc =	1.8	>	1

USCS: CL

TECH MKS
DATE 11/23/09
REVIEW MKS/MB

PARTICLE SIZE DISTRIBUTION ASTM D 422 AND D 4221
US STANDARD SIEVE OPENING SIZES

PROJECT NAME: **093-816721**
PROJECT NUMBER **FP Sand N-3** Depth: -
SAMPLE ID: **Pail**



Boulders	Cobbles	Coarse GRAVEL	Fine GRAVEL	Coarse SAND	Medium SAND	Fine SAND	SILT OR CLAY FINES

% DISPERSION = % passing the 5 micron (D4221)/ % passing the 5 micron (D422)*100 **10.2**

U.S. Standard Sieves Sizes and Numbers

12.0"	304.8	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
2.5"	63.5	**100.0**		
2.0"	50.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**		
0.75"	19.0	**100.0**	Coarse Gravel	**0.00**
0.50"	12.7	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.0	**99.9**	Coarse Sand	**0.13**
#20	0.9	**99.6**		
#40	0.4	**94.2**	Medium Sand	**5.67**
#60	0.3	**78.0**		
#100	0.2	**60.2**		
#200	0.1	**50.5**	Fine Sand	**43.67**

Hydrometer Analysis

(mm)	%Finer		
0.035	**27.7**		
0.023	**19.8**		
0.013	**17.8**	Fines	
0.009	**10.9**	Silt or Clay	**50.53**
0.007	**6.9**		
0.005	**4.0**		
0.005	**4.0**		
0.003	**3.0**		
0.001	**2.0**		

DESCRIPTION: Yellowish brown sandy lean clay

USCS: CL

LL	32
PL	14
PI	18

TECH	MKS
DATE	11/23/09
REVIEW	MKS/MB

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	AEC	JOB NO.	2507-14
BORING NO.	--	SAMPLED	
DEPTH	--	DATE TESTED	10/15/09 LB
SAMPLE NO.	FP Sand-4 (FP Sand Comp-4)	WASH SIEVE	Yes
SOIL DESCR.	With DI	DRY SIEVE	No
LOCATION	Five Part		

Hydrometer #	ASTM 152 H	Temp., Deg. C	25.8
Sp. Gr. of Soil	2.65	Temp. Coef. K	0.01275
Value of "alpha"	1.00	Wt. Dry Sample "W"	63.679
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	0.0		
Meniscus Corr'n	0.0		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	31.00	31.00	48.7	48.7	11.21	0.0604
1.0	28.00	28.00	44.0	44.0	11.70	0.0436
2.0	26.50	26.50	41.6	41.6	11.94	0.0312
5.0	22.00	22.00	34.5	34.5	12.68	0.0203
15.0	10.50	10.50	16.5	16.5	14.57	0.0126
30.0	1.50	1.50	2.4	2.4	16.04	0.0093
60.0	0.00	0.00	0.0	0.0	16.29	0.0066
120.0	0.00	0.00	0.0	0.0	16.29	0.0047
250.0	0.00	0.00	0.0	0.0	16.29	0.0033
1440.0	0.00	0.00	0.0	0.0	16.29	0.0014

Grain Diameter = K*(SQRT(L/T))

Data entered by: MLM Date: 10/19/2009
Data checked by: TMR Date: 10/19/09
FileName: AEHYFP4B

ADVANCED TERRA TESTING, Inc. ATT

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	AEC	JOB NO.	2507-14
BORING NO.	--	SAMPLED	
DEPTH	--	DATE TESTED	10/15/09 LB
SAMPLE NO.	FP Sand-4 (FP Sand Comp-4)	WASH SIEVE	Yes
SOIL DESCR.	With Hexametaphosphate	DRY SIEVE	No
LOCATION	Five Part		

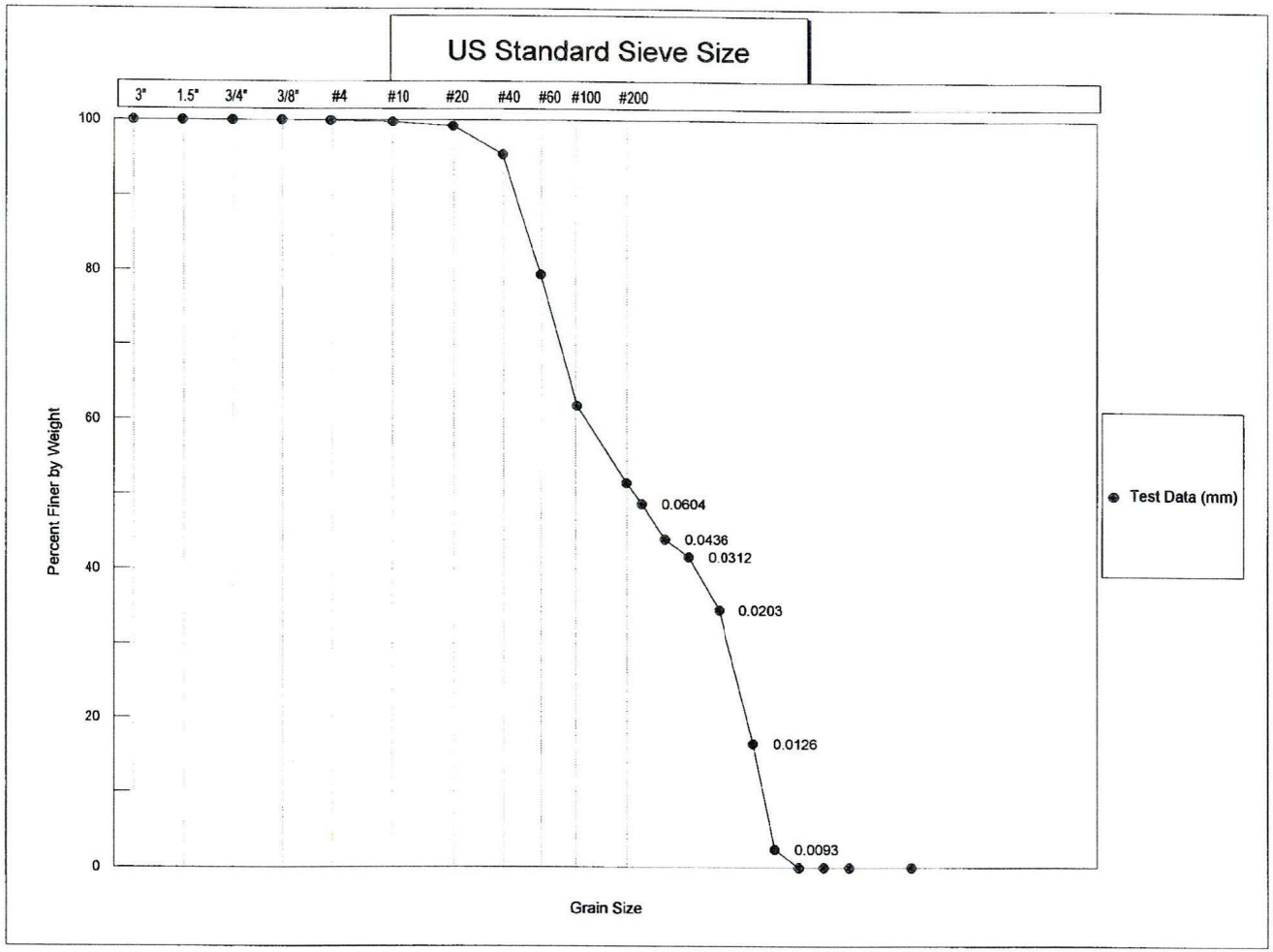
Hydrometer #	ASTM 152 H	Temp., Deg. C	25.9
Sp. Gr. of Soil	2.65	Temp. Coef. K	0.01273
Value of "alpha"	1.00	Wt. Dry Sample "W"	63.958
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	5.0		
Meniscus Corr'n	0.0		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	--	--	--	--	--	--
1.0	33.00	28.00	43.8	43.8	10.88	0.0420
2.0	30.00	25.00	39.1	39.1	11.37	0.0304
5.0	29.50	24.50	38.3	38.3	11.45	0.0193
15.0	28.00	23.00	36.0	36.0	11.70	0.0112
30.0	26.00	21.00	32.8	32.8	12.03	0.0081
60.0	25.00	20.00	31.3	31.3	12.19	0.0057
120.0	23.50	18.50	28.9	28.9	12.44	0.0041
250.0	23.50	18.50	28.9	28.9	12.44	0.0028
1440.0	23.50	18.50	28.9	28.9	12.44	0.0012

Grain Diameter = K*(SQRT(L/T))

Data entered by: MLM Date: 10/19/2009
Data checked by: TMR Date: 10/19/09
FileName: AEHYFP4A

ADVANCED TERRA TESTING, INC. ATT



COBBLES	GRAVEL		SAND			SILT OR CLAY (mm)
	COARSE	FINE	CRS	MEDIUM	FINE	

USCS

COBBLES	PEBBLE GRAVEL				SAND			SILT	CLAY
TO BOULDERS	COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WENTWORTH

Client: AEC
Job Number: 2507-14
Classification: **Classification Not Performed**

Boring No.: --
Depth: --

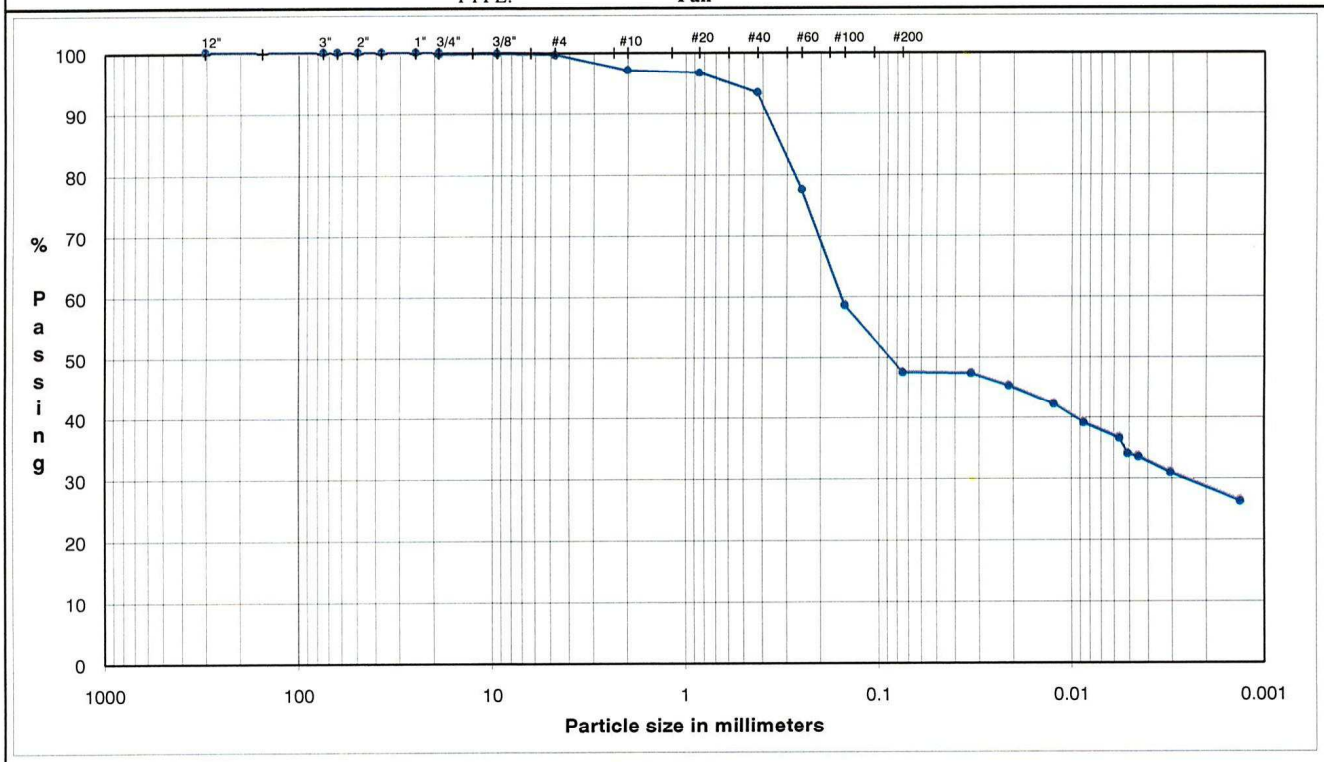
Sample No.: FP Sand-4 (FP Sand Comp-4)

093-816721

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FP Sand Comp 5** Depth: -
TYPE: **Pail**



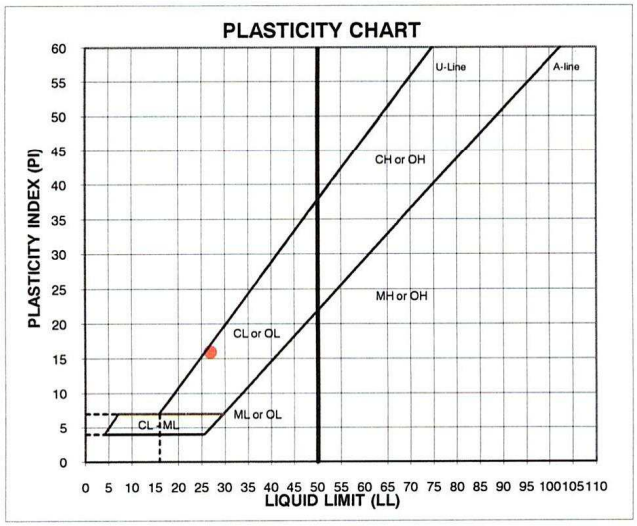
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
2.5"	63.5	**100.0**		
2.0"	50.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**		
0.75"	19.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**99.7**		
0.375"	9.5	**99.8**		
#4	4.8	**99.6**	Fine Gravel	**0.37**
#10	2.00	**0.0**	Coarse Sand	**2.60**
#20	0.85	**96.6**		
#40	0.43	**93.3**	Medium Sand	**3.69**
#60	0.25	**77.6**		
#100	0.15	**58.9**		
#200	0.075	**47.9**	Fine Sand	**45.49**

Hydrometer Analysis

(mm)	%Finer		
0.033	**47.7**		
0.021	**45.6**		
0.012	**42.5**	Fines	
0.0087	**39.5**	Silt or Clay	**47.85**
0.0056	**36.9**		
0.0031	**31.3**		
0.0013	**26.7**		



ATTERBERG LIMITS

Method -B (Dry preparation)

M_c	LL	PL	PI	SpG (assumed)
--	**27**	**11**	**16**	**2.70**

LL (oven-dried) / < 0.75 = ORGANIC (OL/OH)

DESCRIPTION: Light yellowish brown clayey sand

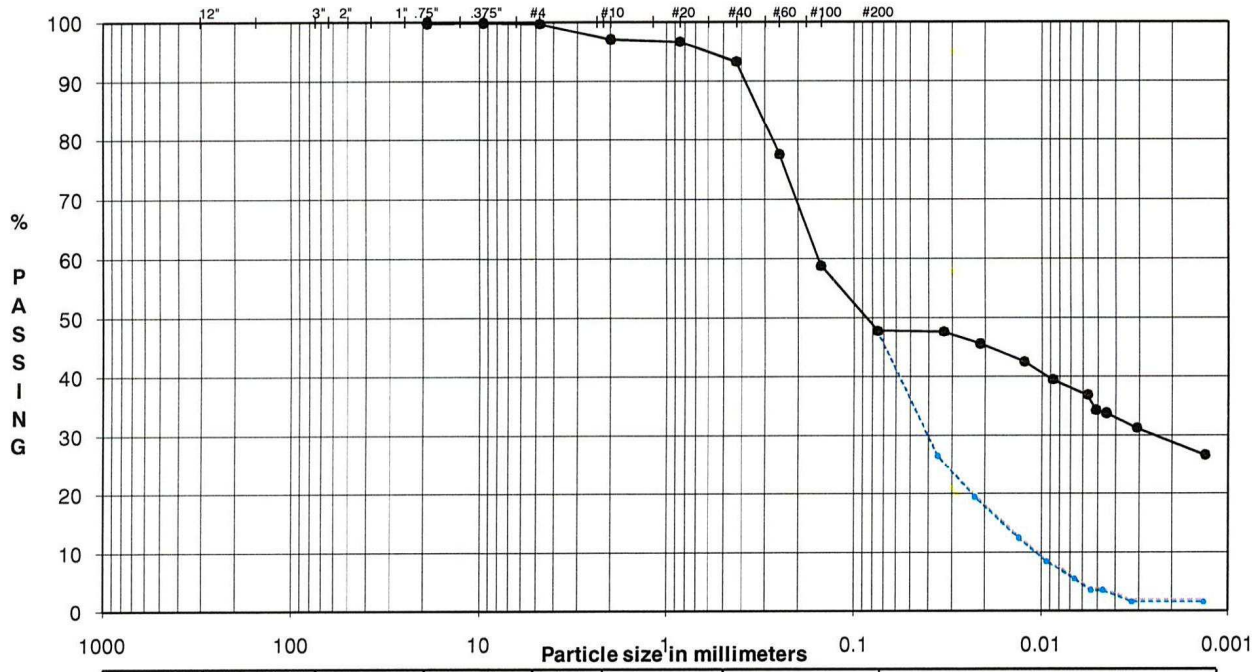
Cu =	8.6	>	6
Cc =	1.8	>	1

USCS: SC

TECH	MKS
DATE	11/23/09
REVIEW	MKS/MB

PARTICLE SIZE DISTRIBUTION ASTM D 422 AND D 4221
US STANDARD SIEVE OPENING SIZES

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBI **093-816721** Depth: -
SAMPLE ID: **FP Sand Comp 5**



Boulders	Cobbles	Coarse GRAVEL	Fine GRAVEL	Coarse SAND	Medium SAND	Fine SAND	SILT OR CLAY FINES

% DISPERSION = % passing the 5 micron (D4221)/ % passing the 5 micron (D422)* 100 **11.5**

U.S. Standard Sieves Sizes and Numbers

12.0"	304.8	**100.0**		
3.0"	75.0	**100.0**	Cobbles	**0.00**
2.5"	63.5	**100.0**		
2.0"	50.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**		
0.75"	19.0	**100.0**	Coarse Gravel	**0.00**
0.50"	12.7	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.0	**99.9**	Coarse Sand	**0.13**
#20	0.9	**99.6**		
#40	0.4	**94.2**	Medium Sand	**5.67**
#60	0.3	**78.0**		
#100	0.2	**60.2**		
#200	0.1	**47.9**	Fine Sand	**46.35**

Hydrometer Analysis

(mm)	%Finer		
0.035	**26.7**		
0.023	**19.8**		
0.013	**12.8**	Fines	
0.009	**8.9**	Silt or Clay	**47.85**
0.007	**5.9**		
0.005	**4.0**		
0.005	**4.0**		
0.003	**2.0**		
0.001	**2.0**		

DESCRIPTION: Yellowish brown sandy lean clay

USCS: CL

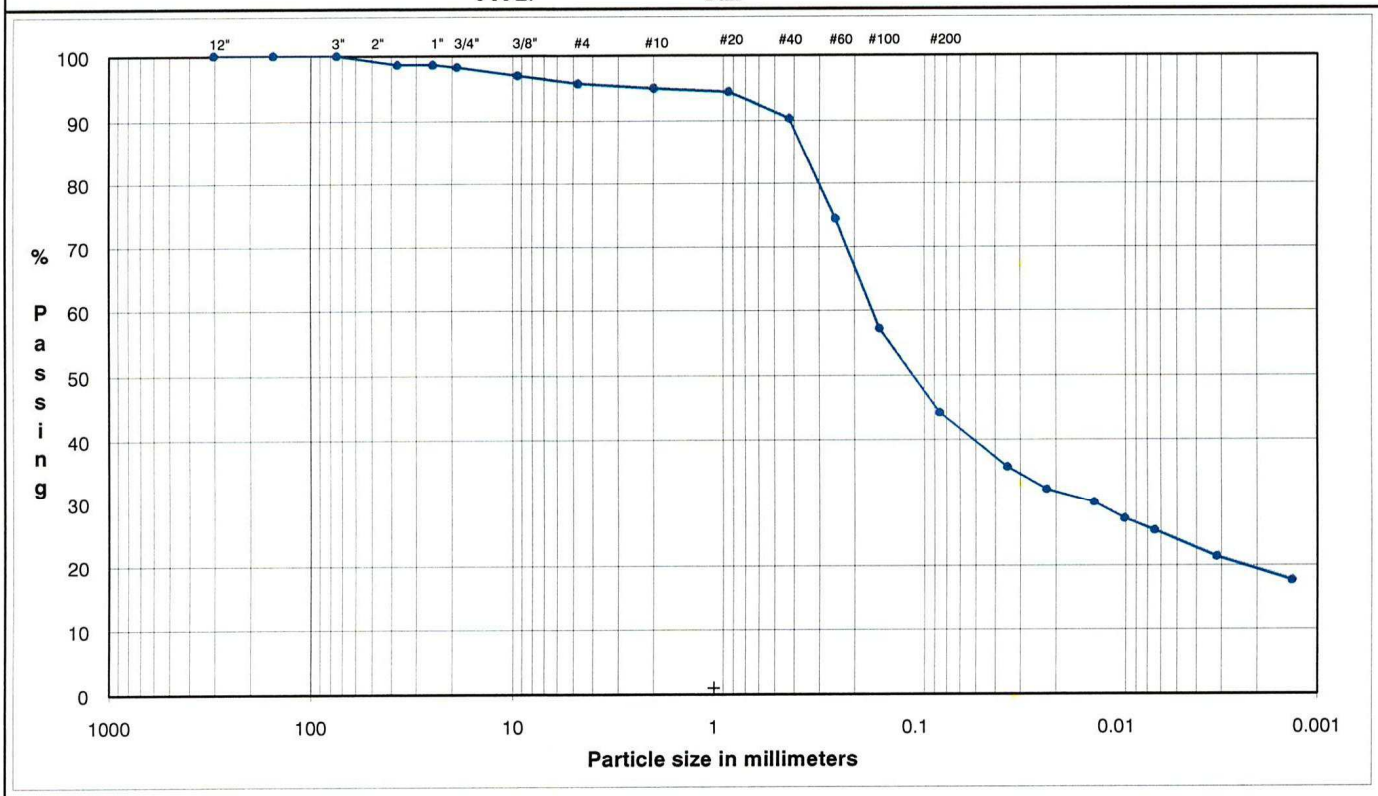
LL	27
PL	11
PI	16

TECH	MKS
DATE	11/23/09
REVIEW	MKS/MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FP Sand Comp-6** Depth (ft): **--**
TYPE: **Pail**



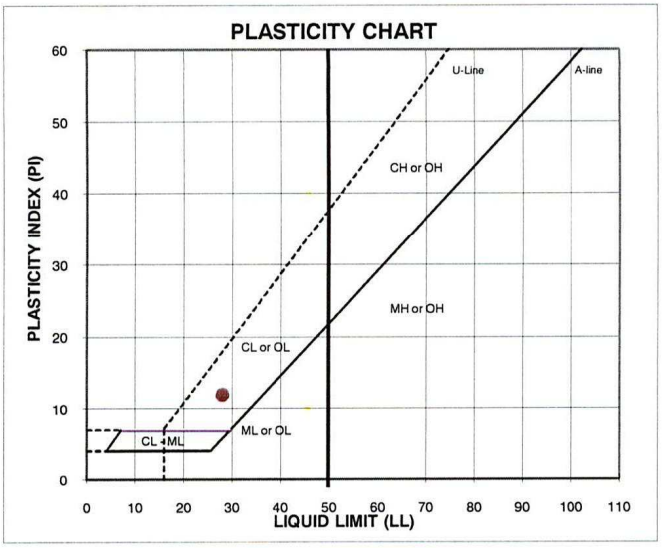
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**98.6**		
1.0"	25.0	**98.6**	Coarse Gravel	**1.69**
0.75"	19.0	**98.3**		
0.375"	9.5	**97.0**		
#4	4.8	**95.8**	Fine Gravel	**2.53**
#10	2.00	**95.1**	Coarse Sand	**0.64**
#20	0.85	**94.6**		
#40	0.43	**90.4**	Medium Sand	**4.70**
#60	0.25	**74.6**		
#100	0.15	**57.3**		
#200	0.075	**44.2**	Fine Sand	**46.21**

Hydrometer Analysis

(mm)	%Finer		
0.035	**35.7**		
0.022	**32.1**		
0.013	**30.1**	Fines	
0.009	**27.5**	Silt or Clay	**44.23**
0.006	**25.7**		
0.003	**21.5**		
0.001	**17.8**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
15.3	**28**	**16**	**12**	**2.70**

DESCRIPTION: Light olive brown clayey sand

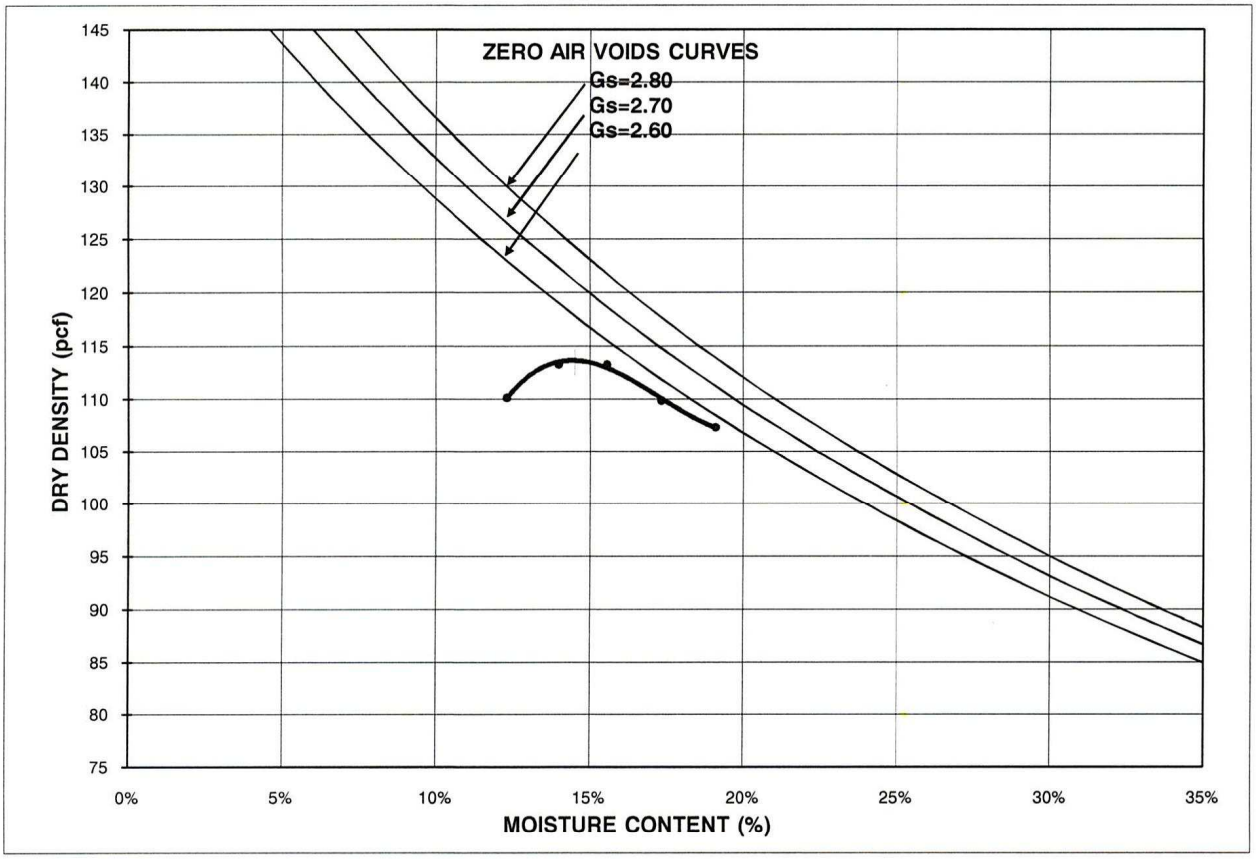
USCS: SC

TECH	NRS
DATE	6/3/2010
REVIEW	MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **103-816721**
SAMPLE ID: **FP Sand Comp-6** DEPTH: **--** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	113.3	14.0%
2	113.3	15.6%
3	109.9	17.3%
4	107.3	19.1%
5	110.1	12.3%

Maximum Dry Density (pcf)	**113.4**
Optimum Moisture (%)	**14.5**
Corrected Maximum Dry Density (pcf)	**--**
Corrected Optimum Moisture (%)	**--**
As-Received Moisture Content (%)	**15.3**
% Passing #4 sieve	**95.8**
% Passing 3/8" sieve	**97.0**
% Passing 3/4" sieve	**98.3**

DESCRIPTION Light olive brown clayey sand

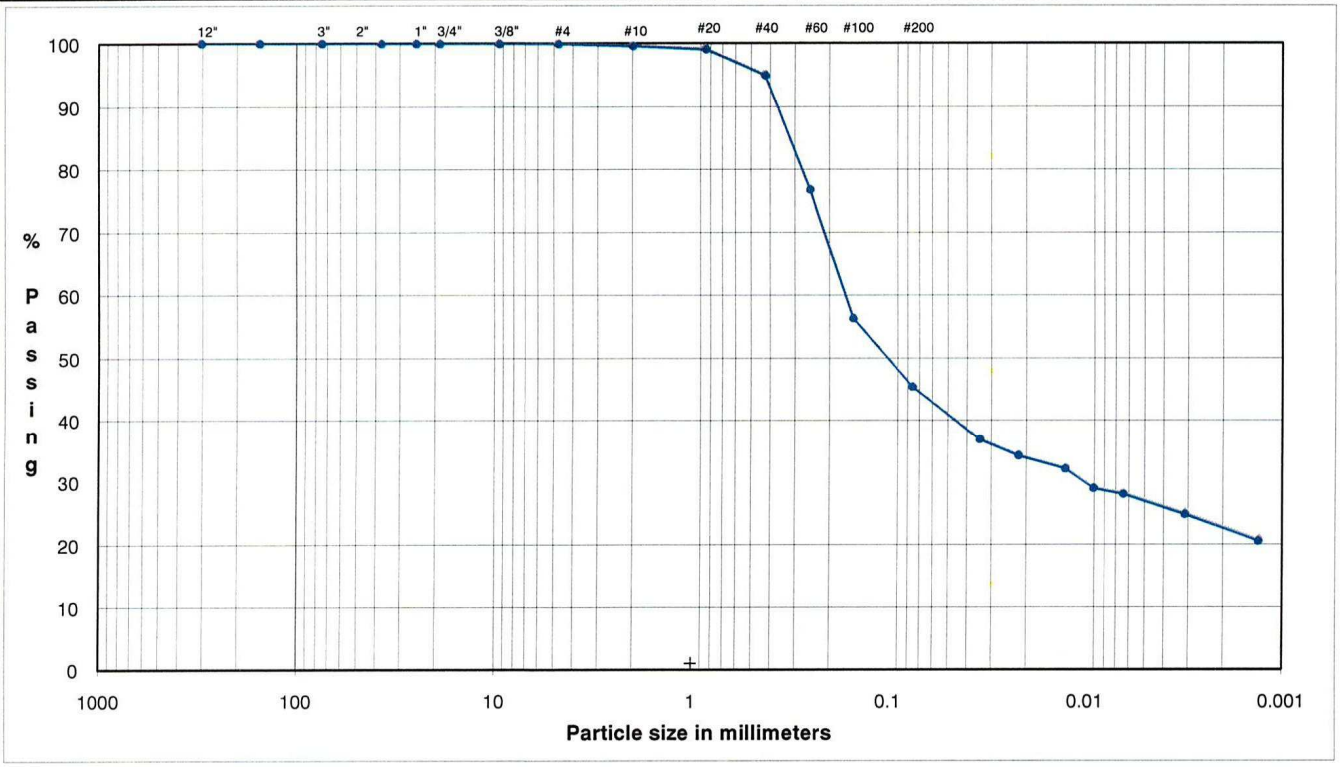
USCS SC

TECH	PRH
DATE	6-7-10
REVIEW	MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing/CO**
SAMPLE ID: **FP Sand Comp-7** Depth (ft): --
TYPE: **Pail**



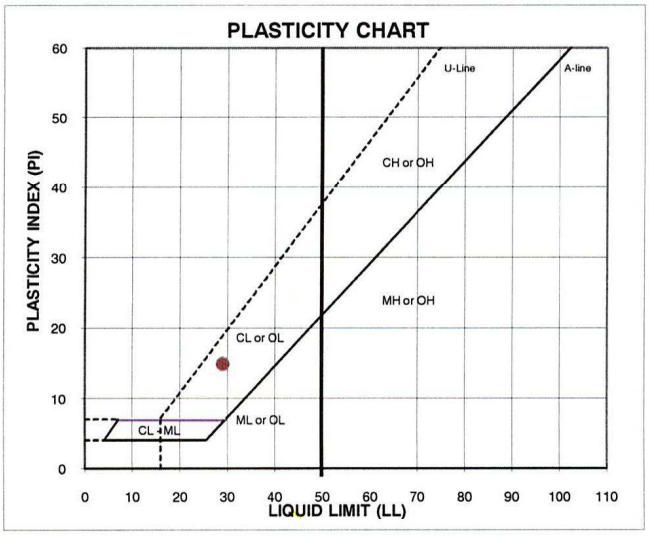
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	**100.0**		
6.0"	154.2	**100.0**	Cobbles	**0.00**
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
3.0"	75.0	**100.0**		
1.5"	37.5	**100.0**		
1.0"	25.0	**100.0**	Coarse Gravel	**0.00**
0.75"	19.0	**100.0**		
0.375"	9.5	**100.0**		
#4	4.8	**100.0**	Fine Gravel	**0.00**
#10	2.00	**99.7**	Coarse Sand	**0.30**
#20	0.85	**99.2**		
#40	0.43	**95.2**	Medium Sand	**4.54**
#60	0.25	**76.9**		
#100	0.15	**56.3**		
#200	0.075	**45.4**	Fine Sand	**49.73**

Hydrometer Analysis

(mm)	%Finer		
0.034	**37.0**		
0.022	**34.4**		
0.013	**32.3**	Fines	
0.009	**29.2**	Silt or Clay	**45.43**
0.006	**28.3**		
0.003	**25.1**		
0.001	**20.9**		



ATTERBERG LIMITS

M_c (%)	LL	PL	PI	SpG (assumed)
14.6	**29**	**14**	**15**	**2.70**

DESCRIPTION: Light olive brown clayey sand

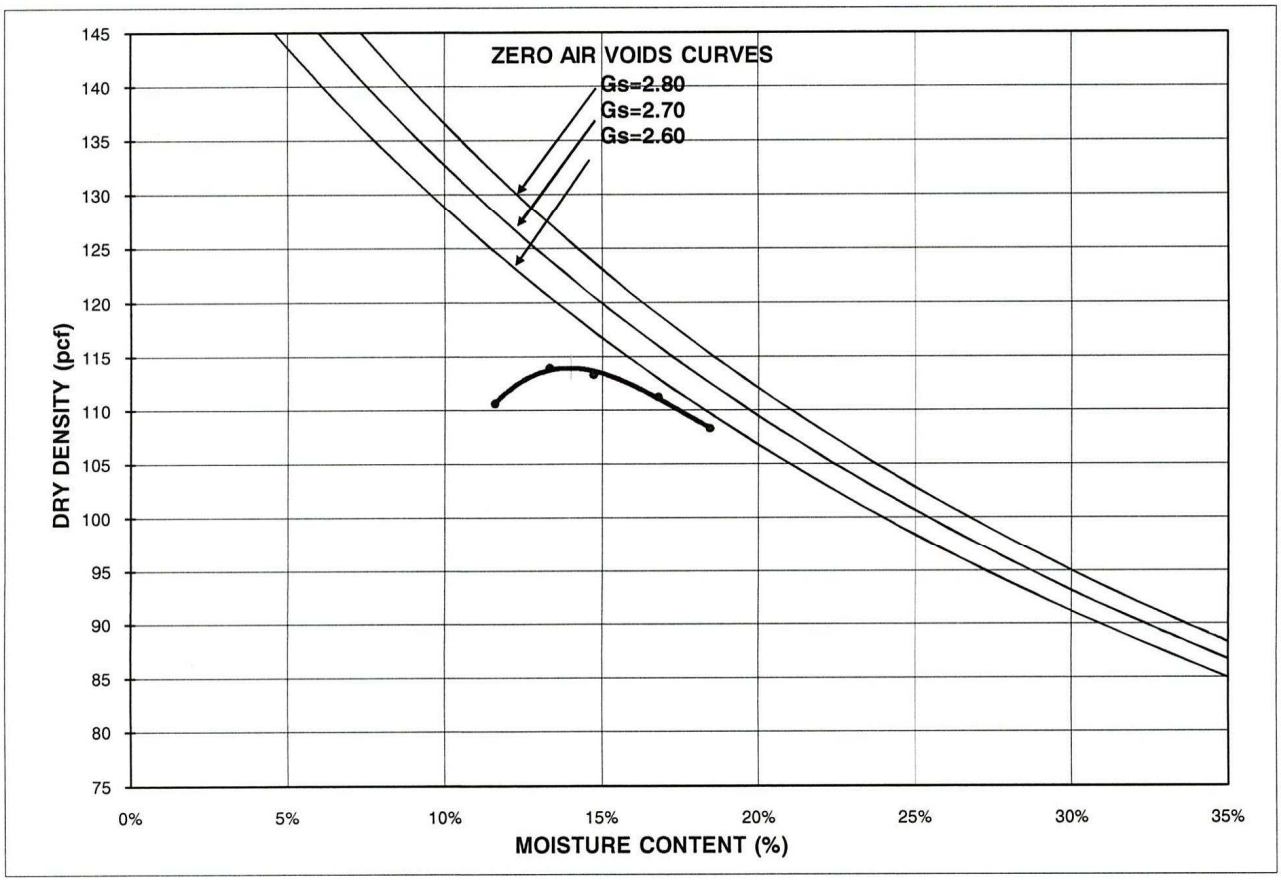
USCS: SC

TECH	NRS
DATE	6/3/2010
REVIEW	MB

MOISTURE / DRY DENSITY CURVE
ASTM D 698 Method A

Mechanical	Standard	Wet Method

PROJECT NAME: **AEC/Lab Testing/CO**
PROJECT NUMBER: **103-816721**
SAMPLE ID: **FP Sand Comp-7** DEPTH: **--** SAMPLE TYPE: **Pail**



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	108.3	18.5%
2	110.6	11.6%
3	114.0	13.3%
4	113.4	14.7%
5	111.2	16.8%

Maximum Dry Density (pcf)	**114.0**
Optimum Moisture (%)	**14.0**
Corrected Maximum Dry Density (pcf)	**--**
Corrected Optimum Moisture (%)	**--**
As-Received Moisture Content (%)	**14.6**
% Passing #4 sieve	**100.0**
% Passing 3/8" sieve	**100.0**
% Passing 3/4" sieve	**100.0**

DESCRIPTION Light olive brown clayey sand

USCS SC

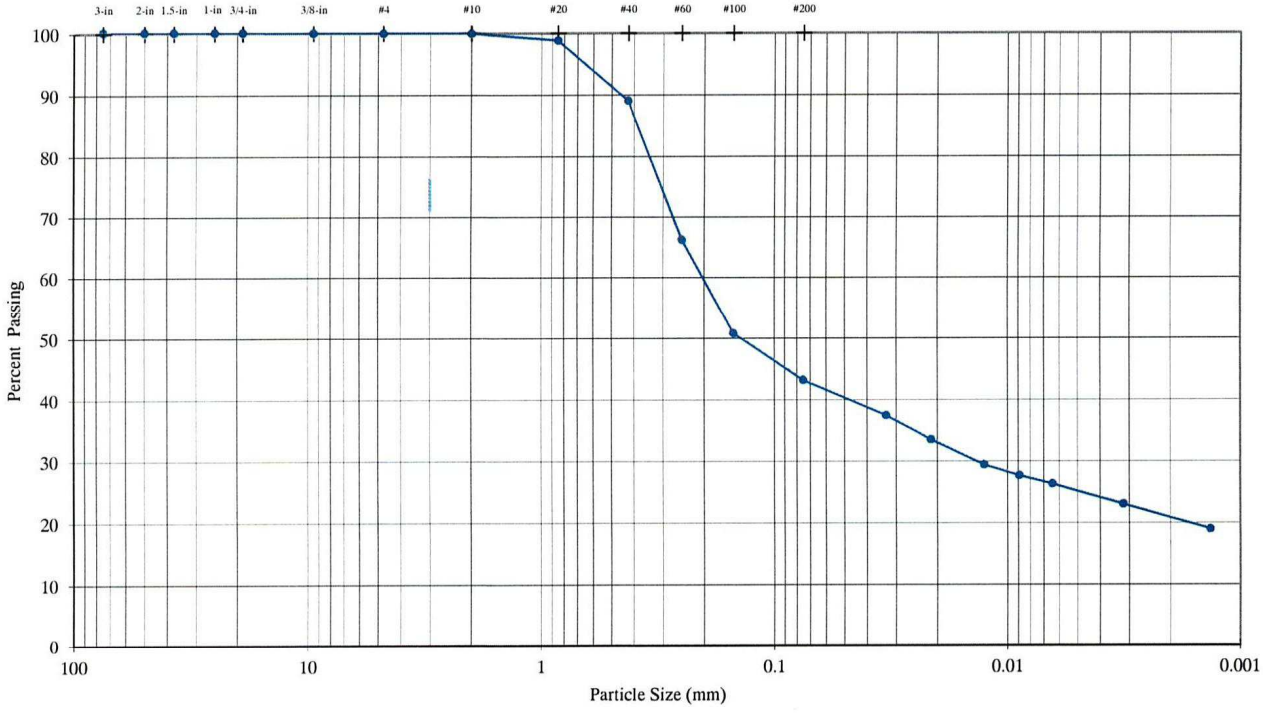
TECH	PRH
DATE	6-7-10
REVIEW	MB

Golder Associates

February-14 133-81500-5

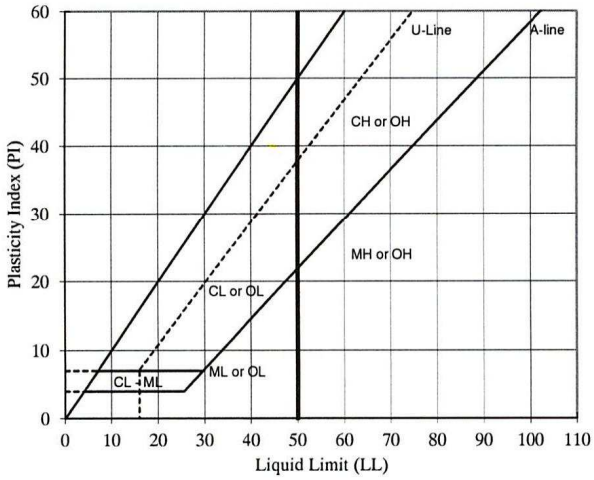
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing - 2013/CO** DEPTH (ft): **6-8**
SAMPLE ID: **TP-4**
TYPE: **Bag**



Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-in	75.0	**100.0**	Coarse Gravel	**0.00**
2-in	50.0	**100.0**		
1.5-in	37.5	**100.0**		
1-in	25.0	**100.0**		
3/4-in	19.0	**100.0**		
3/8-in	9.5	**99.9**	Fine Gravel	**0.07**
#4	4.75	**99.9**		
#10	2.00	**99.9**	Coarse Sand	**0.00**
#20	0.850	**98.8**	Medium Sand	**10.78**
#40	0.425	**89.2**		
#60	0.250	**66.4**	Fine Sand	**45.81**
#100	0.150	**51.0**		
#200	0.075	**43.3**		
	0.033	**37.5**	Fines	**43.34**
	0.021	**33.6**		
	0.013	**29.5**		
	0.009	**27.8**		
	0.006	**26.4**		
	0.003	**23.1**		
	0.001	**19.1**		

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI
--	--	--

AS-RECEIVED WATER CONTENT: --

Visual Description:
CLAYEY SAND, dark yellowish brown, moist

USCS Group Symbol: --

Notes: 0g of particles up to 19.0mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample mechanically dispersed using Stirring Apparatus A for about 1 minute

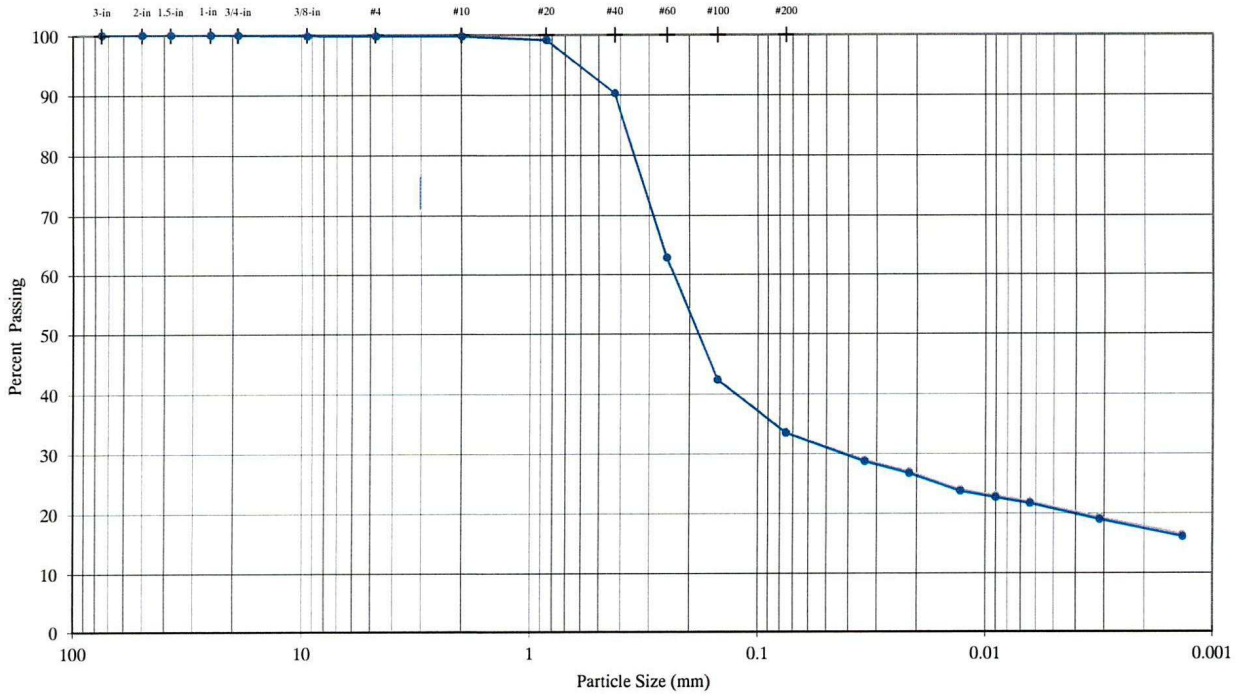
TECH	RU/LR
DATE	2/19/2014
REVIEW	MB

Golder Associates

February-14 133-81500-5

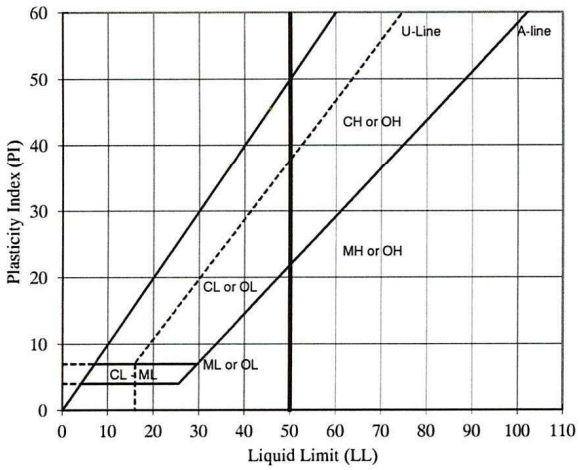
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **AEC/Lab Testing - 2013/CO** DEPTH (ft): **8-12**
SAMPLE ID: **TP-3**
TYPE: **Bag**



Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-in	75.0	**100.0**		
2-in	50.0	**100.0**		
1.5-in	37.5	**100.0**	Coarse Gravel	**0.00**
1-in	25.0	**100.0**		
3/4-in	19.0	**100.0**		
3/8-in	9.5	**99.9**		
#4	4.75	**99.9**	Fine Gravel	**0.15**
#10	2.00	**99.9**	Coarse Sand	**0.00**
#20	0.850	**99.2**		
#40	0.425	**90.3**	Medium Sand	**9.52**
#60	0.250	**62.9**		
#100	0.150	**42.4**	Fine Sand	**56.66**
#200	0.075	**33.7**		
Hydrometer Analysis	0.034	**29.0**		
	0.022	**27.1**		
	0.013	**24.1**		
	0.009	**23.0**	Fines	**33.67**
	0.006	**22.1**		
	0.003	**19.4**		
	0.001	**16.5**		



LL	PL	PI
--	--	--

AS-RECEIVED WATER CONTENT: --

Visual Description:
CLAYEY SAND, dark yellowish brown, moist

USCS Group Symbol: --

Notes: 0g of particles up to 19.0mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample mechanically dispersed using Stirring Apparatus A for about 1 minute

TECH	RU/LR
DATE	2/19/2014
REVIEW	MB

Appendix O
Slope Stability Analysis

AEC *AMERICAN ENVIRONMENTAL CONSULTING, LLC*

February 26, 2025

Solid Waste Permitting, Engineering Design Unit
Solid Waste & Materials Management Program
Hazardous Materials & Waste Management Division
4300 Cherry Creek Drive S.
Denver, CO 80246-1530

Subject: East Regional Landfill Slope Stability Analyses

Attached are the slope stability analyses for the East Regional Landfill final cover system. The purpose of these calculations is to demonstrate that the proposed design of the final cover system will resist the maximum horizontal acceleration in lithified material for the site. I attest that the work conducted for the attached analyses was done in accordance with good engineering practices.

Respectfully,

AMERICAN ENVIRONMENTAL CONSULTING, LLC

William A. Cincilla, P.E.
Senior Engineer

APPENDIX N – EAST REGIONAL LANDFILL SLOPE STABILITY ANALYSIS

1.0 INTRODUCTION

This document contains the slope stability evaluation of the East Regional Landfill (ERL). The slope stability analyses include multiple potential failure alignments through the landfill and multiple different methods of analysis to ensure that the slopes are stable during the construction and at the point the municipal solid waste (MSW) reaches final cover grades.

2.0 MODELLING DATA AND PARAMETERS

This section outlines the sources and methods used in the construction of the slope stability analyses.

2.1 Groundwater Data

Groundwater elevation data used in this analysis was sourced from 38 piezometer and groundwater monitoring wells located across the ERL facility and measured in February of 2011. This is the same potentiometric surface used in the redesign of the ERL base grades to ensure 10 feet of separation between the base of the landfill and groundwater. A contour map of this potentiometric surface is shown in Figure 2.

2.2 Material Data

TABLE 1
ERL SLOPE MATERIAL PROPERTIES

Material Description	Unit Weight (pcf)		Cohesion (psf)	Friction Angle (°)
	Dry	Moist		
Cover Soils (clayey silt)	98		78	25.7
Native Soils (silty clay)	104	115	10	30.5
MSW	60		200	32
Claystone	120		1,000	18

These material properties were sourced from the Tower Road Landfill's 2021 Engineering Design and Operations Plan (Revision 1). The Tower Road Landfill is located 14 miles east of ERL, and the soil descriptions from its boring logs closely match those encountered at ERL.

The Cover Soils are only used in the 3.5-feet of soil in the final cover system.

Native Soils are used in both the filled and excavated subgrade, down to the claystone horizon.

Claystone is used for everything below the claystone horizon, which was identified by field investigation conducted between November 2, 2010 and February 7, 2011. A contour map of the claystone horizon is shown in Figure 1.

MAS is used for the landfilled waste in the scenarios

2.3 Seismic Loading

The USGS 2014 Dynamic Seismic Hazard Map for the conterminous United States was used to find the seismic hazards at the East Regional Landfill (39.842737°N, 104.496725°W). There is a 2% or

less chance that the peak ground acceleration at ERL will exceed 8.18% of the earth's gravitational pull in 50 years (equivalent to 10% chance in 250 years). This seismic acceleration value was used in all slope stability models.

2.4 Search Method

All modelling scenarios used a grid search method to identify the minimum failure surface. The grids were placed automatically by the software and the analyses were run. After seeing the results, the grid position and spacing were adjusted so that the factors of safety at the edges of the grid were generally higher than the factors of safety near the center of the grid, ensuring that the minimum failure surface would be found within the grid search space.

2.5 Analysis Methods

Each modelling scenario was analyzed for slope stability using four different methods of limit equilibrium analysis: Bishop Simplified, GLE (General Limit Equilibrium) / Morgenstern-Price, Janbu Corrected, and Spencer.

2.6 Statistical Variance

To account for uncertainty in the material properties and seismic loading values used in the model, a probabilistic analysis was conducted in addition to the deterministic failure analysis. For the probabilistic analysis, the Table 1 material properties and the seismic loading coefficient were assumed to be the mean values, and all values were assumed to be normally distributed with a standard deviation of 10% of the mean value.

For each scenario, 10,000 slope stability analyses were computed. Random values were selected for each material property and seismic coefficient prior to each of the analyses. After all 10,000 analyses had been conducted, three metrics were computed:

FS (mean) – The mean factor of safety for all statistical analyses.

PF – Probability of Failure, defined as the percentage of the statistical analyses whose factor of safety was less than 1.0 (the critical factor of safety).

RI – Reliability Index, defined as the number of standard deviations which separate the Mean Factor of Safety from 1.0 (the critical factor of safety).

3.0 MODELLING SCENARIOS

Three profile alignments were selected for slope stability analysis. Profiles 1, 2, and 3 are through the claystone bedrock (Figure 1), groundwater potentiometric surface (Figure 2), and the design subgrade and existing ground surface (Figure 3). Profiles 2 and 3 are also through the design top of final cover (Figure 4) and the design top of waste (3.5 feet below the top of final cover). All three profile alignments are shown in Figures 1 – 4.

- Profile 1 (Figure 5) – through the deepest design excavation at ERL, located adjacent to the Module 3 sump.
- Profile 2 (Figure 6) – through the tallest section of the final cover in Module 3, located near the center of Module 3 and aligned north-south.
- Profile 3 (Figure 7) – through the tallest section of the final cover in all of ERL, located in Module 1 through the north-facing slope.

3.1 Scenario 1 – Through Deepest Excavation

This scenario analyzed the profile through the deepest design excavation at ERL, located through the eastern permanent sideslope adjacent to the Module 3 leachate collection sump (Profile 1). This scenario analyzed an open condition: after construction but before placement of any waste. The results from all four modelling analyses and the worst-case results are shown in Table 2 below. Figures showing the minimum failure surfaces for each analysis method are included in Attachment 1.

TABLE 2
SCENARIO 1 SLOPE STABILITY ANALYSIS RESULTS

Method	Factor of Safety (Deterministic)	Mean Factor of Safety	Probability of Failure	Reliability Index
Bishop Simplified	1.476	1.482	0.030%	2.783
GLE / Morgenstern-Price	1.471	1.478	0.030%	2.756
Janbu Corrected	1.495	1.502	0.020%	2.860
Spencer	1.472	1.479	0.040%	2.748
Worst-Case	**1.471**	**1.478**	**0.040%**	**2.748**

3.2 Scenario 2 - Through Final Cover in Module 3

Scenarios 2.A and 2.B analyzed the profile through the tallest design final cover in Module 3, located approximately in the center of Module 3 and aligned north-south (Profile 2). These scenarios analyzed a closed condition: after construction of final cover.

3.2.1 Scenario 2.A – Failing North

This scenario analyzed the condition of slope failure to the north. The results from all four modelling analyses and the worst-case results are shown in Table 5 below. Figures showing the minimum failure surfaces for each analysis method are included in Attachment 2.A.

TABLE 3
SCENARIO 2.A SLOPE STABILITY ANALYSIS RESULTS

Method	Factor of Safety (Deterministic)	Mean Factor of Safety	Probability of Failure	Reliability Index
Bishop Simplified	1.943	1.951	0.000%	6.393
GLE / Morgenstern-Price	1.942	1.950	0.000%	6.384
Janbu Corrected	1.921	1.932	0.000%	5.442
Spencer	1.941	1.950	0.000%	6.385
Worst-Case	**1.921**	**1.932**	**0.000%**	**5.442**

3.2.2 Scenario 2.B – Failing South

This scenario analyzed the condition of slope failure to the north. The results from all four modelling analyses and the worst-case results are shown in Table 4 below. Figures showing the minimum failure surfaces for each analysis method are included in Attachment 2.B.

TABLE 4
SCENARIO 2.B SLOPE STABILITY ANALYSIS RESULTS

Method	Factor of Safety (Deterministic)	Mean Factor of Safety	Probability of Failure	Reliability Index
Bishop Simplified	1.937	1.944	0.000%	6.209
GLE / Morgenstern-Price	1.936	1.944	0.000%	6.221
Janbu Corrected	1.934	1.945	0.000%	5.348
Spencer	1.936	1.944	0.000%	6.221
Worst-Case	**1.934**	**1.944**	**0.000%**	**5.348**

3.3 Scenario 3 – Through Tallest Final Cover in Module 1

This scenario analyzed the profile through the tallest design final cover at ERL, located through the north-facing slope in Module 1 (Profile 3). This scenario analyzed a closed condition: after construction of final cover. The results from all four modelling analyses and the worst-case results are shown in Table 5 below. Figures showing the minimum failure surfaces for each analysis method are included in Attachment 3.

TABLE 5
SCENARIO 3 SLOPE STABILITY ANALYSIS RESULTS

Method	Factor of Safety (Deterministic)	Mean Factor of Safety	Probability of Failure	Reliability Index
Bishop Simplified	1.763	1.770	0.000%	5.021
GLE / Morgenstern-Price	1.749	1.756	0.000%	5.005
Janbu Corrected	1.665	1.672	0.000%	4.399
Spencer	1.749	1.757	0.000%	5.030
Worst-Case	**1.665**	**1.672**	**0.000%**	**4.399**

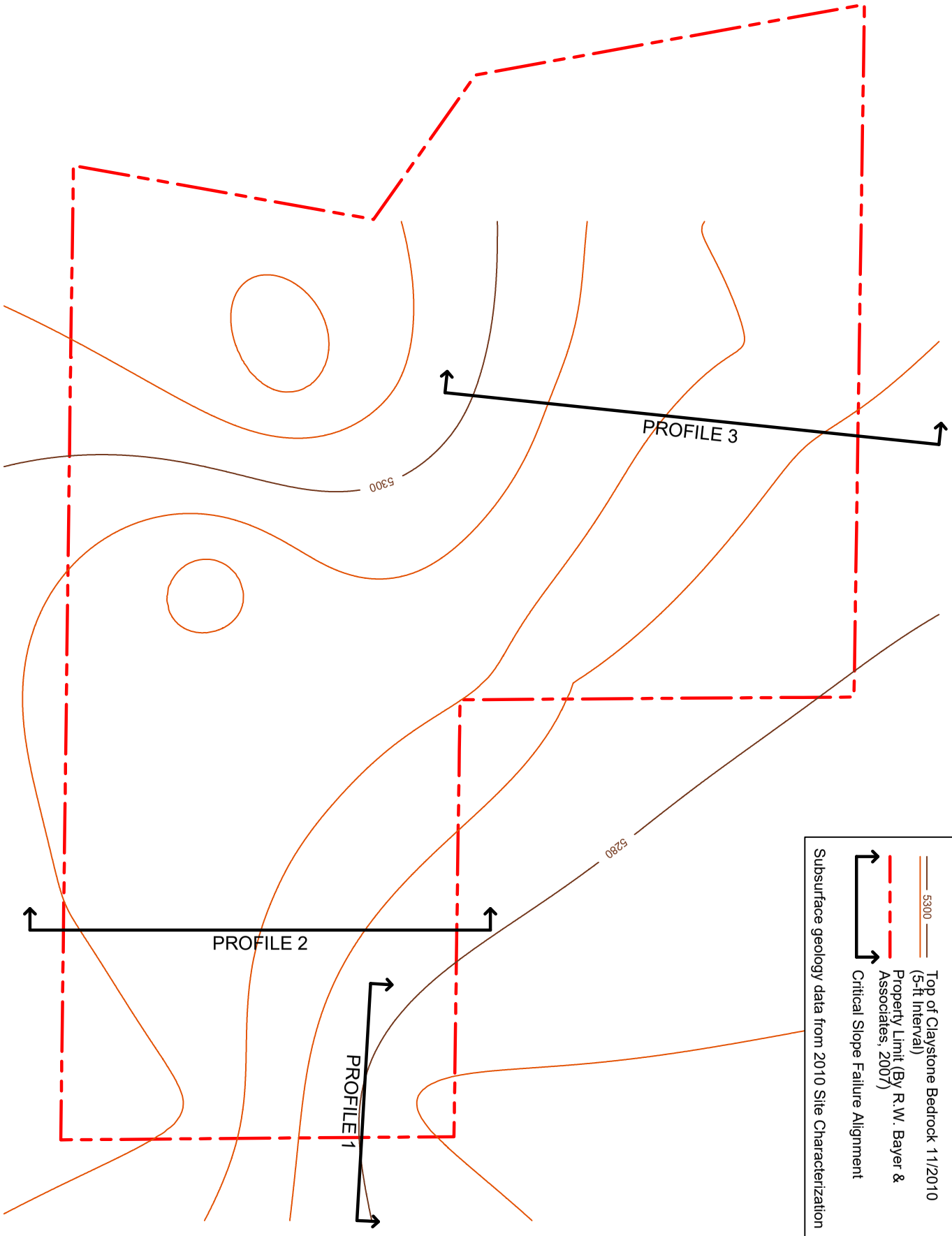
4.0 SUMMARY AND CONCLUSIONS

The worst-case factors of safety, probabilities of failure, and reliability indices for all four scenarios are shown in Table 6 below. Based on these modelling results, the worst factor of safety observed at the ERL is 1.471 in Scenario 1 – the open condition after the landfill has been constructed and before waste has been placed. This factor of safety exceeds the minimum design criteria of 1.3, so the landfill design is acceptable.

TABLE 6
WORST-CASE SLOPE STABILITIES FOR ALL FOUR SCENARIOS

Method	Factor of Safety (Deterministic)	Mean Factor of Safety	Probability of Failure	Reliability Index
Scenario 1	1.471	1.478	0.040%	2.748
Scenario 2.A	1.921	1.932	0.000%	5.442
Scenario 2.B	1.934	1.944	0.000%	5.348
Scenario 3	1.665	1.672	0.000%	4.399

FIGURES



Slope Stability Critical Failure Alignments Through Top of Claystone Bedrock

East Regional Landfill 2024 EDOP

Bennett, CO

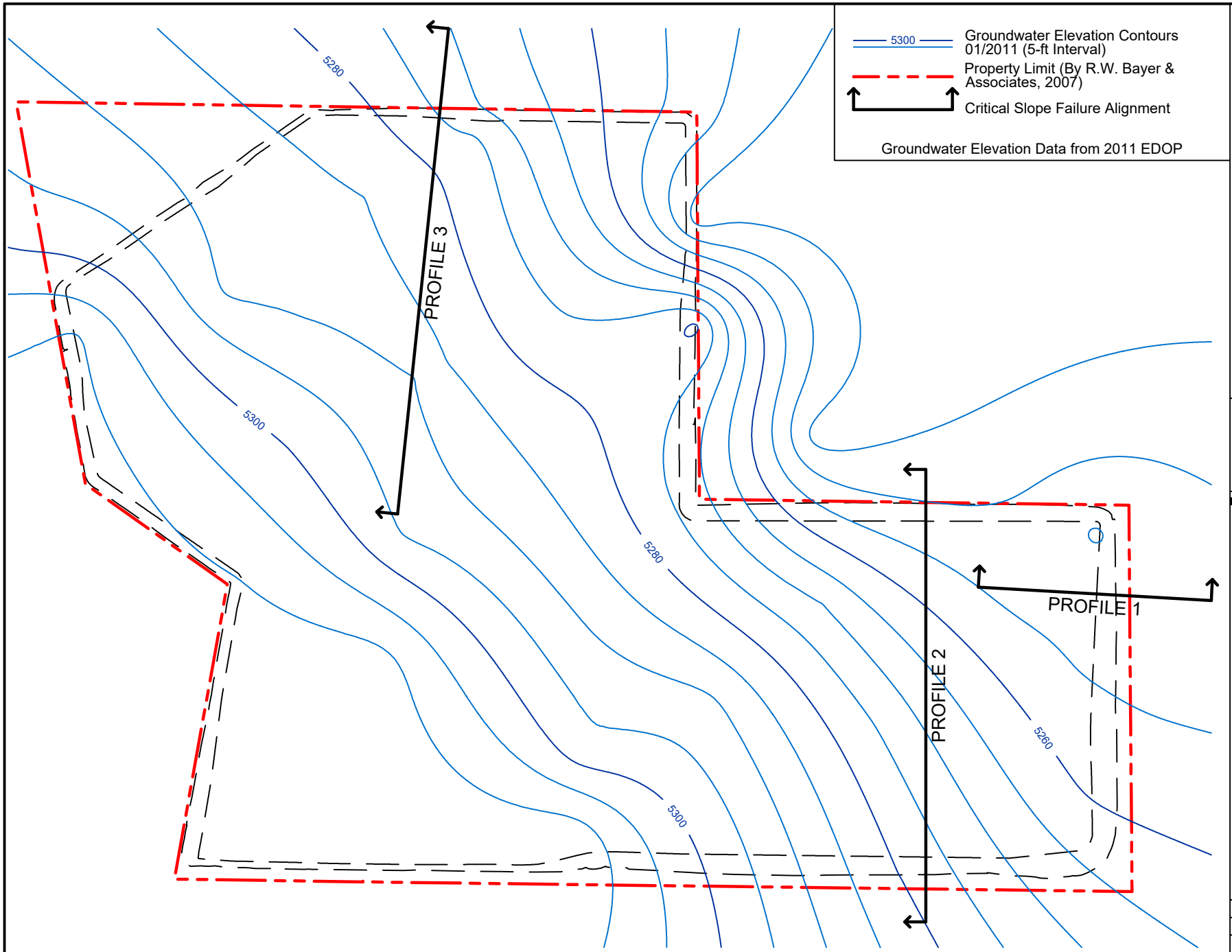
ERL Slope Stability Alignments & Horizons.dwg

0 450'

PROJECT NO: --
DESIGNED BY: MBT
DRAWN BY: MBT
APPROVED BY: CJA
DATE: 08/2023

FIGURE 1 OF 7

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.
8191 Southpark Lane, Suite 107, Littleton, CO 80120
phone 303-948-7733 fax 303-948-7739



AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.
8191 Southpark Lane, Suite 107, Littleton, CO 80120
phone 303-948-7733 fax 303-948-7739

0 450'

Slope Stability Critical Failure Alignments Through Groundwater Potentiometric Surface

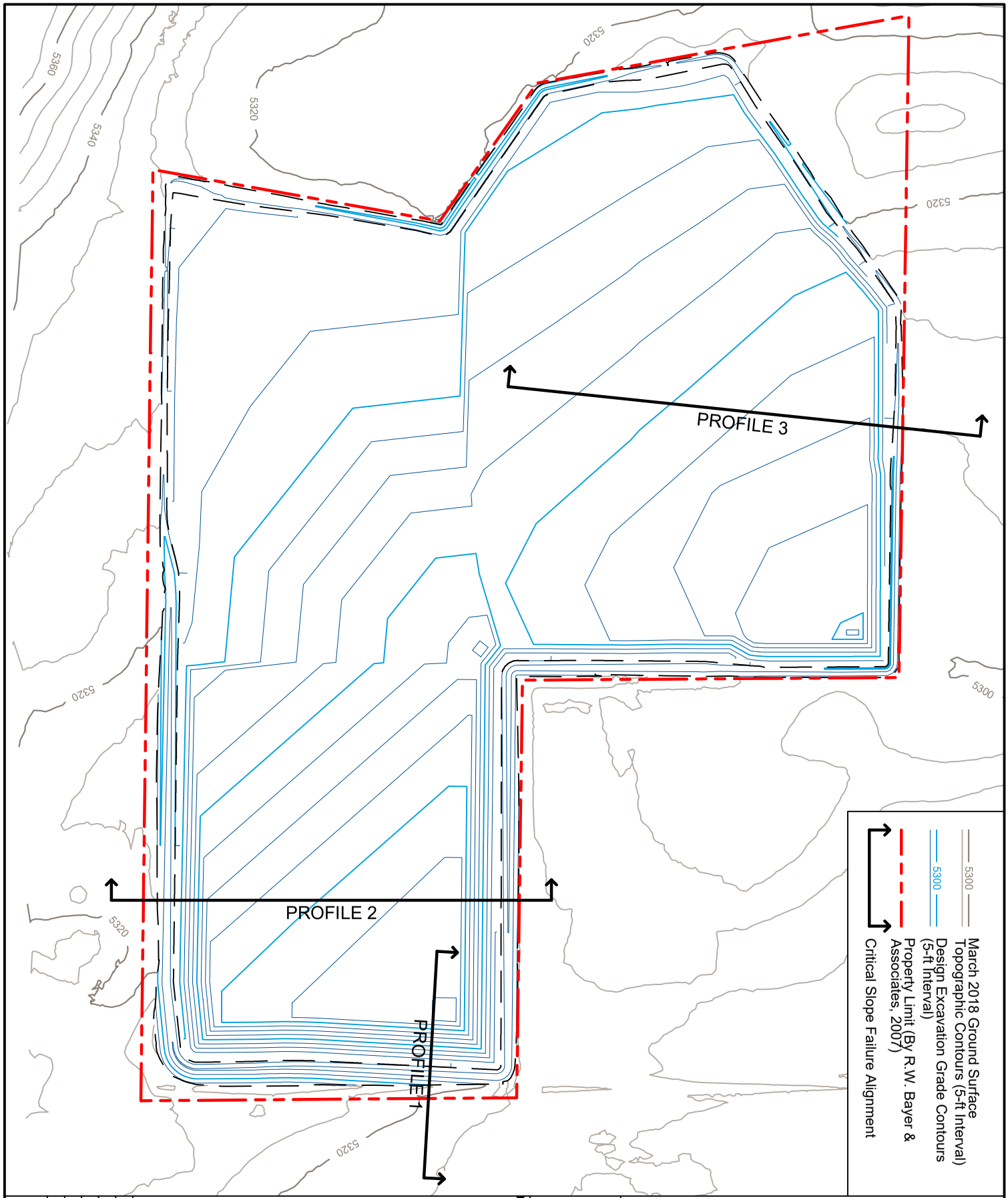
East Regional Landfill 2024 EDOP

Bennett, CO

ERL Slope Stability Alignments & Horizons.dwg

PROJECT NO:	--
DESIGNED BY:	MBT
DRAWN BY:	MBT
APPROVED BY:	CJA
DATE:	08/2023

FIGURE
2 OF 7



Slope Stability Critical Failure Alignments Through Landfill Base Grades

East Regional Landfill 2024 EDOP

Bennett, CO

ERL Slope Stability Alignments & Horizons.dwg

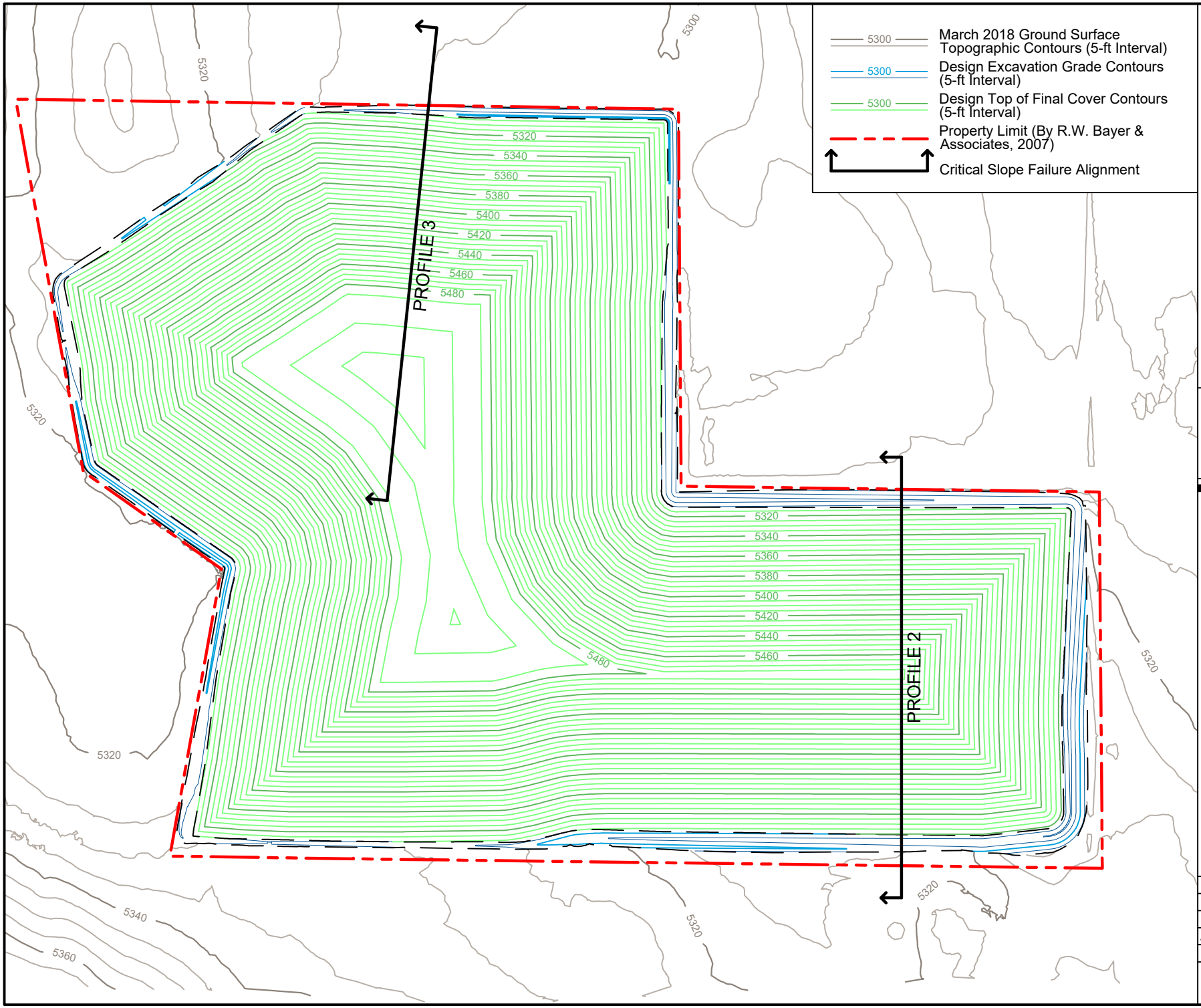
0 450'

PROJECT NO: --
DESIGNED BY: MBT
DRAWN BY: MBT
APPROVED BY: CJA
DATE: 08/2023

FIGURE 3 OF 7

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.

8191 Southpark Lane, Suite 107, Littleton, CO 80120
phone 303-948-7733 fax 303-948-7739



AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.
8191 Southpark Lane, Suite 107, Littleton, CO 80120
phone 303-948-7733 fax 303-948-7739

0 450'

Slope Stability Critical Failure Alignments Through Landfill Final Cover

East Regional Landfill 2024 EDOP

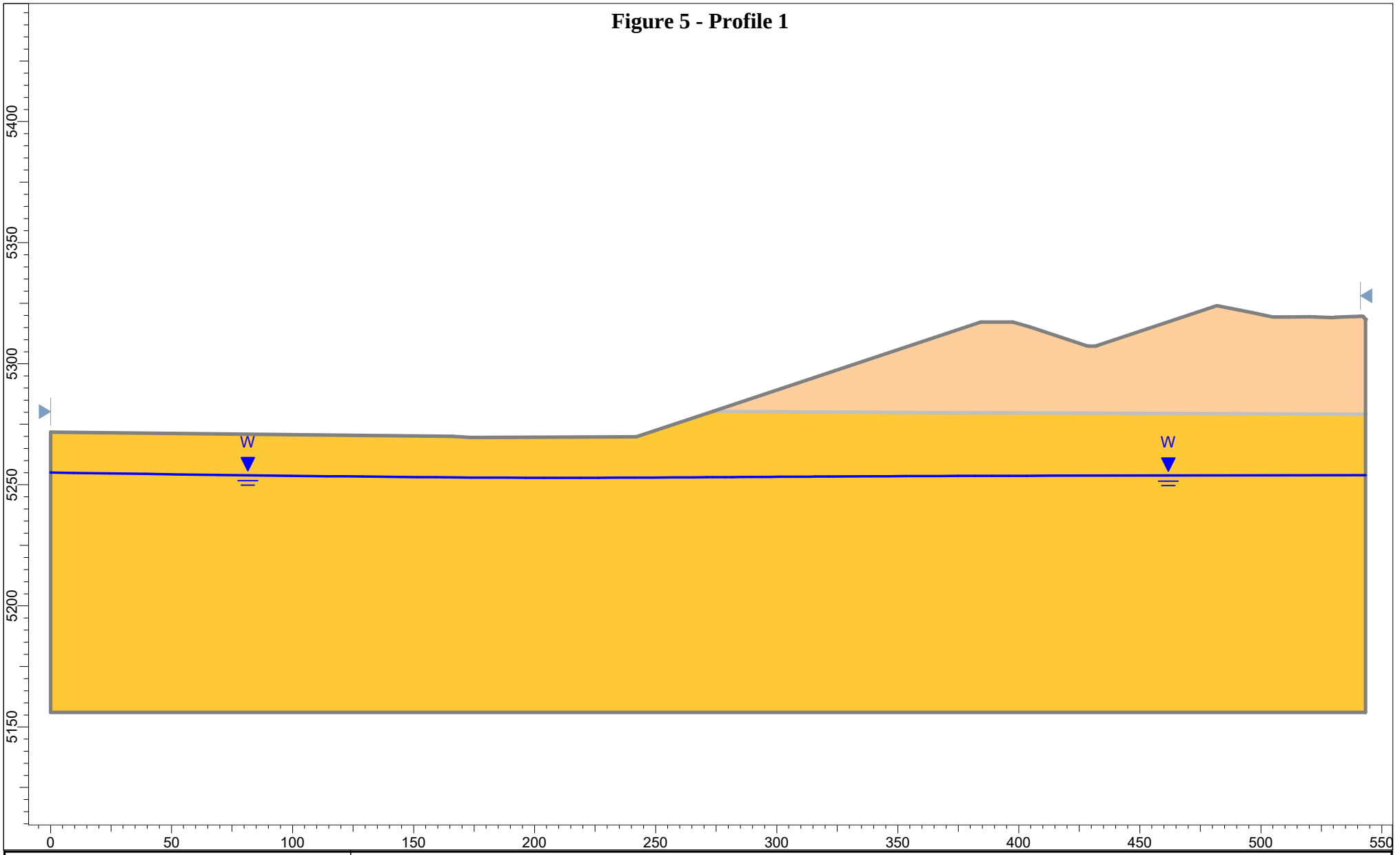
Bennett, CO

ERL Slope Stability Alignments & Horizons.dwg

PROJECT NO:	--
DESIGNED BY:	MBT
DRAWN BY:	MBT
APPROVED BY:	CJA
DATE:	08/2023

FIGURE
4 OF 7

Figure 5 - Profile 1

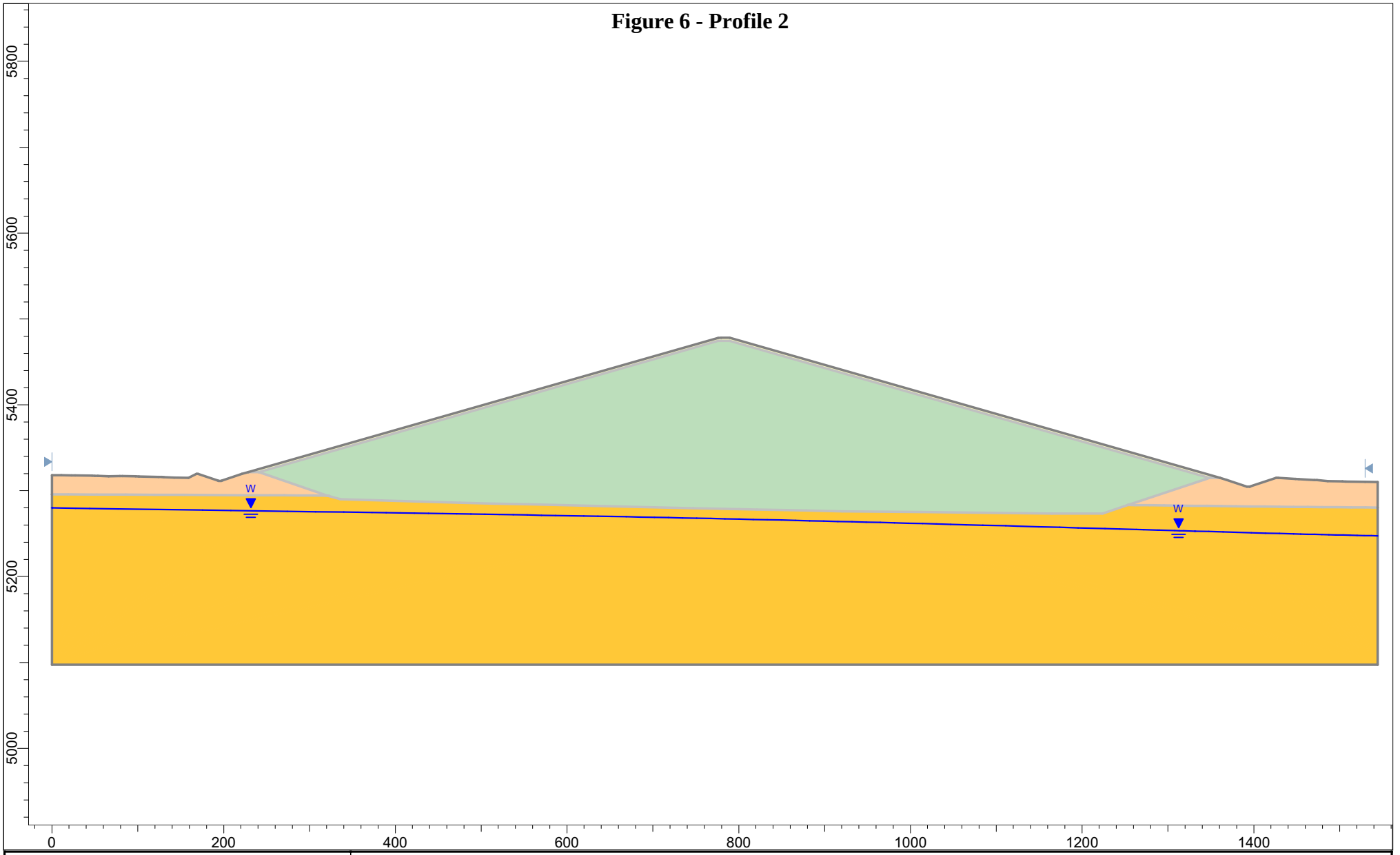


AEC

SLIDE 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 1 - Module 3 Excavation (Deepest)		
Drawn By	Michael Bucari-Tovo	Scale 1:656	Company American Environmental Consulting
Date	8/23/2024, 7:47:53 AM		File Name Profile1 - 0.1 SD.slim

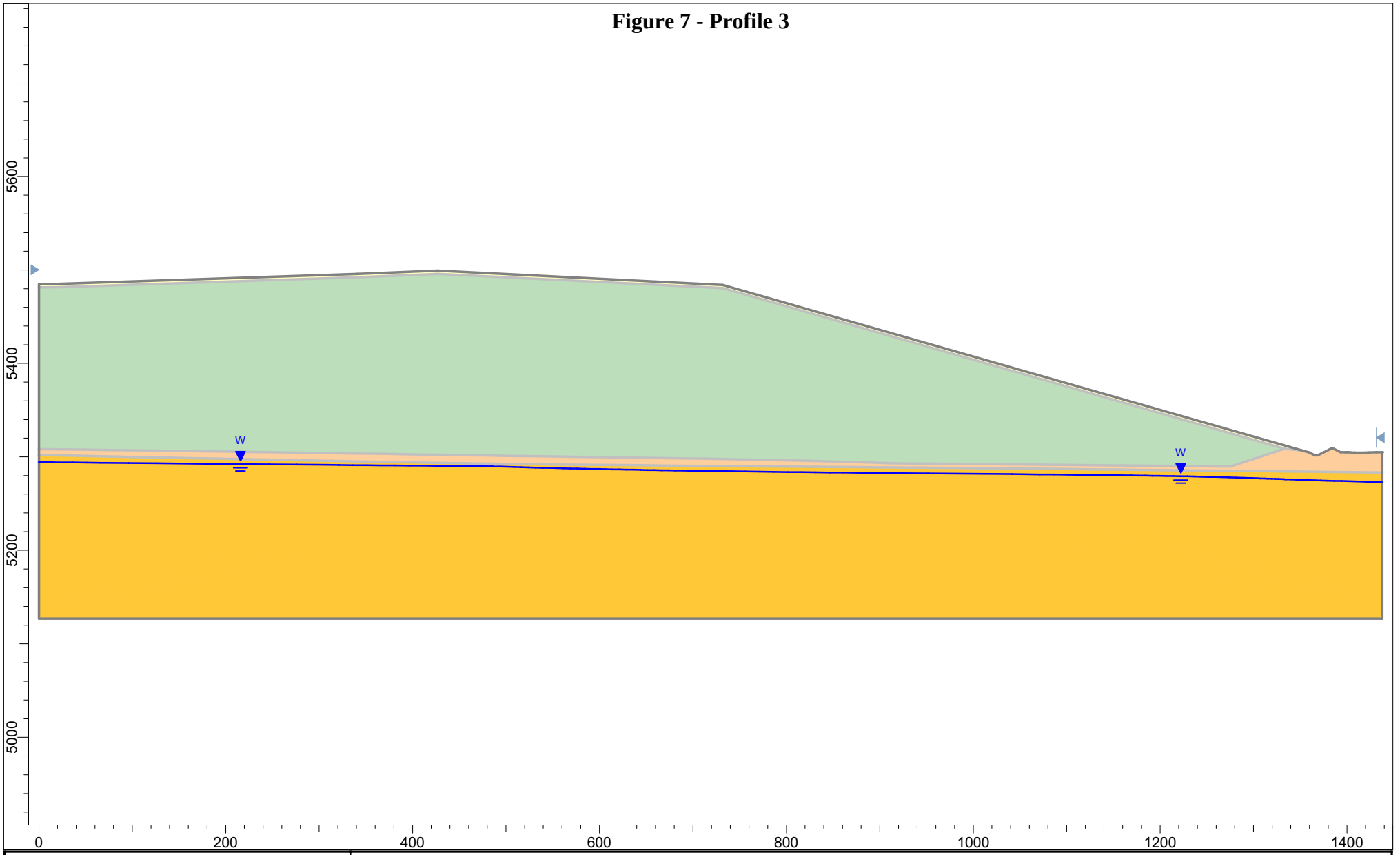
Figure 6 - Profile 2



AEC	Project	East Regional Landfill 2024 EDOP Slope Stability		
	Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail North		
	Drawn By	Michael Bucari-Tovo	Scale 1:1850	Company American Environmental Consulting
	Date	8/23/2024, 7:47:53 AM		File Name Profile2 - 0.1 SD - Fail North.slim

SLIDE 6.039

Figure 7 - Profile 3

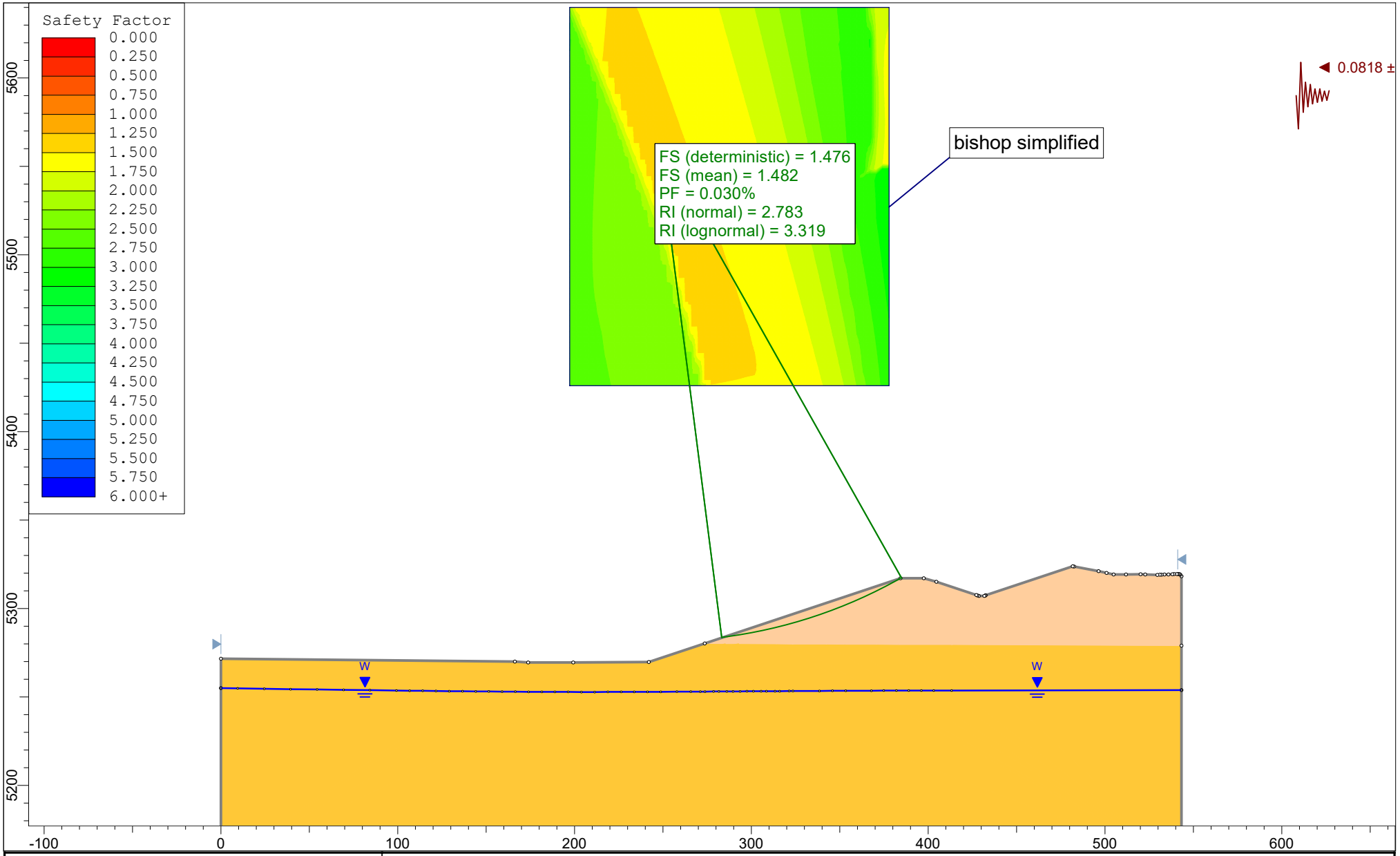


AEC	Project	East Regional Landfill 2024 EDOP Slope Stability		
	Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
	Drawn By: Michael Bucari-Tovo	Scale: 1:1700	Company: American Environmental Consulting	
	Date: 8/23/2024, 7:47:53 AM		File Name: Profile3 - 0.1 SD.slim	

SLIDE 6.039

ATTACHMENT 1

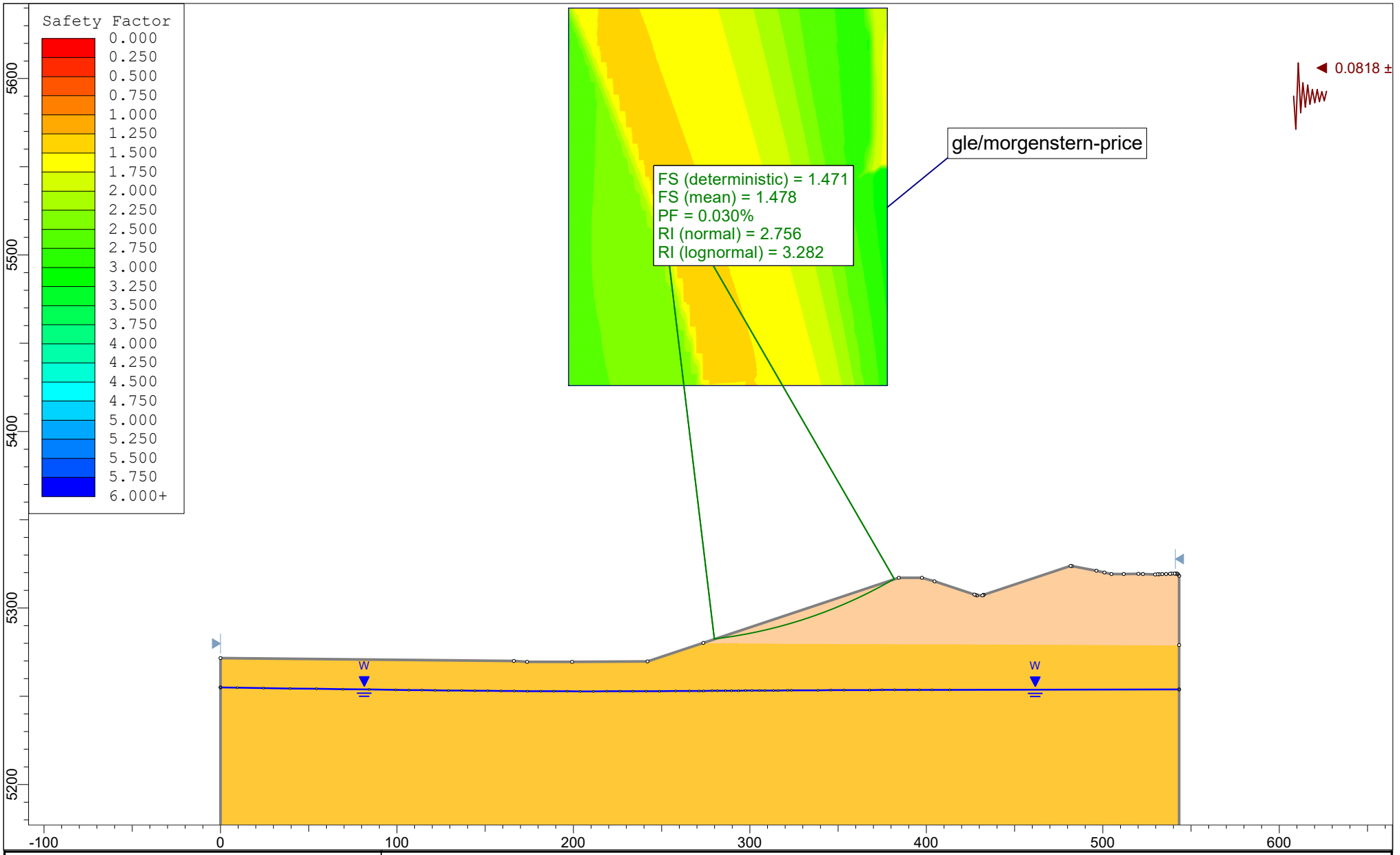
SCENARIO 1 SLOPE STABILITY ANALYSIS RESULTS



AEC

SLIDEINTERPRET 6.039

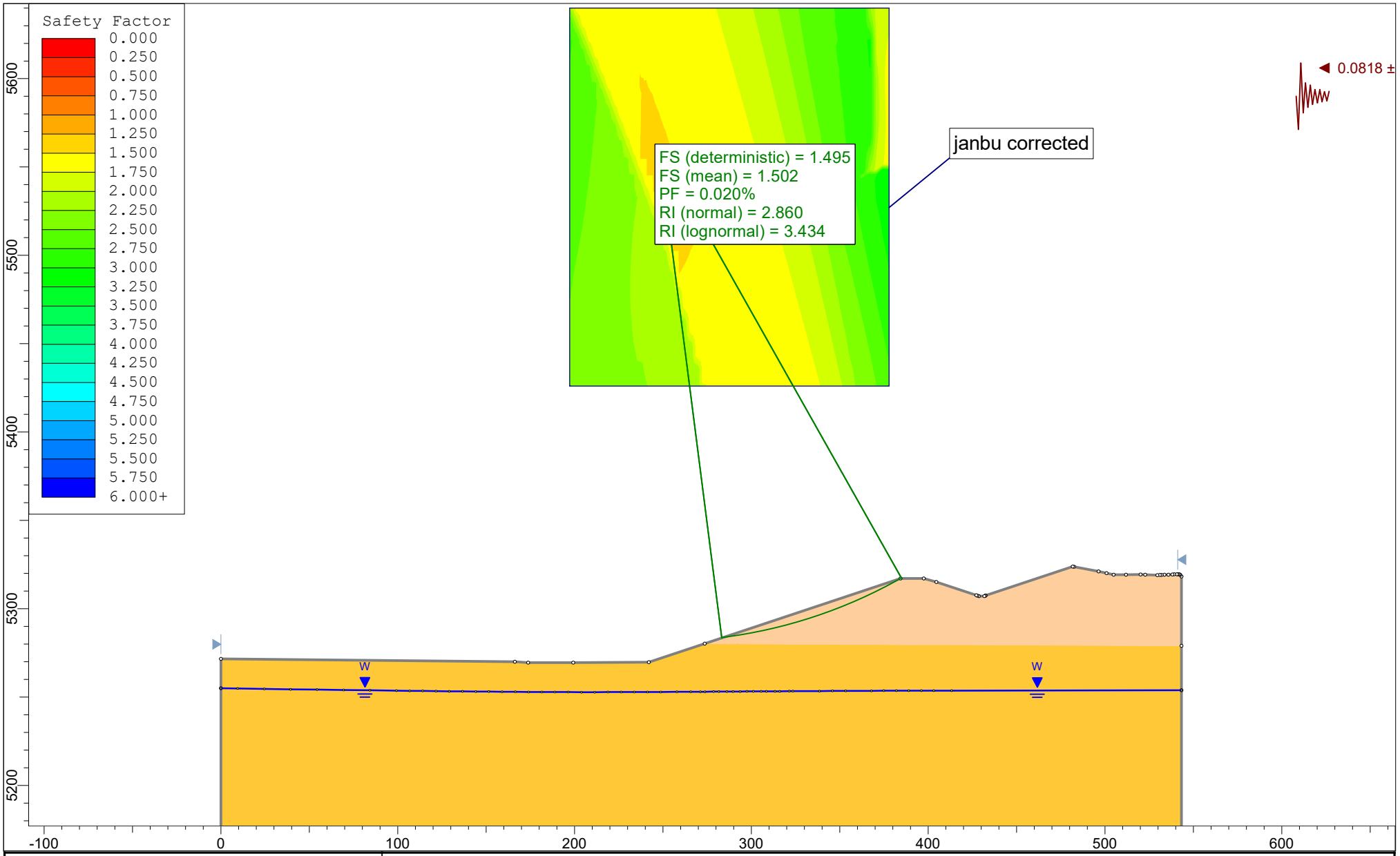
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 1 - Module 3 Excavation (Deepest)		
Drawn By Michael Bucari-Tovo	*Scale* 1:900	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile1 - 0.1 SD.slim	



AEC

SLIDEINTERPRET 6.039

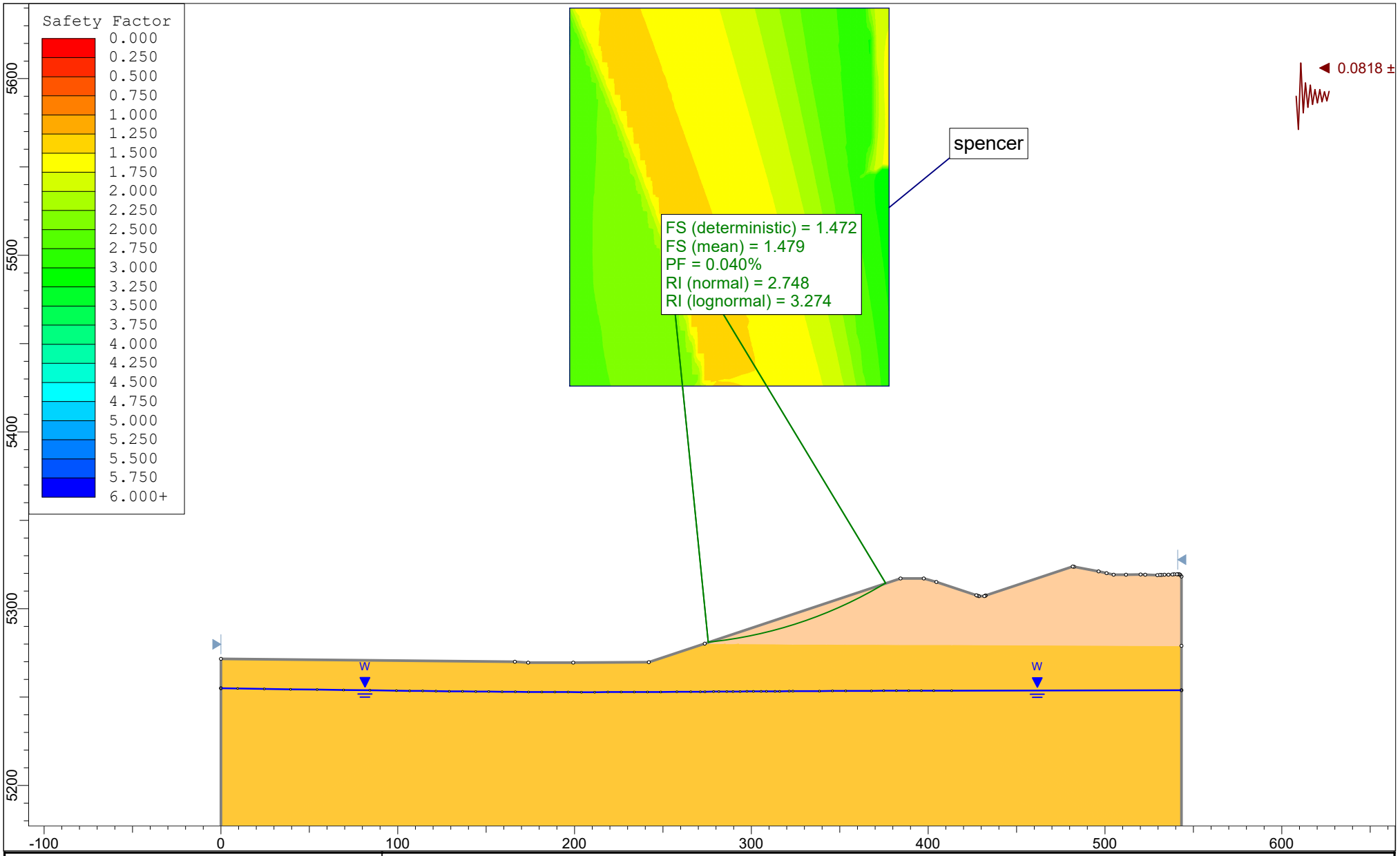
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 1 - Module 3 Excavation (Deepest)		
Drawn By Michael Bucari-Tovo	*Scale* 1:900	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile1 - 0.1 SD.slim	



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 1 - Module 3 Excavation (Deepest)		
Drawn By Michael Bucari-Tovo	*Scale* 1:900	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile1 - 0.1 SD.slim



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 1 - Module 3 Excavation (Deepest)		
Drawn By Michael Bucari-Tovo	*Scale* 1:900	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile1 - 0.1 SD.slim

Slide Analysis Information

East Regional Landfill 2024 EDOP Slope Stability

Project Summary

File Name: Profile1 - 0.1 SD.slim
Slide Modeler Version: 6.039
Project Title: East Regional Landfill 2024 EDOP Slope Stability
Analysis: Profile 1 - Module 3 Excavation (Deepest)
Author: Michael Bucari-Tovo
Company: American Environmental Consulting
Date Created: 8/23/2024, 7:47:53 AM
Comments:

Material and Seismic Standard Deviation: 10%
Min/Max: +/- 3 Standard Deviations

General Settings

Units of Measurement: Imperial Units
Time Units: seconds
Permeability Units: feet/second
Failure Direction: Right to Left
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
GLE/Morgenstern-Price with interslice force function: Half Sine
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.0818

Material Properties

Property	Native Soils	Claystone
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unsaturated Unit Weight [lbs/ft3]	104	
Saturated Unit Weight [lbs/ft3]	115	
Cohesion [psf]	10	1000
Friction Angle [deg]	30.5	18
Water Surface	Water Table	Water Table
Hu Value	Automatically Calculated	Automatically Calculated

Probabilistic Analysis Input

General Settings

Sensitivity Analysis: Off
Probabilistic Analysis: On
Sampling Method: Latin-Hypercube
Number of Samples: 10000
Analysis Type: Overall Slope

Variables

Material	Property	Distribution	Mean	Min	Max	Standard Deviation
Cover Soils	Cohesion	Normal	78	54.6	101.4	7.8
Cover Soils	Phi	Normal	25.7	17.99	33.41	2.57
Cover Soils	Unit Weight	Normal	98	68.6	127.4	9.8
Waste	Cohesion	Normal	200	140	260	20
Waste	Phi	Normal	32	22.4	41.6	3.2
Waste	Unit Weight	Normal	60	42	78	6
Native Soils	Cohesion	Normal	10	7	13	1
Native Soils	Phi	Normal	30.5	21.35	39.65	3.05
Native Soils	Unit Weight	Normal	104	72.8	135.2	10.4
Claystone	Cohesion	Normal	1000	700	1300	100
Claystone	Phi	Normal	18	12.6	23.4	1.8
Claystone	Unit Weight	Normal	120	84	156	12

Seismic Coefficient	Property	Distribution	Mean	Min	Max	Standard Deviation
Horizontal Seismic Coefficient		Normal	0.0818	0.05726	0.10634	0.00818
Vertical Seismic Coefficient			0			

Global Minimums

Method: bishop simplified

FS: 1.475560
Center: 247.850, 5560.507
Radius: 279.252
Left Slip Surface Endpoint: 283.213, 5283.504
Right Slip Surface Endpoint: 384.931, 5317.216
Resisting Moment=6.34782e+006 lb-ft
Driving Moment=4.30198e+006 lb-ft
Total Slice Area=380.511 ft2

Method: janbu corrected

FS: 1.495240
Center: 247.850, 5560.507

Radius: 279.252
Left Slip Surface Endpoint: 283.213, 5283.504
Right Slip Surface Endpoint: 384.931, 5317.216
Resisting Horizontal Force=21959.7 lb
Driving Horizontal Force=14686.4 lb
Total Slice Area=380.511 ft2

Method: spencer

FS: 1.471950
Center: 251.461, 5520.772
Radius: 241.012
Left Slip Surface Endpoint: 275.624, 5280.974
Right Slip Surface Endpoint: 376.010, 5314.436
Resisting Moment=5.94262e+006 lb-ft
Driving Moment=4.03724e+006 lb-ft
Resisting Horizontal Force=23384.5 lb
Driving Horizontal Force=15886.7 lb
Total Slice Area=415.073 ft2

Method: gle/morgenstern-price

FS: 1.471230
Center: 247.850, 5548.281
Radius: 267.823
Left Slip Surface Endpoint: 279.821, 5282.373
Right Slip Surface Endpoint: 381.819, 5316.372
Resisting Moment=6.23061e+006 lb-ft
Driving Moment=4.23497e+006 lb-ft
Resisting Horizontal Force=22073.1 lb
Driving Horizontal Force=15003.1 lb
Total Slice Area=390.851 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 49673
Number of Invalid Surfaces: 158

Error Codes:

Error Code -103 reported for 156 surfaces
Error Code -108 reported for 2 surfaces

Method: janbu corrected

Number of Valid Surfaces: 49671
Number of Invalid Surfaces: 160

Error Codes:

Error Code -103 reported for 156 surfaces
Error Code -108 reported for 4 surfaces

Method: spencer

Number of Valid Surfaces: 49671
Number of Invalid Surfaces: 160

Error Codes:

Error Code -103 reported for 156 surfaces
Error Code -108 reported for 4 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 49671
Number of Invalid Surfaces: 160

Error Codes:

Error Code -103 reported for 156 surfaces
Error Code -108 reported for 4 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.47556

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.06871	170.61	Native Soils	10	30.5	22.3158	32.9283	38.9245	0	38.9245
2	4.06871	498.903	Native Soils	10	30.5	52.5833	77.5898	114.745	0	114.745
3	4.06871	801.254	Native Soils	10	30.5	80.1201	118.222	183.724	0	183.724
4	4.06871	1077.48	Native Soils	10	30.5	104.951	154.862	245.928	0	245.928
5	4.06871	1327.39	Native Soils	10	30.5	127.102	187.547	301.415	0	301.415
6	4.06871	1550.74	Native Soils	10	30.5	146.593	216.307	350.24	0	350.24

7	4.06871	1747.31	Native Soils	10	30.5	163.444	241.172	392.453	0	392.453
8	4.06871	1916.83	Native Soils	10	30.5	177.674	262.168	428.096	0	428.096
9	4.06871	2059.01	Native Soils	10	30.5	189.296	279.318	457.212	0	457.212
10	4.06871	2173.53	Native Soils	10	30.5	198.327	292.644	479.833	0	479.833
11	4.06871	2260.07	Native Soils	10	30.5	204.779	302.163	495.993	0	495.993
12	4.06871	2318.27	Native Soils	10	30.5	208.66	307.891	505.719	0	505.719
13	4.06871	2347.72	Native Soils	10	30.5	209.983	309.843	509.032	0	509.032
14	4.06871	2348.01	Native Soils	10	30.5	208.753	308.027	505.95	0	505.95
15	4.06871	2318.7	Native Soils	10	30.5	204.976	302.454	496.489	0	496.489
16	4.06871	2259.29	Native Soils	10	30.5	198.656	293.129	480.658	0	480.658
17	4.06871	2169.26	Native Soils	10	30.5	189.796	280.056	458.463	0	458.463
18	4.06871	2048.06	Native Soils	10	30.5	178.397	263.236	429.911	0	429.911
19	4.06871	1895.09	Native Soils	10	30.5	164.46	242.67	394.996	0	394.996
20	4.06871	1709.7	Native Soils	10	30.5	147.98	218.354	353.716	0	353.716
21	4.06871	1491.21	Native Soils	10	30.5	128.957	190.284	306.062	0	306.062
22	4.06871	1238.86	Native Soils	10	30.5	107.384	158.452	252.022	0	252.022
23	4.06871	951.868	Native Soils	10	30.5	83.2572	122.851	191.582	0	191.582
24	4.06871	629.372	Native Soils	10	30.5	56.5668	83.4677	124.724	0	124.724
25	4.06871	264.624	Native Soils	10	30.5	26.8369	39.5995	50.2499	0	50.2499

Global Minimum Query (janbu corrected) - Safety Factor: 1.49524

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.06871	170.61	Native Soils	10	30.5	22.0089	32.9086	38.8911	0	38.8911
2	4.06871	498.903	Native Soils	10	30.5	51.8568	77.5384	114.658	0	114.658
3	4.06871	801.254	Native Soils	10	30.5	79.0081	118.136	183.579	0	183.579
4	4.06871	1077.48	Native Soils	10	30.5	103.489	154.741	245.72	0	245.72
5	4.06871	1327.39	Native Soils	10	30.5	125.323	187.388	301.145	0	301.145
6	4.06871	1550.74	Native Soils	10	30.5	144.532	216.11	349.905	0	349.905
7	4.06871	1747.31	Native Soils	10	30.5	161.136	240.937	392.052	0	392.052
8	4.06871	1916.83	Native Soils	10	30.5	175.153	261.896	427.635	0	427.635
9	4.06871	2059.01	Native Soils	10	30.5	186.6	279.012	456.691	0	456.691
10	4.06871	2173.53	Native Soils	10	30.5	195.49	292.305	479.26	0	479.26
11	4.06871	2260.07	Native Soils	10	30.5	201.837	301.795	495.368	0	495.368
12	4.06871	2318.27	Native Soils	10	30.5	205.651	307.497	505.049	0	505.049
13	4.06871	2347.72	Native Soils	10	30.5	206.941	309.427	508.326	0	508.326
14	4.06871	2348.01	Native Soils	10	30.5	205.716	307.595	505.215	0	505.215
15	4.06871	2318.7	Native Soils	10	30.5	201.981	302.01	495.735	0	495.735
16	4.06871	2259.29	Native Soils	10	30.5	195.742	292.681	479.897	0	479.897
17	4.06871	2169.26	Native Soils	10	30.5	187	279.61	457.706	0	457.706
18	4.06871	2048.06	Native Soils	10	30.5	175.758	262.801	429.17	0	429.17
19	4.06871	1895.09	Native Soils	10	30.5	162.016	242.253	394.288	0	394.288

20	4.06871	1709.7	Native Soils	10	30.5	145.773	217.965	353.055	0	353.055
21	4.06871	1491.21	Native Soils	10	30.5	127.024	189.932	305.463	0	305.463
22	4.06871	1238.86	Native Soils	10	30.5	105.768	158.149	251.508	0	251.508
23	4.06871	951.868	Native Soils	10	30.5	81.9989	122.608	191.17	0	191.17
24	4.06871	629.372	Native Soils	10	30.5	55.7081	83.297	124.434	0	124.434
25	4.06871	264.624	Native Soils	10	30.5	26.4277	39.5158	50.1079	0	50.1079

Global Minimum Query (spencer) - Safety Factor: 1.47195

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.01543	187.891	Native Soils	10	30.5	26.5188	39.0343	49.2905	0	49.2905
2	4.01543	549.411	Native Soils	10	30.5	62.6071	92.1545	139.471	0	139.471
3	4.01543	882.318	Native Soils	10	30.5	94.9523	139.765	220.297	0	220.297
4	4.01543	1186.42	Native Soils	10	30.5	123.663	182.026	292.042	0	292.042
5	4.01543	1461.48	Native Soils	10	30.5	148.841	219.086	354.958	0	354.958
6	4.01543	1707.27	Native Soils	10	30.5	170.581	251.086	409.283	0	409.283
7	4.01543	1923.49	Native Soils	10	30.5	188.972	278.157	455.239	0	455.239
8	4.01543	2109.84	Native Soils	10	30.5	204.097	300.42	493.037	0	493.037
9	4.01543	2265.98	Native Soils	10	30.5	216.035	317.993	522.868	0	522.868
10	4.01543	2391.53	Native Soils	10	30.5	224.859	330.981	544.917	0	544.917
11	4.01543	2486.08	Native Soils	10	30.5	230.638	339.488	559.359	0	559.359
12	4.01543	2549.18	Native Soils	10	30.5	233.438	343.609	566.354	0	566.354
13	4.01543	2580.34	Native Soils	10	30.5	233.318	343.433	566.056	0	566.056
14	4.01543	2579.03	Native Soils	10	30.5	230.337	339.045	558.606	0	558.606
15	4.01543	2544.68	Native Soils	10	30.5	224.549	330.525	544.143	0	544.143
16	4.01543	2476.65	Native Soils	10	30.5	216.005	317.948	522.793	0	522.793
17	4.01543	2374.27	Native Soils	10	30.5	204.754	301.387	494.678	0	494.678
18	4.01543	2236.8	Native Soils	10	30.5	190.841	280.908	459.911	0	459.911
19	4.01543	2063.45	Native Soils	10	30.5	174.31	256.576	418.602	0	418.602
20	4.01543	1853.34	Native Soils	10	30.5	155.203	228.451	370.856	0	370.856
21	4.01543	1605.54	Native Soils	10	30.5	133.56	196.593	316.772	0	316.772
22	4.01543	1319.03	Native Soils	10	30.5	109.418	161.058	256.446	0	256.446
23	4.01543	992.691	Native Soils	10	30.5	82.8153	121.9	189.969	0	189.969
24	4.01543	625.326	Native Soils	10	30.5	53.7871	79.1719	117.431	0	117.431
25	4.01543	215.614	Native Soils	10	30.5	22.3283	32.8662	38.8189	0	38.8189

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.47123

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.07992	177.708	Native Soils	10	30.5	23.2954	34.2729	41.2071	0	41.2071
2	4.07992	519.57	Native Soils	10	30.5	55.7908	82.0811	122.369	0	122.369
3	4.07992	834.234	Native Soils	10	30.5	85.8268	126.271	197.389	0	197.389

4	4.07992	1121.51	Native Soils	10	30.5	113.15	166.47	265.632	0	265.632
5	4.07992	1381.18	Native Soils	10	30.5	137.528	202.336	326.522	0	326.522
6	4.07992	1613.02	Native Soils	10	30.5	158.773	233.592	379.584	0	379.584
7	4.07992	1816.76	Native Soils	10	30.5	176.752	260.043	424.49	0	424.49
8	4.07992	1992.11	Native Soils	10	30.5	191.4	281.593	461.074	0	461.074
9	4.07992	2138.77	Native Soils	10	30.5	202.718	298.245	489.342	0	489.342
10	4.07992	2256.4	Native Soils	10	30.5	210.772	310.094	509.459	0	509.459
11	4.07992	2344.63	Native Soils	10	30.5	215.681	317.317	521.722	0	521.722
12	4.07992	2403.07	Native Soils	10	30.5	217.604	320.146	526.525	0	526.525
13	4.07992	2431.28	Native Soils	10	30.5	216.721	318.846	524.316	0	524.316
14	4.07992	2428.8	Native Soils	10	30.5	213.216	313.69	515.563	0	515.563
15	4.07992	2395.13	Native Soils	10	30.5	207.263	304.931	500.695	0	500.695
16	4.07992	2329.74	Native Soils	10	30.5	199.008	292.786	480.074	0	480.074
17	4.07992	2232.04	Native Soils	10	30.5	188.557	277.411	453.974	0	453.974
18	4.07992	2101.41	Native Soils	10	30.5	175.972	258.895	422.54	0	422.54
19	4.07992	1937.18	Native Soils	10	30.5	161.258	237.247	385.788	0	385.788
20	4.07992	1738.62	Native Soils	10	30.5	144.364	212.393	343.594	0	343.594
21	4.07992	1504.96	Native Soils	10	30.5	125.184	184.175	295.69	0	295.69
22	4.07992	1235.36	Native Soils	10	30.5	103.556	152.355	241.67	0	241.67
23	4.07992	928.905	Native Soils	10	30.5	79.2643	116.616	180.999	0	180.999
24	4.07992	584.619	Native Soils	10	30.5	52.048	76.5746	113.021	0	113.021
25	4.07992	201.446	Native Soils	10	30.5	21.604	31.7845	36.9828	0	36.9828

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.47556

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	283.213	5283.5	0	0	0
2	287.282	5284.05	55.1976	0	0
3	291.351	5284.66	157.664	0	0
4	295.419	5285.34	293.695	0	0
5	299.488	5286.07	450.83	0	0
6	303.557	5286.87	617.83	0	0
7	307.625	5287.73	784.676	0	0
8	311.694	5288.65	942.564	0	0
9	315.763	5289.64	1083.9	0	0
10	319.832	5290.69	1202.31	0	0
11	323.9	5291.81	1292.65	0	0
12	327.969	5293	1351	0	0
13	332.038	5294.25	1374.72	0	0

14	336.106	5295.57	1362.43	0	0
15	340.175	5296.96	1314.07	0	0
16	344.244	5298.42	1230.92	0	0
17	348.313	5299.95	1115.63	0	0
18	352.381	5301.56	972.313	0	0
19	356.45	5303.24	806.528	0	0
20	360.519	5304.99	625.398	0	0
21	364.587	5306.83	437.66	0	0
22	368.656	5308.74	253.747	0	0
23	372.725	5310.73	85.8765	0	0
24	376.793	5312.81	-51.8406	0	0
25	380.862	5314.97	-143.288	0	0
26	384.931	5317.22	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 1.49524

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	283.213	5283.5	0	0	0
2	287.282	5284.05	56.2246	0	0
3	291.351	5284.66	161.107	0	0
4	295.419	5285.34	300.816	0	0
5	299.488	5286.07	462.764	0	0
6	303.557	5286.87	635.593	0	0
7	307.625	5287.73	809.165	0	0
8	311.694	5288.65	974.556	0	0
9	315.763	5289.64	1124.06	0	0
10	319.832	5290.69	1251.19	0	0
11	323.9	5291.81	1350.68	0	0
12	327.969	5293	1418.5	0	0
13	332.038	5294.25	1451.91	0	0
14	336.106	5295.57	1449.4	0	0
15	340.175	5296.96	1410.8	0	0
16	344.244	5298.42	1337.28	0	0
17	348.313	5299.95	1231.39	0	0
18	352.381	5301.56	1097.08	0	0
19	356.45	5303.24	939.831	0	0
20	360.519	5304.99	766.621	0	0
21	364.587	5306.83	586.063	0	0
22	368.656	5308.74	408.458	0	0
23	372.725	5310.73	245.887	0	0
24	376.793	5312.81	112.317	0	0
25	380.862	5314.97	23.7167	0	0

26	384.931	5317.22	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.47195

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	275.624	5280.97	0	0	0
2	279.64	5281.41	69.5158	21.7947	17.4073
3	283.655	5281.92	205.317	64.3711	17.4073
4	287.67	5282.5	387.676	121.544	17.4072
5	291.686	5283.14	598.948	187.783	17.4073
6	295.701	5283.85	823.488	258.181	17.4073
7	299.717	5284.64	1047.58	328.439	17.4073
8	303.732	5285.5	1259.38	394.842	17.4073
9	307.748	5286.42	1448.86	454.248	17.4073
10	311.763	5287.43	1607.77	504.07	17.4073
11	315.778	5288.5	1729.61	542.268	17.4073
12	319.794	5289.65	1809.59	567.345	17.4073
13	323.809	5290.87	1844.65	578.335	17.4073
14	327.825	5292.18	1833.4	574.809	17.4073
15	331.84	5293.56	1776.19	556.872	17.4073
16	335.856	5295.02	1675.06	525.166	17.4073
17	339.871	5296.56	1533.81	480.88	17.4072
18	343.886	5298.19	1357.98	425.756	17.4073
19	347.902	5299.9	1154.97	362.106	17.4072
20	351.917	5301.69	933.991	292.826	17.4073
21	355.933	5303.58	706.229	221.418	17.4073
22	359.948	5305.56	484.86	152.014	17.4073
23	363.964	5307.63	285.171	89.4071	17.4073
24	367.979	5309.8	124.666	39.0854	17.4073
25	371.994	5312.06	23.1968	7.27269	17.4073
26	376.01	5314.44	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.47123

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	279.821	5282.37	0	0	0
2	283.901	5282.9	58.9962	2.58411	2.50803
3	287.981	5283.48	172.414	14.9848	4.96719
4	292.061	5284.13	325.981	41.938	7.33093
5	296.141	5284.85	505.937	85.1808	9.55683
6	300.22	5285.63	699.246	143.638	11.6081
7	304.3	5286.47	893.843	213.838	13.4542

8	308.38	5287.39	1078.88	290.518	15.071
9	312.46	5288.37	1244.93	367.347	16.44
10	316.54	5289.42	1384.18	437.701	17.5478
11	320.62	5290.53	1490.51	495.406	18.3854
12	324.7	5291.72	1559.58	535.384	18.9467
13	328.78	5292.98	1588.78	554.148	19.2282
14	332.86	5294.31	1577.22	550.117	19.2282
15	336.94	5295.71	1525.62	523.727	18.9467
16	341.02	5297.19	1436.22	477.363	18.3855
17	345.1	5298.74	1312.72	415.106	17.5479
18	349.18	5300.37	1160.19	342.341	16.4399
19	353.259	5302.07	985.063	265.256	15.071
20	357.339	5303.86	795.199	190.239	13.4543
21	361.419	5305.73	599.946	123.24	11.6081
22	365.499	5307.68	410.321	69.0827	9.55684
23	369.579	5309.72	239.249	30.7798	7.33093
24	373.659	5311.85	101.866	8.85337	4.9672
25	377.739	5314.06	15.91	0.696876	2.50802
26	381.819	5316.37	0	0	0

Probabilistic Analysis Results (Overall Slope)

Method: bishop simplified
Factor of Safety, mean: 1.481404
Factor of Safety, standard deviation: 0.173045
Factor of Safety, minimum: 0.972713
Factor of Safety, maximum: 2.115120
Probability of Failure: 0.030% (= 3 failed surfaces / 10000 valid surfaces)
Reliability index: 2.78195 (assuming normal distribution)
Reliability index: 3.31753 (assuming lognormal distribution)
* best fit = Gamma

Method: janbu corrected
Factor of Safety, mean: 1.500992
Factor of Safety, standard deviation: 0.174409
Factor of Safety, minimum: 0.986041
Factor of Safety, maximum: 2.143750
Probability of Failure: 0.020% (= 2 failed surfaces / 10000 valid surfaces)
Reliability index: 2.87251 (assuming normal distribution)
Reliability index: 3.44903 (assuming lognormal distribution)
* best fit = Gamma

Method: spencer
Factor of Safety, mean: 1.477799
Factor of Safety, standard deviation: 0.173096

Factor of Safety, minimum: 0.968347
Factor of Safety, maximum: 2.110550
Probability of Failure: 0.040% (= 4 failed surfaces / 10000 valid surfaces)
Reliability index: 2.76031 (assuming normal distribution)
Reliability index: 3.28735 (assuming lognormal distribution)
* best fit = Gamma

Method: gle/morgenstern-price
Factor of Safety, mean: 1.477196
Factor of Safety, standard deviation: 0.173048
Factor of Safety, minimum: 0.968424
Factor of Safety, maximum: 2.113220
Probability of Failure: 0.040% (= 4 failed surfaces / 10000 valid surfaces)
Reliability index: 2.75759 (assuming normal distribution)
Reliability index: 3.28342 (assuming lognormal distribution)
* best fit = Gamma

Critical Probabilistic Surface

Method: bishop simplified
Normal Reliability Index: 2.77281
Probability of Failure: 0.0003
Mean Factor of Safety: 1.4827
Center: 251.461, 5514.66
Radius: 235.33
Left Slip Surface Endpoint: 273.906, 5280.4
Right Slip Surface Endpoint: 374.06, 5313.79
Lognormal Reliability Index: 3.30764
Probability of Failure: 0.0003
Mean Factor of Safety: 1.4827
Center: 251.461, 5514.66
Radius: 235.33
Left Slip Surface Endpoint: 273.906, 5280.4
Right Slip Surface Endpoint: 374.06, 5313.79

Method: janbu corrected
Normal Reliability Index: 2.8518
Probability of Failure: 0.0002
Mean Factor of Safety: 1.50342
Center: 251.461, 5514.66
Radius: 235.33
Left Slip Surface Endpoint: 273.906, 5280.4
Right Slip Surface Endpoint: 374.06, 5313.79
Lognormal Reliability Index: 3.42602
Probability of Failure: 0.0002
Mean Factor of Safety: 1.50342
Center: 251.461, 5514.66
Radius: 235.33
Left Slip Surface Endpoint: 273.906, 5280.4
Right Slip Surface Endpoint: 374.06, 5313.79

Method: spencer
Normal Reliability Index: 2.7414
Probability of Failure: 0.0003
Mean Factor of Safety: 1.48211
Center: 255.072, 5502.43
Radius: 222.74
Left Slip Surface Endpoint: 274.264, 5280.52
Right Slip Surface Endpoint: 372.866, 5313.39
Lognormal Reliability Index: 3.26626
Probability of Failure: 0.0003
Mean Factor of Safety: 1.47957
Center: 251.461, 5514.66
Radius: 235.33
Left Slip Surface Endpoint: 273.906, 5280.4
Right Slip Surface Endpoint: 374.06, 5313.79

Method: gle/morgenstern-price
Normal Reliability Index: 2.74692
Probability of Failure: 0.0004
Mean Factor of Safety: 1.47972
Center: 251.461, 5526.88
Radius: 246.698
Left Slip Surface Endpoint: 277.351, 5281.55
Right Slip Surface Endpoint: 377.951, 5315.08
Lognormal Reliability Index: 3.27269
Probability of Failure: 0.0004
Mean Factor of Safety: 1.47949
Center: 251.461, 5529.94
Radius: 249.542
Left Slip Surface Endpoint: 278.217, 5281.84
Right Slip Surface Endpoint: 378.919, 5315.41

List Of Coordinates

Water Table

X	Y
0	5255
9.4986	5254.87
24.4504	5254.66
39.4022	5254.46
54.3539	5254.26
69.3057	5254.06
84.2575	5253.88
99.2093	5253.7
106.685	5253.61
114.161	5253.52
121.637	5253.44

129.113	5253.36
136.589	5253.28
144.065	5253.21
151.541	5253.14
159.016	5253.08
166.492	5253.02
173.968	5252.97
181.444	5252.93
188.92	5252.9
196.396	5252.88
203.872	5252.86
211.348	5252.86
218.823	5252.87
226.299	5252.88
233.775	5252.9
241.251	5252.93
248.727	5252.96
257.813	5253.01
265.75	5253.05
271.155	5253.08
273.687	5253.1
278.631	5253.13
281.624	5253.14
286.106	5253.17
289.562	5253.19
293.582	5253.22
297.499	5253.24
301.058	5253.27
305.436	5253.29
308.534	5253.31
313.373	5253.34
316.01	5253.35
321.311	5253.38
323.486	5253.4
338.438	5253.48
345.914	5253.51
353.389	5253.55
367.814	5253.61
374.879	5253.63
381.944	5253.65
389.009	5253.67
396.075	5253.69

403.14	5253.7
413.197	5253.72
543.237	5253.93

External Boundary

X	Y
543.237	5318.28
542.635	5319.13
542.286	5319.47
541.823	5319.56
541.163	5319.58
540.617	5319.57
539.148	5319.49
538.138	5319.47
535.821	5319.33
533.55	5319.3
532.03	5319.16
531.041	5319.14
529.662	5319.02
522.674	5319.29
520.078	5319.39
511.912	5319.31
504.872	5319.31
500.91	5320.14
496.319	5321.12
482.479	5323.8
481.761	5323.96
432.522	5307.54
432.337	5307.47
431.749	5307.21
428.751	5307.21
427.817	5307.47
427.277	5307.64
404.554	5315.21
397.53	5317.22
384.351	5317.22
273.585	5280.29
242.002	5269.77
199.257	5269.61
173.734	5269.51
166.195	5270

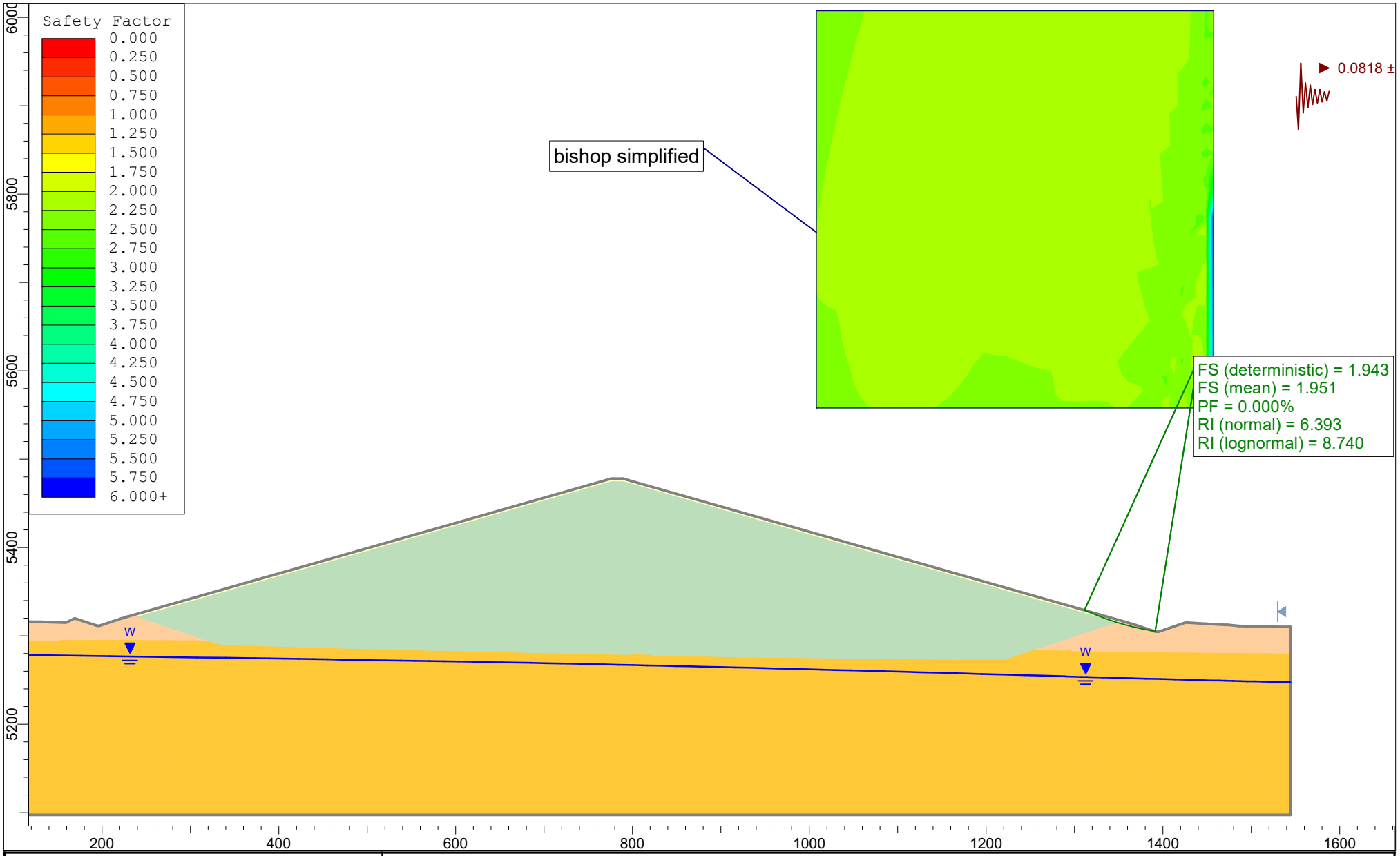
0	5271.7
0	5255
3.55271e-015	5155.98
543.237	5155.98
543.237	5253.93
543.237	5279.11

Material Boundary

X	Y
273.585	5280.29
285.489	5280.21
293.013	5280.16
313.884	5280.03
323.058	5279.97
342.279	5279.88
353.105	5279.83
370.674	5279.77
383.151	5279.73
413.197	5279.68
543.237	5279.11

ATTACHMENT 2.A

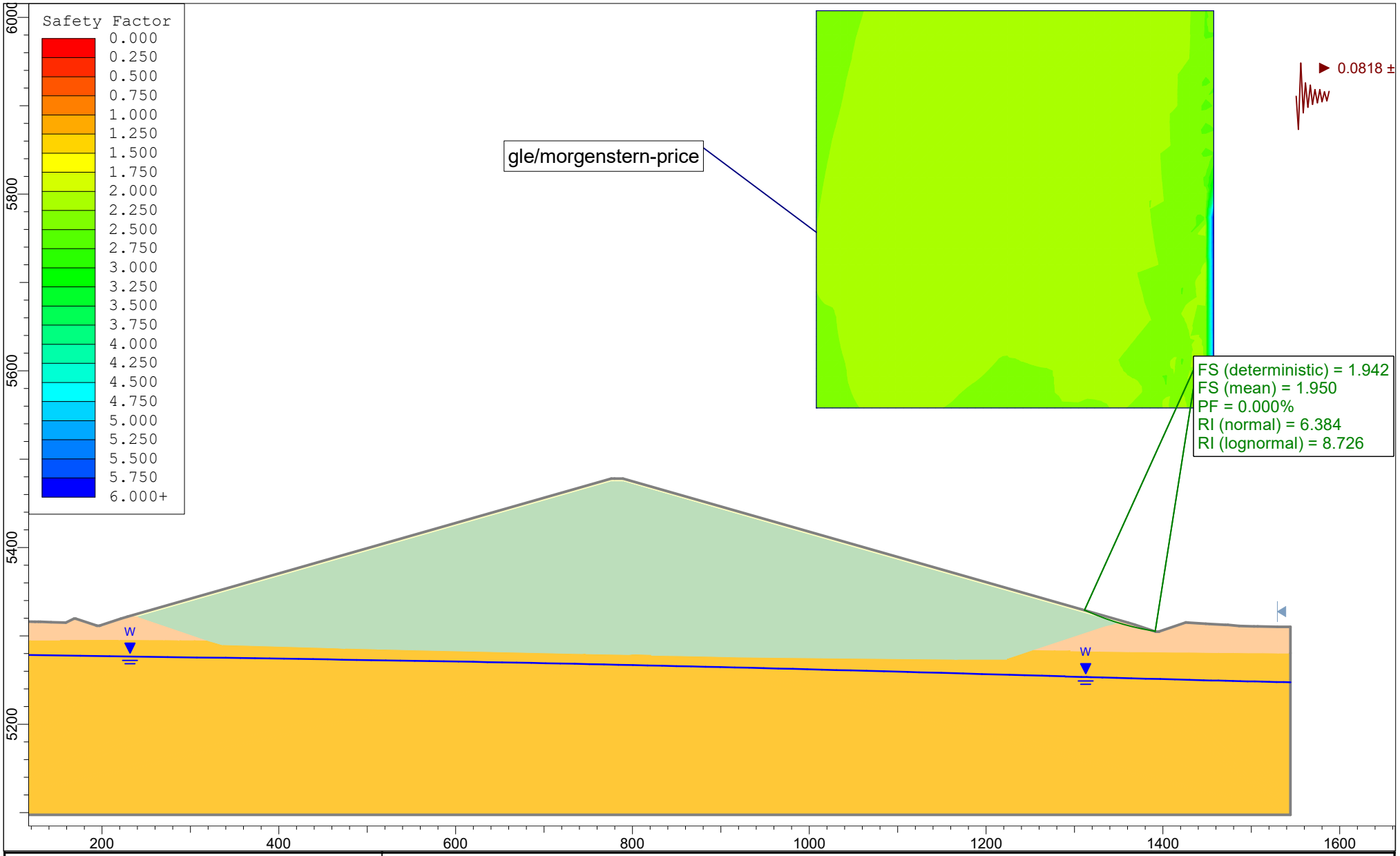
SCENARIO 2.A SLOPE STABILITY ANALYSIS RESULTS



AEC

SLIDEINTERPRET 6.039

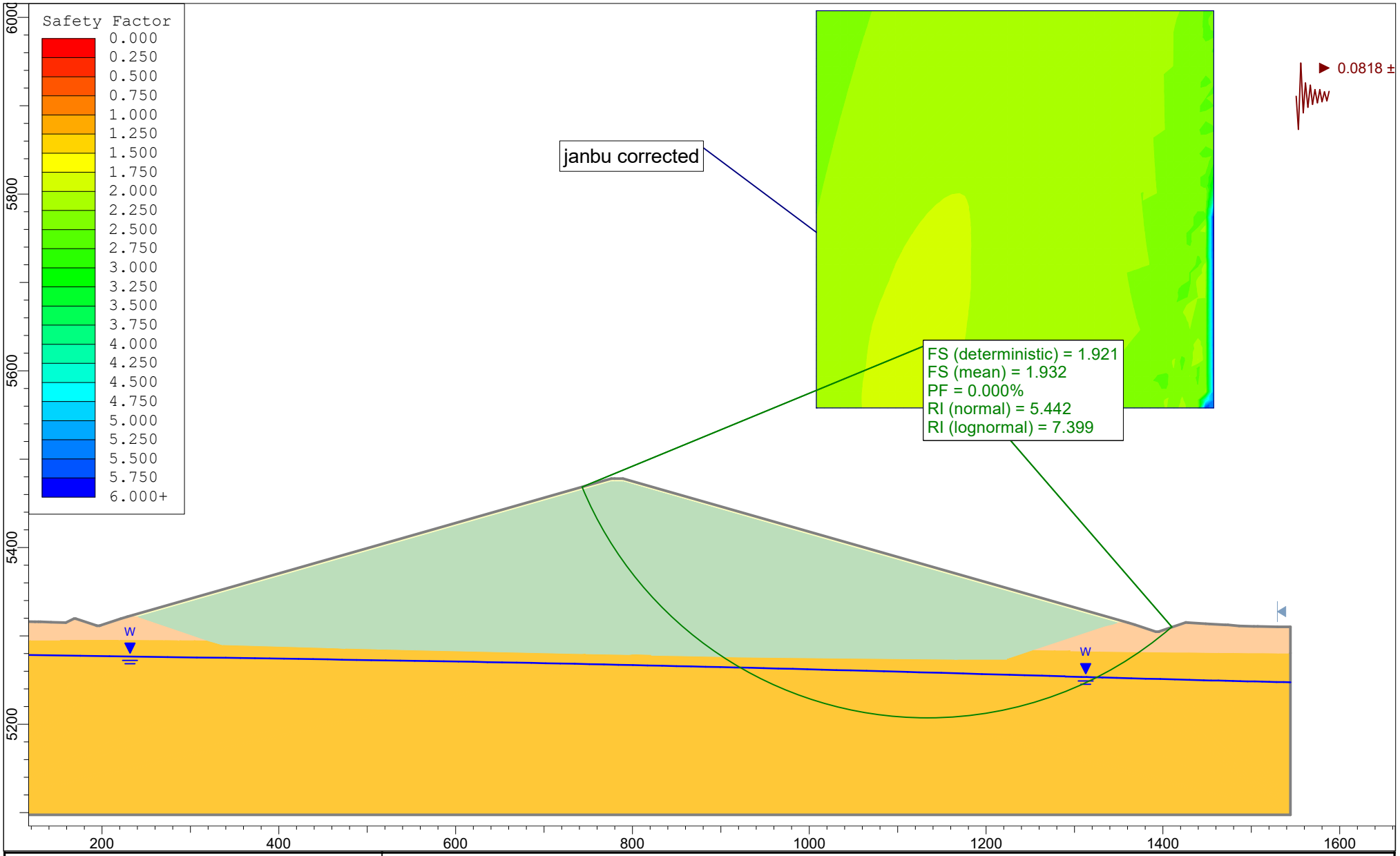
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail North		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile2 - 0.1 SD - Fail North.slim



AEC

SLIDEINTERPRET 6.039

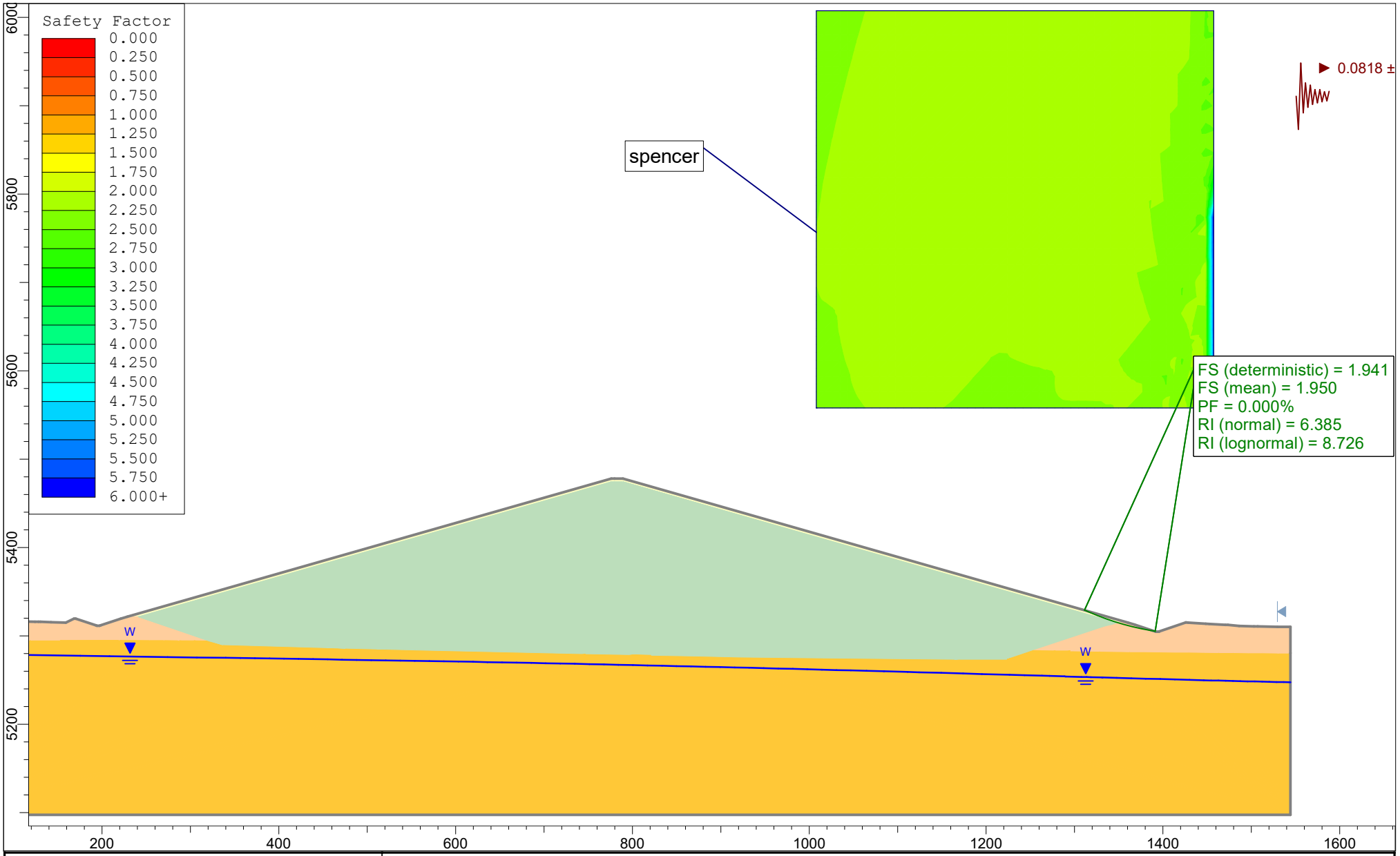
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail North		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail North.slim	



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail North		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile2 - 0.1 SD - Fail North.slim



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail North		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail North.slim	

Slide Analysis Information

East Regional Landfill 2024 EDOP Slope Stability

Project Summary

File Name: Profile2 - 0.1 SD - Fail North.slim
Slide Modeler Version: 6.039
Project Title: East Regional Landfill 2024 EDOP Slope Stability
Analysis: Profile 2 - Module 3 Final Cover and Waste - Fail North
Author: Michael Bucari-Tovo
Company: American Environmental Consulting
Date Created: 8/23/2024, 7:47:53 AM
Comments:

Material and Seismic Standard Deviation: 10%
Min/Max: +/- 3 Standard Deviations

General Settings

Units of Measurement: Imperial Units
Time Units: seconds
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
GLE/Morgenstern-Price with interslice force function: Half Sine
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.0818

Material Properties

Property	Cover Soils	Waste	Native Soils	Claystone
Color				
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unsaturated Unit Weight [lbs/ft3]			104	
Saturated Unit Weight [lbs/ft3]			115	
Cohesion [psf]	78	200	10	1000
Friction Angle [deg]	25.7	32	30.5	18
Water Surface	None	None	Water Table	Water Table
Hu Value			Automatically Calculated	Automatically Calculated
Ru Value	0	0		

Probabilistic Analysis Input

General Settings

Sensitivity Analysis: Off
Probabilistic Analysis: On
Sampling Method: Latin-Hypercube
Number of Samples: 10000
Analysis Type: Overall Slope

Variables

Material	Property	Distribution	Mean	Min	Max	Standard Deviation
Cover Soils	Cohesion	Normal	78	54.6	101.4	7.8
Cover Soils	Phi	Normal	25.7	17.99	33.41	2.57
Cover Soils	Unit Weight	Normal	98	68.6	127.4	9.8
Waste	Cohesion	Normal	200	140	260	20
Waste	Phi	Normal	32	22.4	41.6	3.2
Waste	Unit Weight	Normal	60	42	78	6
Native Soils	Cohesion	Normal	10	7	13	1
Native Soils	Phi	Normal	30.5	21.35	39.65	3.05
Native Soils	Unit Weight	Normal	104	72.8	135.2	10.4
Claystone	Cohesion	Normal	1000	700	1300	100
Claystone	Phi	Normal	18	12.6	23.4	1.8
Claystone	Unit Weight	Normal	120	84	156	12

Seismic Coefficient	Property	Distribution	Mean	Min	Max	Standard Deviation
Horizontal Seismic Coefficient		Normal	0.0818	0.05726	0.10634	0.00818
Vertical Seismic Coefficient			0			

Global Minimums

Method: bishop simplified

FS: 1.943080
Center: 1439.460, 5611.737
Radius: 310.589
Left Slip Surface Endpoint: 1311.248, 5328.846
Right Slip Surface Endpoint: 1391.043, 5304.945
Resisting Moment=4.0777e+006 lb-ft
Driving Moment=2.09857e+006 lb-ft
Total Slice Area=186.903 ft2

Method: janbu corrected

FS: 1.921470
Center: 1133.691, 5629.723
Radius: 422.859
Left Slip Surface Endpoint: 742.778, 5468.489
Right Slip Surface Endpoint: 1410.169, 5309.770
Resisting Horizontal Force=2.80186e+006 lb
Driving Horizontal Force=1.45819e+006 lb
Total Slice Area=88266 ft2

Method: spencer

FS: 1.941170
Center: 1439.460, 5611.737
Radius: 310.589
Left Slip Surface Endpoint: 1311.248, 5328.846
Right Slip Surface Endpoint: 1391.043, 5304.945
Resisting Moment=4.07369e+006 lb-ft
Driving Moment=2.09857e+006 lb-ft
Resisting Horizontal Force=12526.4 lb
Driving Horizontal Force=6452.98 lb
Total Slice Area=186.903 ft2

Method: gle/morgenstern-price

FS: 1.941510
Center: 1439.460, 5611.737
Radius: 310.589
Left Slip Surface Endpoint: 1311.248, 5328.846
Right Slip Surface Endpoint: 1391.043, 5304.945
Resisting Moment=4.07441e+006 lb-ft
Driving Moment=2.09857e+006 lb-ft
Resisting Horizontal Force=12526.1 lb
Driving Horizontal Force=6451.73 lb
Total Slice Area=186.903 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 38352
Number of Invalid Surfaces: 259

Error Codes:

Error Code -103 reported for 257 surfaces
Error Code -106 reported for 1 surface
Error Code -109 reported for 1 surface

Method: janbu corrected

Number of Valid Surfaces: 38350
Number of Invalid Surfaces: 261

Error Codes:

Error Code -103 reported for 257 surfaces
Error Code -106 reported for 1 surface
Error Code -108 reported for 2 surfaces
Error Code -109 reported for 1 surface

Method: spencer

Number of Valid Surfaces: 38349
Number of Invalid Surfaces: 262

Error Codes:

Error Code -103 reported for 257 surfaces
Error Code -106 reported for 1 surface
Error Code -108 reported for 2 surfaces
Error Code -109 reported for 1 surface
Error Code -111 reported for 1 surface

Method: gle/morgenstern-price

Number of Valid Surfaces: 38350
Number of Invalid Surfaces: 261

Error Codes:

Error Code -103 reported for 257 surfaces
Error Code -106 reported for 1 surface
Error Code -108 reported for 2 surfaces
Error Code -109 reported for 1 surface

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region,even though the slip surface is wholly within the soil region.
-111 = safety factor equation did not converge

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.94308

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.09047	75.3291	Cover Soils	78	25.7	41.5811	80.7955	5.80856	0	5.80856
2	3.09047	219.913	Cover Soils	78	25.7	52.1658	101.362	48.5432	0	48.5432
3	3.09047	352.435	Cover Soils	78	25.7	61.934	120.343	87.9814	0	87.9814
4	3.09047	473.06	Cover Soils	78	25.7	70.8897	137.744	124.139	0	124.139
5	3.09047	581.948	Cover Soils	78	25.7	79.0366	153.575	157.032	0	157.032
6	3.09047	679.248	Cover Soils	78	25.7	86.3783	167.84	186.674	0	186.674
7	3.09047	765.105	Cover Soils	78	25.7	92.9179	180.547	213.076	0	213.076
8	3.09047	839.655	Cover Soils	78	25.7	98.6583	191.701	236.252	0	236.252
9	3.09047	903.03	Cover Soils	78	25.7	103.602	201.307	256.212	0	256.212
10	3.09047	955.354	Cover Soils	78	25.7	107.752	209.37	272.967	0	272.967
11	3.09047	996.744	Cover Soils	78	25.7	111.109	215.894	286.523	0	286.523
12	3.09047	1027.31	Cover Soils	78	25.7	113.677	220.884	296.89	0	296.89
13	3.28535	1123.25	Native Soils	10	30.5	99.702	193.729	311.91	0	311.91
14	3.28535	1152.04	Native Soils	10	30.5	102.478	199.123	321.068	0	321.068
15	3.28535	1167.45	Native Soils	10	30.5	104.13	202.332	326.515	0	326.515
16	3.28535	1168.5	Native Soils	10	30.5	104.563	203.175	327.945	0	327.945
17	3.28535	1142.99	Native Soils	10	30.5	102.721	199.595	321.869	0	321.869
18	3.28535	1100.38	Native Soils	10	30.5	99.3927	193.128	310.888	0	310.888
19	3.28535	1015.6	Native Soils	10	30.5	92.4038	179.548	287.835	0	287.835
20	3.28535	893.806	Native Soils	10	30.5	82.1644	159.652	254.059	0	254.059
21	3.28535	759.276	Native Soils	10	30.5	70.7516	137.476	216.411	0	216.411
22	3.28535	612.093	Native Soils	10	30.5	58.1613	113.012	174.879	0	174.879
23	3.28535	452.34	Native Soils	10	30.5	44.3909	86.255	129.455	0	129.455
24	3.28535	280.095	Native Soils	10	30.5	29.4366	57.1976	80.1256	0	80.1256
25	3.28535	95.4292	Native Soils	10	30.5	13.2941	25.8315	26.8766	0	26.8766

Global Minimum Query (janbu corrected) - Safety Factor: 1.92147

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	1.30452	223.721	Cover Soils	78	25.7	50.6446	97.312	40.1275	0	40.1275
2	26.2175	55681.9	Waste	200	32	468.555	900.314	1120.74	0	1120.74
3	26.2175	134858	Waste	200	32	1166.75	2241.87	3267.68	0	3267.68
4	26.2175	181737	Waste	200	32	1659.66	3188.99	4783.39	0	4783.39
5	26.2175	215124	Waste	200	32	2053.94	3946.59	5995.79	0	5995.79
6	26.2175	241150	Waste	200	32	2389.56	4591.46	7027.81	0	7027.81

7	26.2175	261386	Waste	200	32	2674.81	5139.57	7904.95	0	7904.95
8	27.8088	307545	Claystone	1000	18	2152.73	4136.4	9652.87	0	9652.87
9	27.8088	345141	Claystone	1000	18	2292.14	4404.27	11157.8	680.564	10477.3
10	27.8088	374194	Claystone	1000	18	2371.7	4557.16	12384.8	1436.93	10947.8
11	27.8088	395438	Claystone	1000	18	2429.15	4667.53	13334	2046.49	11287.5
12	27.8088	409490	Claystone	1000	18	2465.95	4738.25	14025.7	2520.57	11505.1
13	27.8088	416786	Claystone	1000	18	2483.11	4771.22	14473.9	2867.29	11606.6
14	27.8088	417621	Claystone	1000	18	2481.09	4767.34	14687.7	3093.01	11594.7
15	27.8088	412196	Claystone	1000	18	2460.42	4727.62	14672.7	3200.28	11472.5
16	27.8088	400622	Claystone	1000	18	2420.83	4651.55	14431.5	3193.21	11238.3
17	27.8088	382995	Claystone	1000	18	2362.9	4540.24	13965.9	3070.13	10895.8
18	27.8088	359560	Claystone	1000	18	2287.85	4396.04	13282.9	2830.95	10451.9
19	27.8088	331144	Claystone	1000	18	2200.77	4228.72	12411.8	2474.86	9936.98
20	27.8088	307396	Claystone	1000	18	2164.27	4158.58	11718.1	1996.98	9721.11
21	27.8088	276392	Claystone	1000	18	2104.8	4044.31	10758.7	1389.34	9369.4
22	27.8088	237108	Claystone	1000	18	2016.44	3874.52	9491.36	644.481	8846.88
23	27.8088	189803	Claystone	1000	18	1855.52	3565.33	7895.28	0	7895.28
24	27.8088	124592	Claystone	1000	18	1446.12	2778.67	5474.2	0	5474.2
25	36.032	42654.7	Native Soils	10	30.5	495.285	951.676	1598.65	0	1598.65

Global Minimum Query (spencer) - Safety Factor: 1.94117

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.09047	75.3291	Cover Soils	78	25.7	43.8862	85.1905	14.9407	0	14.9407
2	3.09047	219.913	Cover Soils	78	25.7	53.7685	104.374	54.8007	0	54.8007
3	3.09047	352.435	Cover Soils	78	25.7	62.9516	122.2	91.8403	0	91.8403
4	3.09047	473.06	Cover Soils	78	25.7	71.431	138.66	126.042	0	126.042
5	3.09047	581.948	Cover Soils	78	25.7	79.2024	153.745	157.387	0	157.387
6	3.09047	679.248	Cover Soils	78	25.7	86.2611	167.447	185.858	0	185.858
7	3.09047	765.105	Cover Soils	78	25.7	92.6024	179.757	211.436	0	211.436
8	3.09047	839.655	Cover Soils	78	25.7	98.2222	190.666	234.103	0	234.103
9	3.09047	903.03	Cover Soils	78	25.7	103.115	200.164	253.838	0	253.838
10	3.09047	955.354	Cover Soils	78	25.7	107.277	208.242	270.623	0	270.623
11	3.09047	996.744	Cover Soils	78	25.7	110.702	214.891	284.438	0	284.438
12	3.09047	1027.31	Cover Soils	78	25.7	113.385	220.1	295.261	0	295.261
13	3.28535	1123.25	Native Soils	10	30.5	98.1084	190.445	306.335	0	306.335
14	3.28535	1152.04	Native Soils	10	30.5	101.123	196.297	316.269	0	316.269
15	3.28535	1167.45	Native Soils	10	30.5	103.046	200.029	322.605	0	322.605
16	3.28535	1168.5	Native Soils	10	30.5	103.775	201.444	325.006	0	325.006
17	3.28535	1142.99	Native Soils	10	30.5	102.249	198.483	319.981	0	319.981
18	3.28535	1100.38	Native Soils	10	30.5	99.235	192.632	310.048	0	310.048
19	3.28535	1015.6	Native Soils	10	30.5	92.5504	179.656	288.019	0	288.019

20	3.28535	893.806	Native Soils	10	30.5	82.5729	160.288	255.139	0	255.139
21	3.28535	759.276	Native Soils	10	30.5	71.3564	138.515	218.176	0	218.176
22	3.28535	612.093	Native Soils	10	30.5	58.8877	114.311	177.085	0	177.085
23	3.28535	452.34	Native Soils	10	30.5	45.1524	87.6484	131.821	0	131.821
24	3.28535	280.095	Native Soils	10	30.5	30.1364	58.4999	82.3364	0	82.3364
25	3.28535	95.4292	Native Soils	10	30.5	13.8517	26.8885	28.6709	0	28.6709

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.94151

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.09047	75.3291	Cover Soils	78	25.7	41.9259	81.3995	7.06366	0	7.06366
2	3.09047	219.913	Cover Soils	78	25.7	52.9411	102.786	51.5008	0	51.5008
3	3.09047	352.435	Cover Soils	78	25.7	62.878	122.078	91.5877	0	91.5877
4	3.09047	473.06	Cover Soils	78	25.7	71.8031	139.406	127.593	0	127.593
5	3.09047	581.948	Cover Soils	78	25.7	79.783	154.899	159.785	0	159.785
6	3.09047	679.248	Cover Soils	78	25.7	86.8808	168.68	188.419	0	188.419
7	3.09047	765.105	Cover Soils	78	25.7	93.1522	180.856	213.72	0	213.72
8	3.09047	839.655	Cover Soils	78	25.7	98.6454	191.521	235.879	0	235.879
9	3.09047	903.03	Cover Soils	78	25.7	103.395	200.743	255.041	0	255.041
10	3.09047	955.354	Cover Soils	78	25.7	107.427	208.571	271.307	0	271.307
11	3.09047	996.744	Cover Soils	78	25.7	110.754	215.03	284.726	0	284.726
12	3.09047	1027.31	Cover Soils	78	25.7	113.376	220.12	295.303	0	295.303
13	3.28535	1123.25	Native Soils	10	30.5	97.8748	190.025	305.623	0	305.623
14	3.28535	1152.04	Native Soils	10	30.5	100.911	195.92	315.631	0	315.631
15	3.28535	1167.45	Native Soils	10	30.5	102.933	199.845	322.294	0	322.294
16	3.28535	1168.5	Native Soils	10	30.5	103.802	201.533	325.159	0	325.159
17	3.28535	1142.99	Native Soils	10	30.5	102.42	198.85	320.603	0	320.603
18	3.28535	1100.38	Native Soils	10	30.5	99.5122	193.204	311.018	0	311.018
19	3.28535	1015.6	Native Soils	10	30.5	92.8648	180.298	289.109	0	289.109
20	3.28535	893.806	Native Soils	10	30.5	82.8386	160.832	256.063	0	256.063
21	3.28535	759.276	Native Soils	10	30.5	71.4933	138.805	218.667	0	218.667
22	3.28535	612.093	Native Soils	10	30.5	58.8387	114.236	176.958	0	176.958
23	3.28535	452.34	Native Soils	10	30.5	44.9042	87.182	131.029	0	131.029
24	3.28535	280.095	Native Soils	10	30.5	29.7336	57.7281	81.0263	0	81.0263
25	3.28535	95.4292	Native Soils	10	30.5	13.3846	25.9863	27.1393	0	27.1393

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.94308

Slice	X coordinate	Y coordinate - Bottom	Interslice Normal Force	Interslice Shear Force	Interslice Force Angle

	[ft]	[ft]	[lbs]	[lbs]	[degrees]
1	1311.25	5328.85	0	0	0
2	1314.34	5327.47	-114.278	0	0
3	1317.43	5326.13	-192.384	0	0
4	1320.52	5324.82	-240.448	0	0
5	1323.61	5323.56	-264.121	0	0
6	1326.7	5322.34	-268.601	0	0
7	1329.79	5321.15	-258.64	0	0
8	1332.88	5320.01	-238.567	0	0
9	1335.97	5318.9	-212.299	0	0
10	1339.06	5317.82	-183.352	0	0
11	1342.15	5316.78	-154.86	0	0
12	1345.24	5315.78	-129.577	0	0
13	1348.33	5314.82	-109.894	0	0
14	1351.62	5313.83	-37.1364	0	0
15	1354.9	5312.88	25.2671	0	0
16	1358.19	5311.97	75.9404	0	0
17	1361.47	5311.1	113.901	0	0
18	1364.76	5310.26	138.197	0	0
19	1368.05	5309.47	148.975	0	0
20	1371.33	5308.71	146.589	0	0
21	1374.62	5307.99	132.778	0	0
22	1377.9	5307.31	110.299	0	0
23	1381.19	5306.66	82.315	0	0
24	1384.47	5306.05	52.3999	0	0
25	1387.76	5305.48	24.5327	0	0
26	1391.04	5304.94	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 1.92147

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	742.778	5468.49	0	0	0
2	744.082	5465.36	72.2984	0	0
3	770.3	5413.49	49468.3	0	0
4	796.517	5374.53	154711	0	0
5	822.735	5343.16	272527	0	0
6	848.952	5317.1	388136	0	0
7	875.17	5295.09	494721	0	0
8	901.387	5276.39	588081	0	0
9	929.196	5259.6	710532	0	0
10	957.005	5245.55	826593	0	0
11	984.814	5233.94	929593	0	0

12	1012.62	5224.57	1.01382e+006	0	0
13	1040.43	5217.28	1.07536e+006	0	0
14	1068.24	5211.96	1.11168e+006	0	0
15	1096.05	5208.54	1.12137e+006	0	0
16	1123.86	5206.98	1.10401e+006	0	0
17	1151.67	5207.25	1.06007e+006	0	0
18	1179.48	5209.35	990917	0	0
19	1207.28	5213.32	898788	0	0
20	1235.09	5219.2	786611	0	0
21	1262.9	5227.09	654215	0	0
22	1290.71	5237.1	505805	0	0
23	1318.52	5249.4	347793	0	0
24	1346.33	5264.22	190479	0	0
25	1374.14	5281.88	60467.3	0	0
26	1410.17	5309.77	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.94117

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	1311.25	5328.85	0	0	0
2	1314.34	5327.47	-108.724	-29.837	15.3458
3	1317.43	5326.13	-183.311	-50.3056	15.3458
4	1320.52	5324.82	-229.4	-62.9538	15.3458
5	1323.61	5323.56	-252.234	-69.2202	15.3458
6	1326.7	5322.34	-256.668	-70.4368	15.3458
7	1329.79	5321.15	-247.176	-67.8321	15.3458
8	1332.88	5320.01	-227.867	-62.533	15.3458
9	1335.97	5318.9	-202.485	-55.5676	15.3458
10	1339.06	5317.82	-174.423	-47.8667	15.3458
11	1342.15	5316.78	-146.727	-40.266	15.3458
12	1345.24	5315.78	-122.1	-33.5076	15.3458
13	1348.33	5314.82	-102.911	-28.2417	15.3458
14	1351.62	5313.83	-30.2671	-8.30614	15.3458
15	1354.9	5312.88	32.2015	8.837	15.3458
16	1358.19	5311.97	83.0481	22.7907	15.3458
17	1361.47	5311.1	121.212	33.2639	15.3457
18	1364.76	5310.26	145.654	39.9715	15.3458
19	1368.05	5309.47	156.446	42.9333	15.3458
20	1371.33	5308.71	153.872	42.2267	15.3457
21	1374.62	5307.99	139.634	38.3195	15.3458
22	1377.9	5307.31	116.491	31.9683	15.3457
23	1381.19	5306.66	87.6438	24.0519	15.3458

24	1384.47	5306.05	56.7442	15.5722	15.3458
25	1387.76	5305.48	27.8951	7.65521	15.3458
26	1391.04	5304.94	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.94151

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	1311.25	5328.85	0	0	0
2	1314.34	5327.47	-113.567	-4.30686	2.17182
3	1317.43	5326.13	-190.051	-14.3081	4.30542
4	1320.52	5324.82	-236.275	-26.353	6.3642
5	1323.61	5323.56	-258.34	-37.7526	8.31409
6	1326.7	5322.34	-261.675	-46.7286	10.1249
7	1329.79	5321.15	-251.109	-52.3246	11.7705
8	1332.88	5320.01	-230.927	-54.289	13.2295
9	1335.97	5318.9	-204.933	-52.9409	14.4847
10	1339.06	5317.82	-176.5	-49.0238	15.5229
11	1342.15	5316.78	-148.617	-43.5553	16.3343
12	1345.24	5315.78	-123.922	-37.6788	16.912
13	1348.33	5314.82	-104.725	-32.5211	17.2516
14	1351.62	5313.83	-32.0758	-10.0203	17.3485
15	1354.9	5312.88	30.4228	9.40173	17.173
16	1358.19	5311.97	81.2963	24.4305	16.7261
17	1361.47	5311.1	119.441	34.2756	16.0117
18	1364.76	5310.26	143.782	38.6238	15.0363
19	1368.05	5309.47	154.379	37.9465	13.8096
20	1371.33	5308.71	151.544	33.168	12.3455
21	1374.62	5307.99	137.052	25.8037	10.6626
22	1377.9	5307.31	113.754	17.5797	8.78507
23	1381.19	5306.66	84.9518	10.0433	6.74241
24	1384.47	5306.05	54.3585	4.34488	4.56994
25	1387.76	5305.48	26.064	1.05042	2.30786
26	1391.04	5304.94	0	0	0

Probabilistic Analysis Results (Overall Slope)

Method: bishop simplified
Factor of Safety, mean: 1.864415
Factor of Safety, standard deviation: 0.139223
Factor of Safety, minimum: 1.384630
Factor of Safety, maximum: 2.450770
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)

Reliability index: 6.20887 (assuming normal distribution) * best fit = Normal
Reliability index: 8.31659 (assuming lognormal distribution)

Method: janbu corrected
Factor of Safety, mean: 1.836525
Factor of Safety, standard deviation: 0.137976
Factor of Safety, minimum: 1.329150
Factor of Safety, maximum: 2.357740
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.06283 (assuming normal distribution) * best fit = Normal
Reliability index: 8.06500 (assuming lognormal distribution)

Method: spencer
Factor of Safety, mean: 1.861275
Factor of Safety, standard deviation: 0.137526
Factor of Safety, minimum: 1.388020
Factor of Safety, maximum: 2.449300
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.26265 (assuming normal distribution) * best fit = Normal
Reliability index: 8.38273 (assuming lognormal distribution)

Method: gle/morgenstern-price
Factor of Safety, mean: 1.859238
Factor of Safety, standard deviation: 0.137438
Factor of Safety, minimum: 1.384040
Factor of Safety, maximum: 2.423350
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.25181 (assuming normal distribution) * best fit = Normal
Reliability index: 8.36403 (assuming lognormal distribution)

Critical Probabilistic Surface

Method: bishop simplified
Normal Reliability Index: 0.809656
Probability of Failure: 0
Mean Factor of Safety: 71.0032
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51
Lognormal Reliability Index: 3.99326
Probability of Failure: 0
Mean Factor of Safety: 71.0032
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51

Method: janbu corrected
Normal Reliability Index: 0.802617
Probability of Failure: 0

Mean Factor of Safety: 67.6711
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51
Lognormal Reliability Index: 3.91715
Probability of Failure: 0
Mean Factor of Safety: 67.6711
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51

Method: spencer
Normal Reliability Index: 0.790469
Probability of Failure: 0
Mean Factor of Safety: 69.2049
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51
Lognormal Reliability Index: 3.89099
Probability of Failure: 0
Mean Factor of Safety: 69.2049
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51

Method: gle/morgenstern-price
Normal Reliability Index: 0.790478
Probability of Failure: 0
Mean Factor of Safety: 69.2054
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51
Lognormal Reliability Index: 3.89104
Probability of Failure: 0
Mean Factor of Safety: 69.2054
Center: 1412.48, 5575.76
Radius: 265.138
Left Slip Surface Endpoint: 1412.74, 5310.63
Right Slip Surface Endpoint: 1451.5, 5313.51

List Of Coordinates

Water Table

X	Y

0	5279.87
27.4955	5279.49
43.9406	5279.26
76.8309	5278.79
175.502	5277.37
208.392	5276.9
274.173	5275.96
307.063	5275.49
339.953	5275.01
356.398	5274.77
372.844	5274.52
389.289	5274.27
405.734	5274.03
422.179	5273.77
438.624	5273.52
455.069	5273.26
471.514	5273
487.96	5272.74
504.405	5272.47
520.85	5272.2
537.295	5271.93
553.74	5271.66
570.185	5271.38
586.63	5271.09
603.076	5270.8
619.521	5270.51
635.966	5270.21
652.411	5269.9
668.856	5269.59
685.301	5269.27
701.747	5268.95
718.192	5268.62
734.637	5268.28
751.082	5267.93
767.527	5267.58
783.972	5267.23
800.417	5266.86
816.863	5266.49
833.308	5266.12
849.753	5265.74
866.198	5265.35
882.643	5264.96

899.088	5264.57
915.533	5264.17
931.979	5263.76
948.424	5263.35
964.869	5262.94
981.314	5262.52
997.759	5262.1
1014.2	5261.67
1030.65	5261.23
1046.77	5260.81
1064.62	5260.32
1084.22	5259.8
1084.54	5259.79
1111.05	5259.06
1124.11	5258.7
1149.23	5258.01
1173.84	5257.3
1195.14	5256.69
1226.52	5255.8
1243.47	5255.34
1263.04	5254.77
1271.72	5254.52
1288.31	5254.05
1289.77	5254
1307.75	5253.49
1313.55	5253.33
1318.52	5253.19
1331.12	5252.84
1331.15	5252.84
1347.59	5252.38
1364.04	5251.92
1380.48	5251.46
1396.93	5251.02
1413.37	5250.57
1429.82	5250.14
1446.26	5249.71
1454.48	5249.49
1462.71	5249.28
1470.93	5249.08
1479.15	5248.87
1487.37	5248.67
1495.6	5248.47

1503.82	5248.27
1512.04	5248.08
1520.27	5247.89
1528.49	5247.7
1536.71	5247.52
1544.16	5247.35

External Boundary

X	Y
1394.87	5304.67
1391.87	5304.67
1367.88	5312.66
1360.35	5314.82
789.193	5478
779.57	5478
775.944	5477.97
228.672	5321.6
221.118	5319.44
198.386	5311.87
197.146	5311.45
194.147	5311.45
192.876	5311.87
170.144	5319.44
168.145	5319.44
159.009	5314.87
142.194	5315.27
130.273	5315.8
128.092	5315.93
124.144	5315.99
101.067	5316.48
97.3864	5316.61
82.0586	5317.08
79.1974	5317
65.9093	5316.71
53.3344	5317.21
49.9101	5317.36
46.5883	5317.44
26.8675	5317.78
22.8942	5317.85
10.8587	5318.06
0	5318.13

0	5295.72
0	5279.87
0	5097.35
1544.16	5097.35
1544.16	5247.35
1544.16	5280.29
1544.16	5310.12
1529.51	5310.25
1507.12	5310.59
1503	5310.71
1486.21	5311.17
1473.43	5312.27
1470.56	5312.46
1452.38	5313.47
1448.38	5313.67
1428.34	5314.87
1426.01	5315.05

Material Boundary

X	Y
228.672	5321.6
240.92	5321.6
775.944	5474.47
779.57	5474.5
789.193	5474.5
1348.1	5314.82
1360.35	5314.82

Material Boundary

X	Y
240.92	5321.6
320.871	5294.25
336.059	5289.9
474.996	5286
515.004	5285
555.295	5284
747.044	5279.57
800.288	5278.51
821.347	5278
853.126	5277.36

878.692	5276.85
920.683	5276
1012.44	5275
1164.76	5273.42
1223.8	5273.43
1253.36	5283.28
1342.37	5312.95
1344.62	5313.71
1345.51	5314
1348.1	5314.82

Material Boundary

X	Y
1253.36	5283.28
1261.81	5283.18
1278.58	5282.97
1295.36	5282.77
1312.13	5282.57
1328.91	5282.38
1345.68	5282.19
1362.46	5282
1379.23	5281.82
1396.01	5281.65
1412.78	5281.48
1429.56	5281.31
1446.33	5281.15
1463.11	5280.99
1479.88	5280.84
1496.66	5280.69
1513.43	5280.54
1530.21	5280.4
1544.16	5280.29

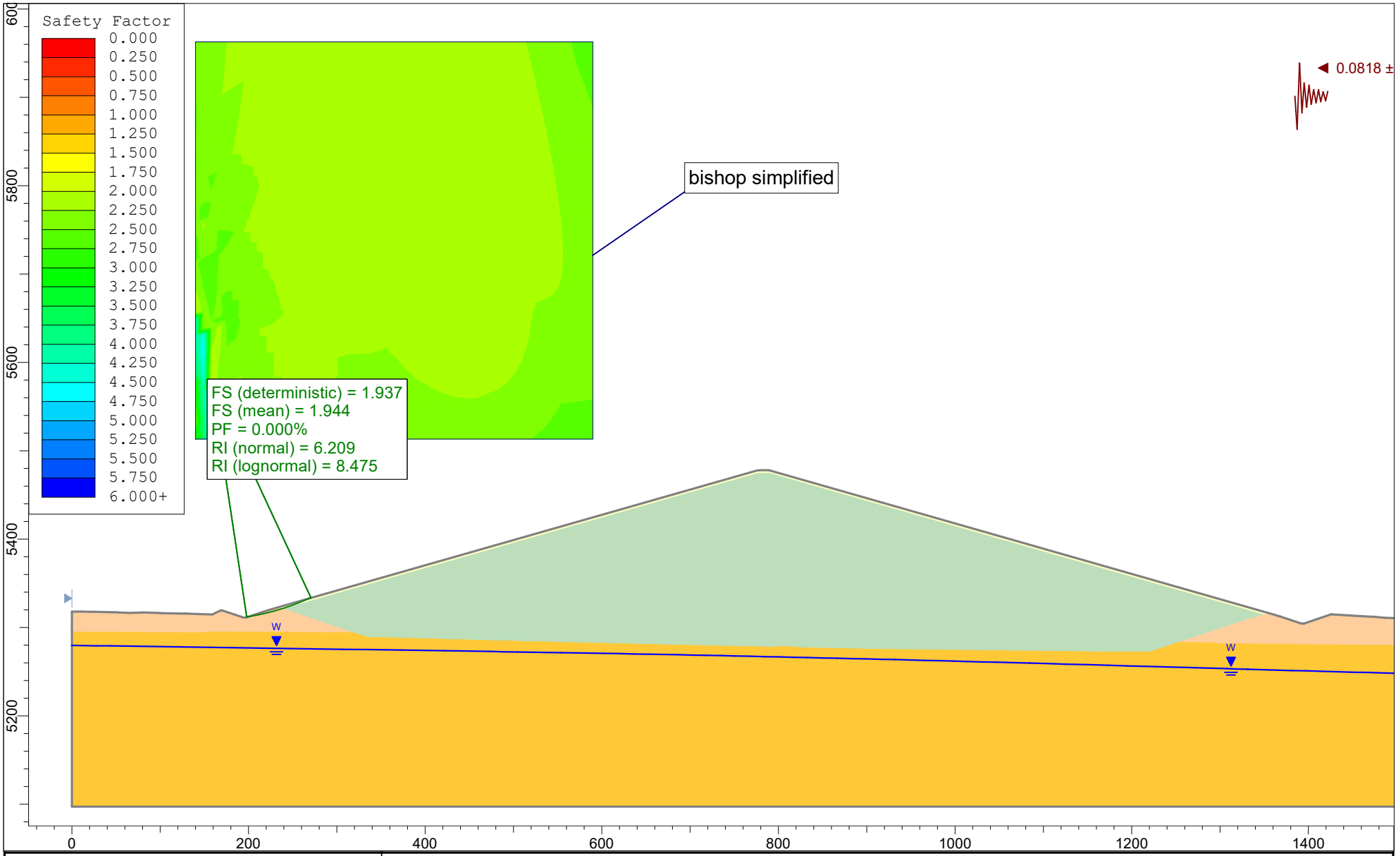
Material Boundary

X	Y
0	5295.72
18.9226	5295.65
52.4725	5295.51
86.0223	5295.36
119.572	5295.22

153.122	5295.06
220.222	5294.76
253.772	5294.6
270.546	5294.51
287.322	5294.43
304.096	5294.34
320.871	5294.25
323.034	5294.24

ATTACHMENT 2.B

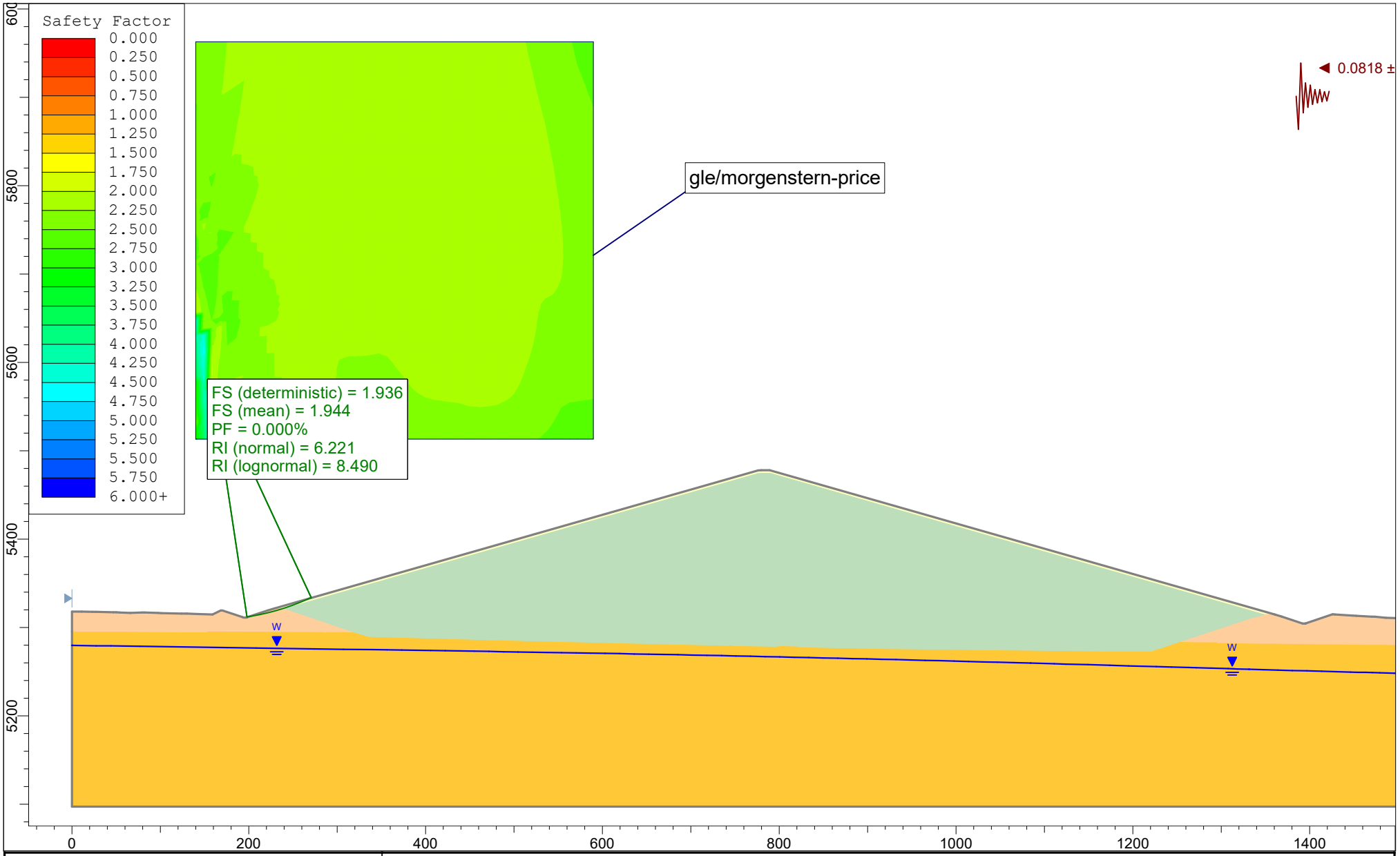
SCENARIO 2.B SLOPE STABILITY ANALYSIS RESULTS



AEC

SLIDEINTERPRET 6.039

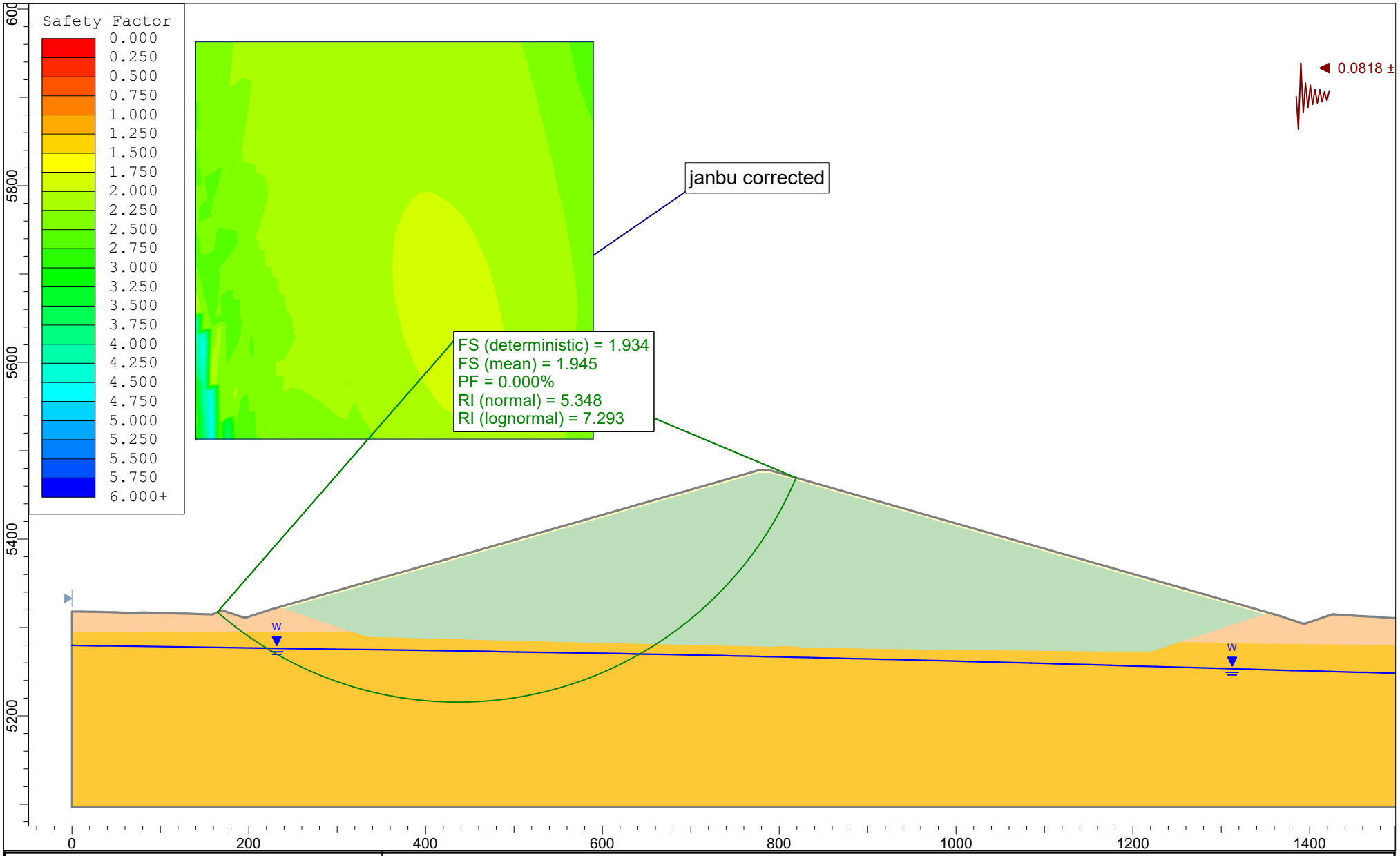
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail South		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail South.slim	



AEC

SLIDEINTERPRET 6.039

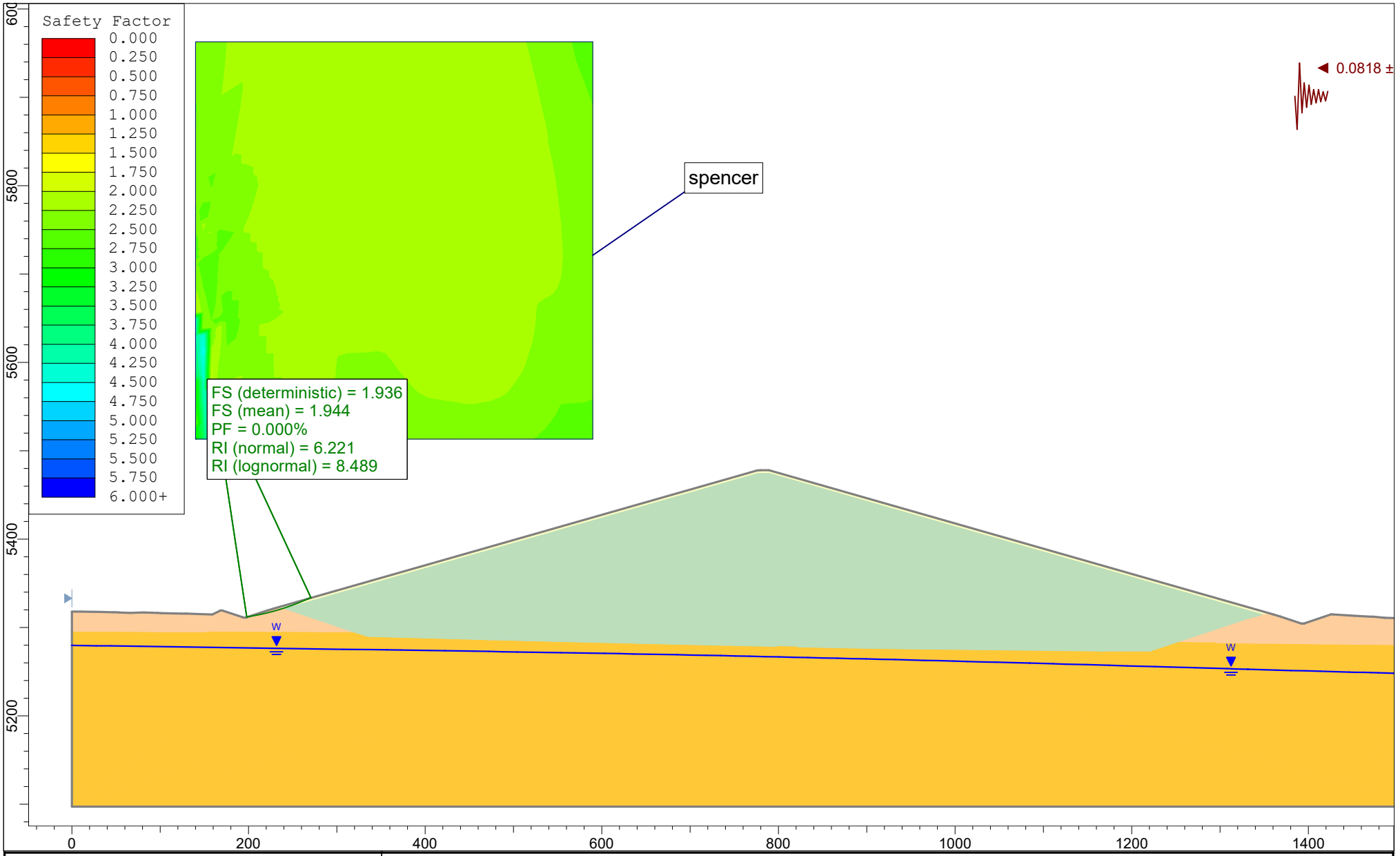
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail South		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail South.slim	



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail South		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail South.slim	



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 2 - Module 3 Final Cover and Waste - Fail South		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company* American Environmental Consulting	
Date 8/23/2024, 7:47:53 AM		*File Name* Profile2 - 0.1 SD - Fail South.slim	

Slide Analysis Information

East Regional Landfill 2024 EDOP Slope Stability

Project Summary

File Name: Profile2 - 0.1 SD - Fail South.slim
Slide Modeler Version: 6.039
Project Title: East Regional Landfill 2024 EDOP Slope Stability
Analysis: Profile 2 - Module 3 Final Cover and Waste - Fail South
Author: Michael Bucari-Tovo
Company: American Environmental Consulting
Date Created: 8/23/2024, 7:47:53 AM
Comments:

Material and Seismic Standard Deviation: 10%
Min/Max: +/- 3 Standard Deviations

General Settings

Units of Measurement: Imperial Units
Time Units: seconds
Permeability Units: feet/second
Failure Direction: Right to Left
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
GLE/Morgenstern-Price with interslice force function: Half Sine
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.0818

Material Properties

Property	Cover Soils	Waste	Native Soils	Claystone
Color				
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unsaturated Unit Weight [lbs/ft3]			104	
Saturated Unit Weight [lbs/ft3]			115	
Cohesion [psf]	78	200	10	1000
Friction Angle [deg]	25.7	32	30.5	18
Water Surface	None	None	Water Table	Water Table
Hu Value			Automatically Calculated	Automatically Calculated
Ru Value	0	0		

Probabilistic Analysis Input

General Settings

Sensitivity Analysis: Off
Probabilistic Analysis: On
Sampling Method: Latin-Hypercube
Number of Samples: 10000
Analysis Type: Overall Slope

Variables

Material	Property	Distribution	Mean	Min	Max	Standard Deviation
Cover Soils	Cohesion	Normal	78	54.6	101.4	7.8
Cover Soils	Phi	Normal	25.7	17.99	33.41	2.57
Cover Soils	Unit Weight	Normal	98	68.6	127.4	9.8
Waste	Cohesion	Normal	200	140	260	20
Waste	Phi	Normal	32	22.4	41.6	3.2
Waste	Unit Weight	Normal	60	42	78	6
Native Soils	Cohesion	Normal	10	7	13	1
Native Soils	Phi	Normal	30.5	21.35	39.65	3.05
Native Soils	Unit Weight	Normal	104	72.8	135.2	10.4
Claystone	Cohesion	Normal	1000	700	1300	100
Claystone	Phi	Normal	18	12.6	23.4	1.8
Claystone	Unit Weight	Normal	120	84	156	12

Seismic Coefficient	Property	Distribution	Mean	Min	Max	Standard Deviation
Horizontal Seismic Coefficient		Normal	0.0818	0.05726	0.10634	0.00818
Vertical Seismic Coefficient			0			

Global Minimums

Method: bishop simplified

FS: 1.936890
Center: 158.030, 5576.272
Radius: 267.527
Left Slip Surface Endpoint: 198.068, 5311.758
Right Slip Surface Endpoint: 270.596, 5333.580
Resisting Moment=3.07571e+006 lb-ft
Driving Moment=1.58797e+006 lb-ft
Total Slice Area=163.148 ft2

Method: janbu corrected

FS: 1.934210
Center: 436.819, 5630.231
Radius: 414.970
Left Slip Surface Endpoint: 164.131, 5317.435
Right Slip Surface Endpoint: 819.348, 5469.385
Resisting Horizontal Force=2.63555e+006 lb
Driving Horizontal Force=1.36259e+006 lb
Total Slice Area=82804.4 ft2

Method: spencer

FS: 1.935680
Center: 158.030, 5576.272
Radius: 267.527
Left Slip Surface Endpoint: 198.068, 5311.758
Right Slip Surface Endpoint: 270.596, 5333.580
Resisting Moment=3.0738e+006 lb-ft
Driving Moment=1.58797e+006 lb-ft
Resisting Horizontal Force=10959.8 lb
Driving Horizontal Force=5661.99 lb
Total Slice Area=163.148 ft2

Method: gle/morgenstern-price

FS: 1.935800
Center: 158.030, 5576.272
Radius: 267.527
Left Slip Surface Endpoint: 198.068, 5311.758
Right Slip Surface Endpoint: 270.596, 5333.580
Resisting Moment=3.07398e+006 lb-ft
Driving Moment=1.58797e+006 lb-ft
Resisting Horizontal Force=10959.5 lb
Driving Horizontal Force=5661.5 lb
Total Slice Area=163.148 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 37572
Number of Invalid Surfaces: 1039

Error Codes:

Error Code -103 reported for 1037 surfaces
Error Code -106 reported for 2 surfaces

Method: janbu corrected

Number of Valid Surfaces: 37572
Number of Invalid Surfaces: 1039

Error Codes:

Error Code -103 reported for 1037 surfaces
Error Code -106 reported for 2 surfaces

Method: spencer

Number of Valid Surfaces: 37565
Number of Invalid Surfaces: 1046

Error Codes:

Error Code -103 reported for 1037 surfaces
Error Code -106 reported for 2 surfaces
Error Code -108 reported for 2 surfaces
Error Code -111 reported for 5 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 37572
Number of Invalid Surfaces: 1039

Error Codes:

Error Code -103 reported for 1037 surfaces
Error Code -106 reported for 2 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.93689

Slice	Width	Weight	Base	Base Cohesion	Base Friction Angle	Shear Stress	Shear Strength	Base Normal Stress	Pore Pressure	Effective Normal Stress

				[psf]	[degrees]	[psf]	[psf]	[psf]	[psf]	[psf]
1	2.99282	82.4557	Native Soils	10	30.5	12.9243	25.0329	25.5208	0	25.5208
2	2.99282	241.176	Native Soils	10	30.5	28.2221	54.6631	75.8228	0	75.8228
3	2.99282	389.003	Native Soils	10	30.5	42.3672	82.0606	122.335	0	122.335
4	2.99282	525.896	Native Soils	10	30.5	55.3662	107.238	165.078	0	165.078
5	2.99282	651.783	Native Soils	10	30.5	67.2232	130.204	204.065	0	204.065
6	2.99282	766.59	Native Soils	10	30.5	77.9414	150.964	239.309	0	239.309
7	2.99282	870.236	Native Soils	10	30.5	87.5243	169.525	270.819	0	270.819
8	2.99282	960.665	Native Soils	10	30.5	95.7871	185.529	297.99	0	297.99
9	2.99282	1008.29	Native Soils	10	30.5	99.9515	193.595	311.682	0	311.682
10	2.99282	1033.55	Native Soils	10	30.5	101.98	197.525	318.355	0	318.355
11	2.99282	1042.68	Native Soils	10	30.5	102.48	198.493	319.998	0	319.998
12	2.99282	1029.8	Native Soils	10	30.5	100.918	195.467	314.86	0	314.86
13	2.99282	1004.77	Native Soils	10	30.5	98.2317	190.264	306.027	0	306.027
14	2.99282	967.851	Native Soils	10	30.5	94.4586	182.956	293.622	0	293.622
15	2.7844	864.512	Cover Soils	78	25.7	108.578	210.304	274.907	0	274.907
16	2.7844	827.909	Cover Soils	78	25.7	105.263	203.882	261.564	0	261.564
17	2.7844	781.988	Cover Soils	78	25.7	101.198	196.009	245.206	0	245.206
18	2.7844	726.64	Cover Soils	78	25.7	96.3818	186.681	225.822	0	225.822
19	2.7844	661.754	Cover Soils	78	25.7	90.8112	175.891	203.403	0	203.403
20	2.7844	587.21	Cover Soils	78	25.7	84.4838	163.636	177.938	0	177.938
21	2.7844	502.884	Cover Soils	78	25.7	77.3965	149.909	149.415	0	149.415
22	2.7844	408.644	Cover Soils	78	25.7	69.5459	134.703	117.82	0	117.82
23	2.7844	304.352	Cover Soils	78	25.7	60.9286	118.012	83.1388	0	83.1388
24	2.7844	189.864	Cover Soils	78	25.7	51.5407	99.8286	45.3565	0	45.3565
25	2.7844	65.026	Cover Soils	78	25.7	41.3779	80.1445	4.45593	0	4.45593

Global Minimum Query (janbu corrected) - Safety Factor: 1.93421

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	28.2643	30041.7	Native Soils	10	30.5	446.155	862.958	1448.03	0	1448.03
2	27.6118	87272.3	Claystone	1000	18	1193.09	2307.69	4024.65	0	4024.65
3	27.6118	166875	Claystone	1000	18	1614.37	3122.53	7024.35	491.873	6532.47
4	27.6118	221178	Claystone	1000	18	1786.94	3456.32	8912.74	1352.96	7559.78
5	27.6118	261507	Claystone	1000	18	1893.38	3662.19	10252.2	2058.81	8193.39
6	27.6118	294237	Claystone	1000	18	1975.14	3820.33	11303.2	2623.14	8680.09
7	27.6118	322610	Claystone	1000	18	2051.75	3968.52	12192.1	3055.89	9136.17
8	27.6118	351879	Claystone	1000	18	2154.77	4167.78	13113.5	3364.07	9749.43
9	27.6118	375054	Claystone	1000	18	2238.8	4330.3	13802.1	3552.46	10249.6
10	27.6118	392049	Claystone	1000	18	2303.19	4454.86	14257.1	3624.09	10633
11	27.6118	402934	Claystone	1000	18	2348.53	4542.55	14483.1	3580.26	10902.9
12	27.6118	407738	Claystone	1000	18	2375.35	4594.42	14483.1	3420.65	11062.5

13	27.6118	406419	Claystone	1000	18	2383.94	4611.04	14257.1	3143.46	11113.6
14	27.6118	398707	Claystone	1000	18	2373.52	4590.88	13796.8	2745.16	11051.6
15	27.6118	384331	Claystone	1000	18	2343.63	4533.08	13093.8	2220.16	10873.7
16	27.6118	362892	Claystone	1000	18	2293.46	4436.03	12135.5	1560.54	10575
17	27.6118	333759	Claystone	1000	18	2221.36	4296.57	10901.1	755.275	10145.8
18	27.6118	296122	Claystone	1000	18	2093.41	4049.09	9384.11	0	9384.11
19	26.0375	250933	Waste	200	32	2583.84	4997.68	7677.89	0	7677.89
20	26.0375	231503	Waste	200	32	2309.13	4466.35	6827.6	0	6827.6
21	26.0375	206409	Waste	200	32	1984.92	3839.25	5824.01	0	5824.01
22	26.0375	174130	Waste	200	32	1603.16	3100.85	4642.34	0	4642.34
23	26.0375	129749	Waste	200	32	1133.25	2191.95	3187.77	0	3187.77
24	26.0375	54301.6	Waste	200	32	462.614	894.793	1111.9	0	1111.9
25	1.32725	227.619	Cover Soils	78	25.7	50.8249	98.306	42.1929	0	42.1929

Global Minimum Query (spencer) - Safety Factor: 1.93568

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.99282	82.4557	Native Soils	10	30.5	13.1805	25.5132	26.3362	0	26.3362
2	2.99282	241.176	Native Soils	10	30.5	28.5674	55.2973	76.8995	0	76.8995
3	2.99282	389.003	Native Soils	10	30.5	42.7502	82.7507	123.506	0	123.506
4	2.99282	525.896	Native Soils	10	30.5	55.7408	107.896	166.195	0	166.195
5	2.99282	651.783	Native Soils	10	30.5	67.5484	130.752	204.996	0	204.996
6	2.99282	766.59	Native Soils	10	30.5	78.1813	151.334	239.937	0	239.937
7	2.99282	870.236	Native Soils	10	30.5	87.6478	169.658	271.045	0	271.045
8	2.99282	960.665	Native Soils	10	30.5	95.7689	185.378	297.733	0	297.733
9	2.99282	1008.29	Native Soils	10	30.5	99.782	193.146	310.92	0	310.92
10	2.99282	1033.55	Native Soils	10	30.5	101.658	196.778	317.086	0	317.086
11	2.99282	1042.68	Native Soils	10	30.5	102.009	197.457	318.239	0	318.239
12	2.99282	1029.8	Native Soils	10	30.5	100.313	194.174	312.666	0	312.666
13	2.99282	1004.77	Native Soils	10	30.5	97.5084	188.745	303.45	0	303.45
14	2.99282	967.851	Native Soils	10	30.5	93.6369	181.251	290.727	0	290.727
15	2.7844	864.512	Cover Soils	78	25.7	108.437	209.899	274.066	0	274.066
16	2.7844	827.909	Cover Soils	78	25.7	105.089	203.419	260.6	0	260.6
17	2.7844	781.988	Cover Soils	78	25.7	101.017	195.537	244.223	0	244.223
18	2.7844	726.64	Cover Soils	78	25.7	96.2225	186.256	224.94	0	224.94
19	2.7844	661.754	Cover Soils	78	25.7	90.7061	175.578	202.752	0	202.752
20	2.7844	587.21	Cover Soils	78	25.7	84.4685	163.504	177.664	0	177.664
21	2.7844	502.884	Cover Soils	78	25.7	77.5103	150.035	149.678	0	149.678
22	2.7844	408.644	Cover Soils	78	25.7	69.8317	135.172	118.794	0	118.794
23	2.7844	304.352	Cover Soils	78	25.7	61.4331	118.915	85.0148	0	85.0148
24	2.7844	189.864	Cover Soils	78	25.7	52.3143	101.264	48.3385	0	48.3385
25	2.7844	65.026	Cover Soils	78	25.7	42.4855	82.2383	8.80654	0	8.80654

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.9358

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.99282	82.4557	Native Soils	10	30.5	12.9711	25.1094	25.6506	0	25.6506
2	2.99282	241.176	Native Soils	10	30.5	28.3807	54.9393	76.2917	0	76.2917
3	2.99282	389.003	Native Soils	10	30.5	42.6455	82.5531	123.171	0	123.171
4	2.99282	525.896	Native Soils	10	30.5	55.7397	107.901	166.203	0	166.203
5	2.99282	651.783	Native Soils	10	30.5	67.6423	130.942	205.318	0	205.318
6	2.99282	766.59	Native Soils	10	30.5	78.3392	151.649	240.472	0	240.472
7	2.99282	870.236	Native Soils	10	30.5	87.8257	170.013	271.649	0	271.649
8	2.99282	960.665	Native Soils	10	30.5	95.9211	185.684	298.251	0	298.251
9	2.99282	1008.29	Native Soils	10	30.5	99.8683	193.325	311.224	0	311.224
10	2.99282	1033.55	Native Soils	10	30.5	101.658	196.789	317.104	0	317.104
11	2.99282	1042.68	Native Soils	10	30.5	101.919	197.295	317.964	0	317.964
12	2.99282	1029.8	Native Soils	10	30.5	100.155	193.88	312.166	0	312.166
13	2.99282	1004.77	Native Soils	10	30.5	97.3226	188.397	302.857	0	302.857
14	2.99282	967.851	Native Soils	10	30.5	93.4781	180.955	290.224	0	290.224
15	2.7844	864.512	Cover Soils	78	25.7	108.467	209.971	274.216	0	274.216
16	2.7844	827.909	Cover Soils	78	25.7	105.168	203.584	260.944	0	260.944
17	2.7844	781.988	Cover Soils	78	25.7	101.16	195.826	244.825	0	244.825
18	2.7844	726.64	Cover Soils	78	25.7	96.4376	186.684	225.828	0	225.828
19	2.7844	661.754	Cover Soils	78	25.7	90.9858	176.13	203.9	0	203.9
20	2.7844	587.21	Cover Soils	78	25.7	84.7861	164.129	178.962	0	178.962
21	2.7844	502.884	Cover Soils	78	25.7	77.8135	150.631	150.917	0	150.917
22	2.7844	408.644	Cover Soils	78	25.7	70.0384	135.58	119.643	0	119.643
23	2.7844	304.352	Cover Soils	78	25.7	61.4281	118.912	85.0098	0	85.0098
24	2.7844	189.864	Cover Soils	78	25.7	51.9473	100.56	46.8754	0	46.8754
25	2.7844	65.026	Cover Soils	78	25.7	41.5607	80.4532	5.09746	0	5.09746

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.93689

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	198.068	5311.76	0	0	0
2	201.061	5312.23	19.9167	0	0
3	204.054	5312.73	46.3161	0	0
4	207.047	5313.27	75.1595	0	0
5	210.039	5313.85	102.786	0	0

6	213.032	5314.46	125.914	0	0
7	216.025	5315.11	141.636	0	0
8	219.018	5315.79	147.426	0	0
9	222.011	5316.51	141.184	0	0
10	225.003	5317.26	122.26	0	0
11	227.996	5318.06	90.5541	0	0
12	230.989	5318.89	46.3789	0	0
13	233.982	5319.75	-8.99296	0	0
14	236.975	5320.66	-74.3165	0	0
15	239.968	5321.6	-147.949	0	0
16	242.752	5322.51	-167.364	0	0
17	245.536	5323.46	-189.718	0	0
18	248.321	5324.44	-212.564	0	0
19	251.105	5325.46	-233.119	0	0
20	253.89	5326.51	-248.253	0	0
21	256.674	5327.6	-254.475	0	0
22	259.458	5328.72	-247.926	0	0
23	262.243	5329.88	-224.359	0	0
24	265.027	5331.07	-179.129	0	0
25	267.812	5332.31	-107.171	0	0
26	270.596	5333.58	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 1.93421

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	164.131	5317.43	0	0	0
2	192.396	5294.88	43840.5	0	0
3	220.008	5276.41	146720	0	0
4	247.619	5260.9	290195	0	0
5	275.231	5248.01	440357	0	0
6	302.843	5237.48	583497	0	0
7	330.455	5229.12	712927	0	0
8	358.066	5222.8	824912	0	0
9	385.678	5218.42	917915	0	0
10	413.29	5215.93	988569	0	0
11	440.902	5215.28	1.03454e+006	0	0
12	468.513	5216.47	1.05448e+006	0	0
13	496.125	5219.52	1.04796e+006	0	0
14	523.737	5224.47	1.01543e+006	0	0
15	551.349	5231.38	958352	0	0
16	578.961	5240.36	879276	0	0
17	606.572	5251.57	782123	0	0

18	634.184	5265.2	672601	0	0
19	661.796	5281.54	557593	0	0
20	687.833	5299.79	469746	0	0
21	713.871	5321.29	369040	0	0
22	739.908	5346.79	259565	0	0
23	765.946	5377.49	147961	0	0
24	791.983	5415.62	47743.4	0	0
25	818.021	5466.26	22.5916	0	0
26	819.348	5469.38	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.93568

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	198.068	5311.76	0	0	0
2	201.061	5312.23	20.2957	2.60731	7.32047
3	204.054	5312.73	47.1755	6.06046	7.32048
4	207.047	5313.27	76.5188	9.8301	7.32049
5	210.039	5313.85	104.607	13.4384	7.32044
6	213.032	5314.46	128.118	16.4588	7.32046
7	216.025	5315.11	144.128	18.5156	7.32048
8	219.018	5315.79	150.107	19.2836	7.32045
9	222.011	5316.51	143.965	18.4947	7.3205
10	225.003	5317.26	125.08	16.0686	7.3205
11	227.996	5318.06	93.384	11.9967	7.32048
12	230.989	5318.89	49.2273	6.32406	7.32049
13	233.982	5319.75	-6.08102	-0.781206	7.32048
14	236.975	5320.66	-71.2639	-9.15502	7.32049
15	239.968	5321.6	-144.652	-18.5829	7.32048
16	242.752	5322.51	-163.724	-21.033	7.32048
17	245.536	5323.46	-185.679	-23.8535	7.32048
18	248.321	5324.44	-208.094	-26.733	7.32046
19	251.105	5325.46	-228.222	-29.3189	7.3205
20	253.89	5326.51	-242.99	-31.216	7.32048
21	256.674	5327.6	-248.981	-31.9857	7.32049
22	259.458	5328.72	-242.433	-31.1444	7.32046
23	262.243	5329.88	-219.22	-28.1624	7.32049
24	265.027	5331.07	-174.847	-22.4619	7.32047
25	267.812	5332.31	-104.43	-13.4158	7.32052
26	270.596	5333.58	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.9358

	X	Y	Interslice	Interslice	Interslice

Number	coordinate [ft]	coordinate - Bottom [ft]	Normal Force [lbs]	Shear Force [lbs]	Force Angle [degrees]
1	198.068	5311.76	0	0	0
2	201.061	5312.23	19.9941	0.411758	1.17978
3	204.054	5312.73	46.6277	1.90439	2.3388
4	207.047	5313.27	75.8468	4.58156	3.45678
5	210.039	5313.85	103.937	8.20634	4.51442
6	213.032	5314.46	127.545	12.2671	5.49373
7	216.025	5315.11	143.696	16.0636	6.37854
8	219.018	5315.79	149.812	18.8049	7.15454
9	222.011	5316.51	143.77	19.7182	7.80945
10	225.003	5317.26	124.932	18.2996	8.33322
11	227.996	5318.06	93.238	14.2975	8.71806
12	230.989	5318.89	49.0591	7.73363	8.95833
13	233.982	5319.75	-6.27071	-0.998849	9.0505
14	236.975	5320.66	-71.4567	-11.309	8.99325
15	239.968	5321.6	-144.828	-22.3879	8.78738
16	242.752	5322.51	-163.933	-24.3978	8.46507
17	245.536	5323.46	-185.976	-26.2059	8.02075
18	248.321	5324.44	-208.564	-27.3105	7.46017
19	251.105	5325.46	-228.981	-27.2665	6.79067
20	253.89	5326.51	-244.16	-25.7541	6.02132
21	256.674	5327.6	-250.664	-22.6475	5.16266
22	259.458	5328.72	-244.649	-18.0814	4.2269
23	262.243	5329.88	-221.833	-12.5094	3.22755
24	265.027	5331.07	-177.457	-6.75323	2.17937
25	267.812	5332.31	-106.247	-2.03645	1.09806
26	270.596	5333.58	0	0	0

Probabilistic Analysis Results (Overall Slope)

Method: bishop simplified
Factor of Safety, mean: 1.861737
Factor of Safety, standard deviation: 0.138505
Factor of Safety, minimum: 1.387610
Factor of Safety, maximum: 2.451150
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.22172 (assuming normal distribution) * best fit = Normal
Reliability index: 8.32854 (assuming lognormal distribution)

Method: janbu corrected
Factor of Safety, mean: 1.839176
Factor of Safety, standard deviation: 0.139783
Factor of Safety, minimum: 1.293400

Factor of Safety, maximum: 2.364440
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.00340 (assuming normal distribution) * best fit = Normal
Reliability index: 7.99060 (assuming lognormal distribution)

Method: spencer
Factor of Safety, mean: 1.858545
Factor of Safety, standard deviation: 0.137348
Factor of Safety, minimum: 1.384700
Factor of Safety, maximum: 2.448920
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.25088 (assuming normal distribution) * best fit = Normal
Reliability index: 8.36138 (assuming lognormal distribution)

Method: gle/morgenstern-price
Factor of Safety, mean: 1.857710
Factor of Safety, standard deviation: 0.136975
Factor of Safety, minimum: 1.383580
Factor of Safety, maximum: 2.449100
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 6.26180 (assuming normal distribution) * best fit = Normal
Reliability index: 8.37438 (assuming lognormal distribution)

Critical Probabilistic Surface

Method: bishop simplified
Normal Reliability Index: 4.53323
Probability of Failure: 0
Mean Factor of Safety: 2.06887
Center: 373.867, 5962.98
Radius: 645.927
Left Slip Surface Endpoint: 252.808, 5328.5
Right Slip Surface Endpoint: 797.717, 5475.56
Lognormal Reliability Index: 6.34178
Probability of Failure: 0
Mean Factor of Safety: 2.0618
Center: 364.873, 5962.98
Radius: 645.552
Left Slip Surface Endpoint: 250.074, 5327.72
Right Slip Surface Endpoint: 790.511, 5477.62

Method: janbu corrected
Normal Reliability Index: 4.45843
Probability of Failure: 0
Mean Factor of Safety: 2.10064
Center: 427.826, 5612.25
Radius: 504.447
Left Slip Surface Endpoint: 18.1335, 5317.93
Right Slip Surface Endpoint: 903.829, 5445.25
Lognormal Reliability Index: 6.26259
Probability of Failure: 0

Mean Factor of Safety: 2.08071
Center: 418.833, 5612.25
Radius: 497.555
Left Slip Surface Endpoint: 17.6514, 5317.94
Right Slip Surface Endpoint: 889.012, 5449.48

Method: spencer
Normal Reliability Index: 4.53858
Probability of Failure: 0
Mean Factor of Safety: 2.07301
Center: 373.867, 5962.98
Radius: 645.927
Left Slip Surface Endpoint: 252.808, 5328.5
Right Slip Surface Endpoint: 797.717, 5475.56
Lognormal Reliability Index: 6.34828
Probability of Failure: 0
Mean Factor of Safety: 2.06532
Center: 364.873, 5962.98
Radius: 645.552
Left Slip Surface Endpoint: 250.074, 5327.72
Right Slip Surface Endpoint: 790.511, 5477.62

Method: gle/morgenstern-price
Normal Reliability Index: 4.53527
Probability of Failure: 0
Mean Factor of Safety: 2.07202
Center: 373.867, 5962.98
Radius: 645.927
Left Slip Surface Endpoint: 252.808, 5328.5
Right Slip Surface Endpoint: 797.717, 5475.56
Lognormal Reliability Index: 6.34438
Probability of Failure: 0
Mean Factor of Safety: 2.06468
Center: 364.873, 5962.98
Radius: 645.552
Left Slip Surface Endpoint: 250.074, 5327.72
Right Slip Surface Endpoint: 790.511, 5477.62

List Of Coordinates

Water Table

X	Y
0	5279.87
27.4955	5279.49
43.9406	5279.26
76.8309	5278.79
175.502	5277.37
208.392	5276.9

274.173	5275.96
307.063	5275.49
339.953	5275.01
356.398	5274.77
372.844	5274.52
389.289	5274.27
405.734	5274.03
422.179	5273.77
438.624	5273.52
455.069	5273.26
471.514	5273
487.96	5272.74
504.405	5272.47
520.85	5272.2
537.295	5271.93
553.74	5271.66
570.185	5271.38
586.63	5271.09
603.076	5270.8
619.521	5270.51
635.966	5270.21
652.411	5269.9
668.856	5269.59
685.301	5269.27
701.747	5268.95
718.192	5268.62
734.637	5268.28
751.082	5267.93
767.527	5267.58
783.972	5267.23
800.417	5266.86
816.863	5266.49
833.308	5266.12
849.753	5265.74
866.198	5265.35
882.643	5264.96
899.088	5264.57
915.533	5264.17
931.979	5263.76
948.424	5263.35
964.869	5262.94
981.314	5262.52

997.759	5262.1
1014.2	5261.67
1030.65	5261.23
1046.77	5260.81
1064.62	5260.32
1084.22	5259.8
1084.54	5259.79
1111.05	5259.06
1124.11	5258.7
1149.23	5258.01
1173.84	5257.3
1195.14	5256.69
1226.52	5255.8
1243.47	5255.34
1263.04	5254.77
1271.72	5254.52
1288.31	5254.05
1289.77	5254
1307.75	5253.49
1313.55	5253.33
1318.52	5253.19
1331.12	5252.84
1331.15	5252.84
1347.59	5252.38
1364.04	5251.92
1380.48	5251.46
1396.93	5251.02
1413.37	5250.57
1429.82	5250.14
1446.26	5249.71
1454.48	5249.49
1462.71	5249.28
1470.93	5249.08
1479.15	5248.87
1487.37	5248.67
1495.6	5248.47
1503.82	5248.27
1512.04	5248.08
1520.27	5247.89
1528.49	5247.7
1536.71	5247.52
1544.16	5247.35

External Boundary

X	Y
1394.87	5304.67
1391.87	5304.67
1367.88	5312.66
1360.35	5314.82
789.193	5478
779.57	5478
775.944	5477.97
228.672	5321.6
221.118	5319.44
198.386	5311.87
197.146	5311.45
194.147	5311.45
192.876	5311.87
170.144	5319.44
168.145	5319.44
159.009	5314.87
142.194	5315.27
130.273	5315.8
128.092	5315.93
124.144	5315.99
101.067	5316.48
97.3864	5316.61
82.0586	5317.08
79.1974	5317
65.9093	5316.71
53.3344	5317.21
49.9101	5317.36
46.5883	5317.44
26.8675	5317.78
22.8942	5317.85
10.8587	5318.06
0	5318.13
0	5295.72
0	5279.87
0	5097.35
1544.16	5097.35
1544.16	5247.35
1544.16	5280.29

1544.16	5310.12
1529.51	5310.25
1507.12	5310.59
1503	5310.71
1486.21	5311.17
1473.43	5312.27
1470.56	5312.46
1452.38	5313.47
1448.38	5313.67
1428.34	5314.87
1426.01	5315.05

Material Boundary

X	Y
228.672	5321.6
240.92	5321.6
775.944	5474.47
779.57	5474.5
789.193	5474.5
1348.1	5314.82
1360.35	5314.82

Material Boundary

X	Y
240.92	5321.6
320.871	5294.25
336.059	5289.9
474.996	5286
515.004	5285
555.295	5284
747.044	5279.57
800.288	5278.51
821.347	5278
853.126	5277.36
878.692	5276.85
920.683	5276
1012.44	5275
1164.76	5273.42
1223.8	5273.43
1253.36	5283.28

1342.37	5312.95
1344.62	5313.71
1345.51	5314
1348.1	5314.82

Material Boundary

X	Y
1253.36	5283.28
1261.81	5283.18
1278.58	5282.97
1295.36	5282.77
1312.13	5282.57
1328.91	5282.38
1345.68	5282.19
1362.46	5282
1379.23	5281.82
1396.01	5281.65
1412.78	5281.48
1429.56	5281.31
1446.33	5281.15
1463.11	5280.99
1479.88	5280.84
1496.66	5280.69
1513.43	5280.54
1530.21	5280.4
1544.16	5280.29

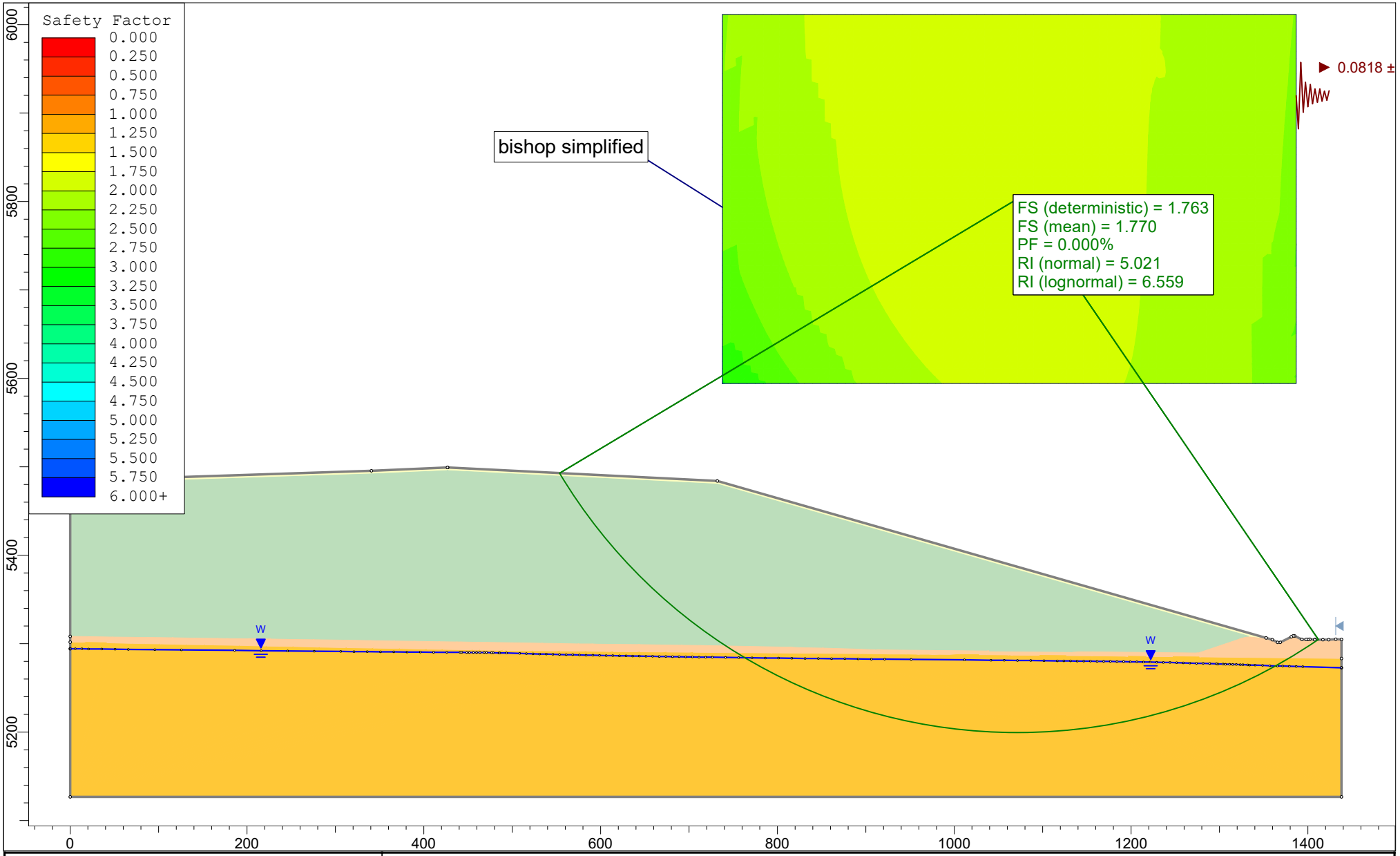
Material Boundary

X	Y
0	5295.72
18.9226	5295.65
52.4725	5295.51
86.0223	5295.36
119.572	5295.22
153.122	5295.06
220.222	5294.76
253.772	5294.6
270.546	5294.51
287.322	5294.43
304.096	5294.34

320.871	5294.25
323.034	5294.24

ATTACHMENT 3

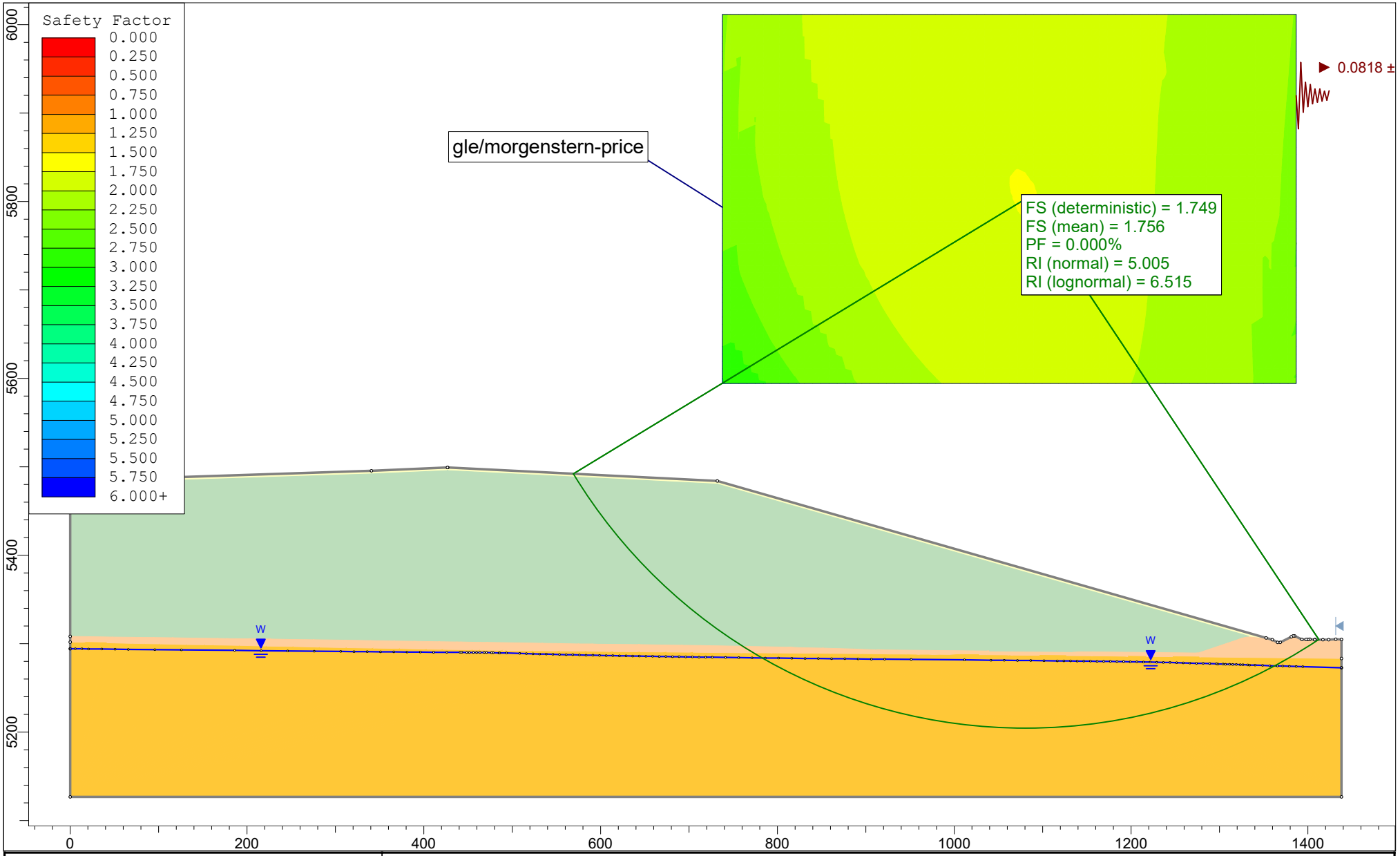
SCENARIO 3 SLOPE STABILITY ANALYSIS RESULTS



AEC

SLIDEINTERPRET 6.039

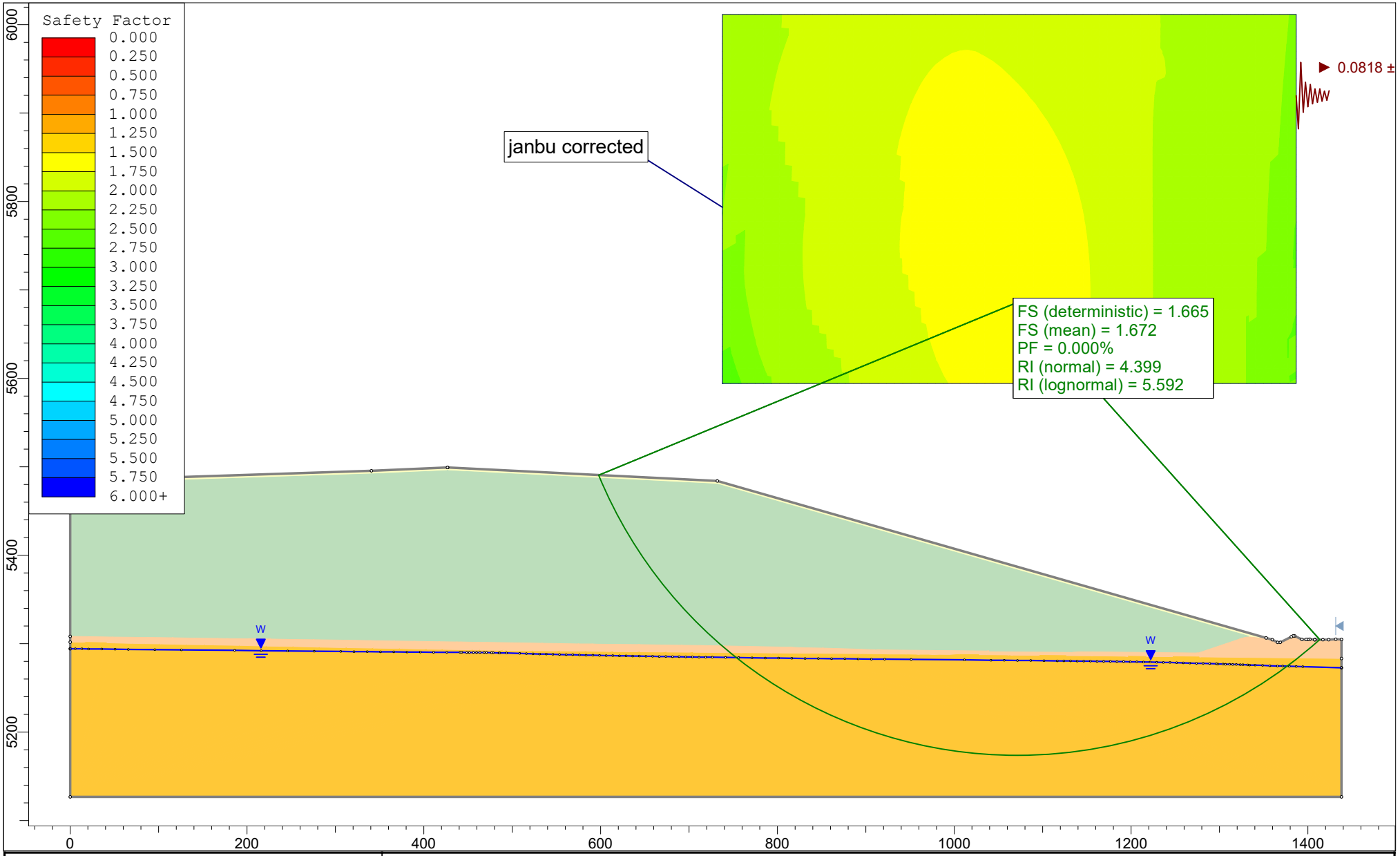
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile3 - 0.1 SD.slim



AEC

SLIDEINTERPRET 6.039

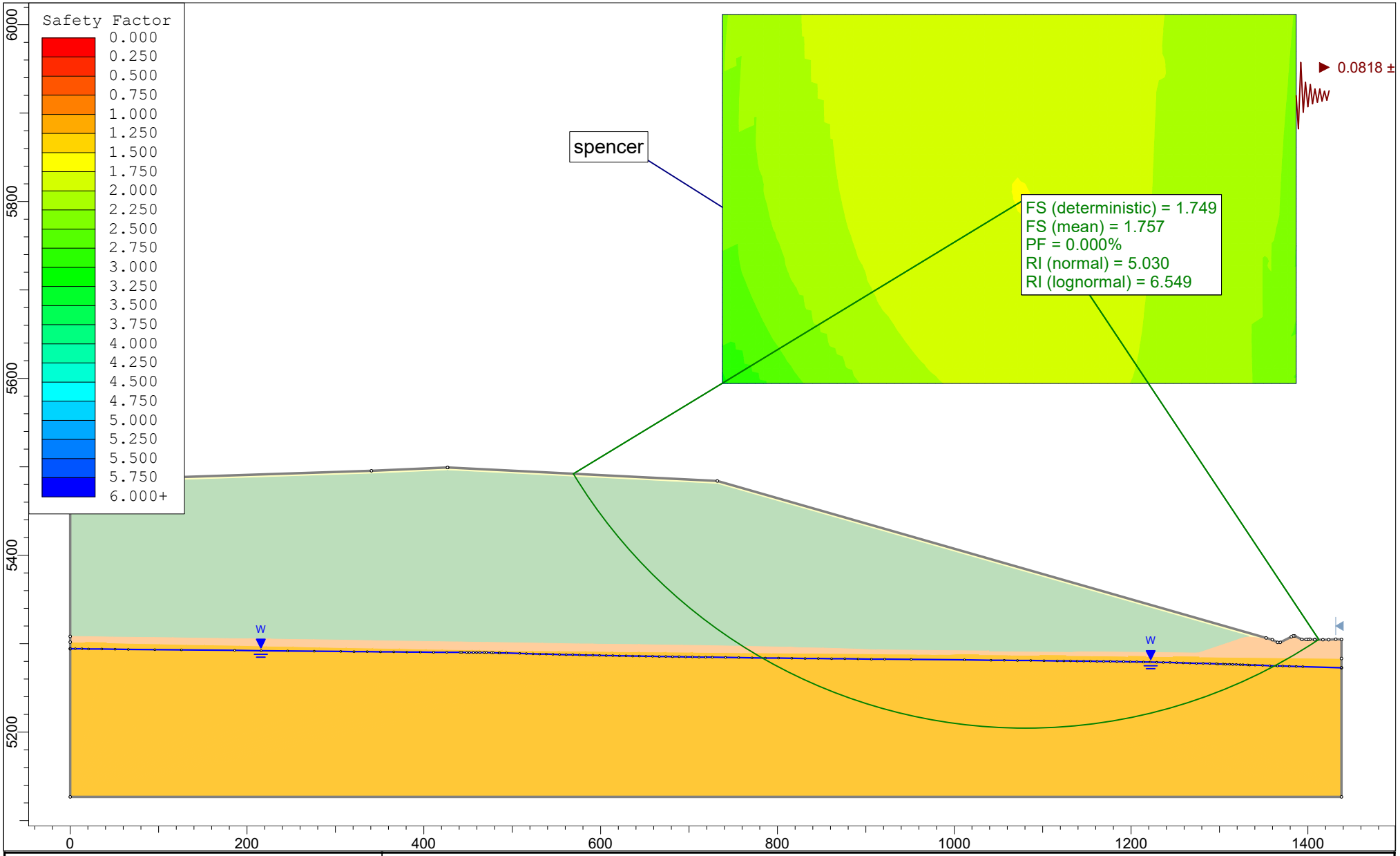
Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile3 - 0.1 SD.slim



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile3 - 0.1 SD.slim



AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
Drawn By Michael Bucari-Tovo	*Scale* 1:1800	*Company*	American Environmental Consulting
Date 8/23/2024, 7:47:53 AM		*File Name*	Profile3 - 0.1 SD.slim

Slide Analysis Information

East Regional Landfill 2024 EDOP Slope Stability

Project Summary

File Name: Profile3 - 0.1 SD.slim
Slide Modeler Version: 6.039
Project Title: East Regional Landfill 2024 EDOP Slope Stability
Analysis: Profile 3 - Module 1 Final Cover and Waste
Author: Michael Bucari-Tovo
Company: American Environmental Consulting
Date Created: 8/23/2024, 7:47:53 AM
Comments:

Material and Seismic Standard Deviation: 10%
Min/Max: +/- 3 Standard Deviations

General Settings

Units of Measurement: Imperial Units
Time Units: seconds
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
GLE/Morgenstern-Price with interslice force function: Half Sine
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.0818

Material Properties

Property	Cover Soils	Waste	Native Soils	Claystone
Color				
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unsaturated Unit Weight [lbs/ft3]			104	
Saturated Unit Weight [lbs/ft3]			115	
Cohesion [psf]	78	200	10	1000
Friction Angle [deg]	25.7	32	30.5	18
Water Surface	None	None	Water Table	Water Table
Hu Value			Automatically Calculated	Automatically Calculated
Ru Value	0	0		

Probabilistic Analysis Input

General Settings

Sensitivity Analysis: Off
Probabilistic Analysis: On
Sampling Method: Latin-Hypercube
Number of Samples: 10000
Analysis Type: Overall Slope

Variables

Material	Property	Distribution	Mean	Min	Max	Standard Deviation
Cover Soils	Cohesion	Normal	78	54.6	101.4	7.8
Cover Soils	Phi	Normal	25.7	17.99	33.41	2.57
Cover Soils	Unit Weight	Normal	98	68.6	127.4	9.8
Waste	Cohesion	Normal	200	140	260	20
Waste	Phi	Normal	32	22.4	41.6	3.2
Waste	Unit Weight	Normal	60	42	78	6
Native Soils	Cohesion	Normal	10	7	13	1
Native Soils	Phi	Normal	30.5	21.35	39.65	3.05
Native Soils	Unit Weight	Normal	104	72.8	135.2	10.4
Claystone	Cohesion	Normal	1000	700	1300	100
Claystone	Phi	Normal	18	12.6	23.4	1.8
Claystone	Unit Weight	Normal	120	84	156	12

Seismic Coefficient	Property	Distribution	Mean	Min	Max	Standard Deviation
Horizontal Seismic Coefficient		Normal	0.0818	0.05726	0.10634	0.00818
Vertical Seismic Coefficient			0			

Global Minimums

Method: bishop simplified

FS: 1.762980
Center: 1071.519, 5803.000
Radius: 603.736
Left Slip Surface Endpoint: 553.494, 5492.923
Right Slip Surface Endpoint: 1412.154, 5304.538
Resisting Moment=2.27572e+009 lb-ft
Driving Moment=1.29084e+009 lb-ft
Total Slice Area=123381 ft2

Method: janbu corrected

FS: 1.665320
Center: 1071.519, 5686.120
Radius: 512.399
Left Slip Surface Endpoint: 597.846, 5490.705
Right Slip Surface Endpoint: 1413.509, 5304.551
Resisting Horizontal Force=3.74009e+006 lb
Driving Horizontal Force=2.24587e+006 lb
Total Slice Area=131636 ft2

Method: spencer

FS: 1.749260
Center: 1080.791, 5803.000
Radius: 598.747
Left Slip Surface Endpoint: 569.061, 5492.145
Right Slip Surface Endpoint: 1412.509, 5304.541
Resisting Moment=2.1437e+009 lb-ft
Driving Moment=1.22549e+009 lb-ft
Resisting Horizontal Force=3.26001e+006 lb
Driving Horizontal Force=1.86365e+006 lb
Total Slice Area=116782 ft2

Method: gle/morgenstern-price

FS: 1.748680
Center: 1080.791, 5803.000
Radius: 598.747
Left Slip Surface Endpoint: 569.061, 5492.145
Right Slip Surface Endpoint: 1412.509, 5304.541
Resisting Moment=2.14299e+009 lb-ft
Driving Moment=1.22549e+009 lb-ft
Resisting Horizontal Force=3.25726e+006 lb
Driving Horizontal Force=1.86269e+006 lb
Total Slice Area=116782 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 46963
Number of Invalid Surfaces: 2868

Error Codes:

Error Code -103 reported for 2860 surfaces
Error Code -106 reported for 1 surface
Error Code -109 reported for 7 surfaces

Method: janbu corrected

Number of Valid Surfaces: 46963
Number of Invalid Surfaces: 2868

Error Codes:

Error Code -103 reported for 2860 surfaces
Error Code -106 reported for 1 surface
Error Code -109 reported for 7 surfaces

Method: spencer

Number of Valid Surfaces: 46963
Number of Invalid Surfaces: 2868

Error Codes:

Error Code -103 reported for 2860 surfaces
Error Code -106 reported for 1 surface
Error Code -109 reported for 7 surfaces

Method: gle/morgenstern-price

Number of Valid Surfaces: 46963
Number of Invalid Surfaces: 2868

Error Codes:

Error Code -103 reported for 2860 surfaces
Error Code -106 reported for 1 surface
Error Code -109 reported for 7 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region,even though the slip surface is wholly within the soil region.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.76298

				Base	Base	Shear	Shear	Base	Pore	Effective

Number	[ft]	[lbs]	Material	Cohesion [psf]	Friction Angle [degrees]	Stress [psf]	Strength [psf]	Normal Stress [psf]	Pressure [psf]	Normal Stress [psf]
1	2.17733	373.412	Cover Soils	78	25.7	62.7142	110.564	67.6628	0	67.6628
2	37.1665	71142	Waste	200	32	522.144	920.529	1153.09	0	1153.09
3	37.1665	176372	Waste	200	32	1266.28	2232.43	3252.57	0	3252.57
4	37.1665	261890	Waste	200	32	1936.63	3414.24	5143.86	0	5143.86
5	37.1665	332968	Waste	200	32	2540.6	4479.03	6847.87	0	6847.87
6	37.1665	391986	Waste	200	32	3079.68	5429.41	8368.8	0	8368.8
7	11.8224	135338	Native Soils	10	30.5	3159.47	5570.08	9439.13	0	9439.13
8	36.8539	466726	Claystone	1000	18	2574.79	4539.31	11191.8	298.927	10892.9
9	36.8539	528191	Claystone	1000	18	2694.52	4750.39	13029	1486.49	11542.5
10	36.8539	575555	Claystone	1000	18	2781.08	4902.99	14494.7	2482.52	12012.2
11	36.8539	610201	Claystone	1000	18	2837.43	5002.34	15621.4	3303.44	12317.9
12	36.8539	633437	Claystone	1000	18	2867.19	5054.8	16440.5	3961.11	12479.4
13	36.8539	646470	Claystone	1000	18	2874.18	5067.13	16981.6	4464.24	12517.3
14	36.8539	648996	Claystone	1000	18	2855.54	5034.26	17235.1	4818.87	12416.2
15	36.8539	641277	Claystone	1000	18	2811.4	4956.44	17205.6	5028.91	12176.7
16	36.8539	623498	Claystone	1000	18	2741.83	4833.79	16895.7	5096.53	11799.2
17	36.8539	595733	Claystone	1000	18	2646.68	4666.04	16304.8	5021.86	11282.9
18	36.8539	557944	Claystone	1000	18	2525.5	4452.4	15428.8	4803.38	10625.4
19	36.8539	509984	Claystone	1000	18	2377.66	4191.77	14260.3	4437.01	9823.26
20	36.8539	451573	Claystone	1000	18	2202.29	3882.6	12787.6	3915.88	8871.73
21	36.8539	382294	Claystone	1000	18	1998.42	3523.17	10994.6	3229.1	7765.51
22	36.8539	308637	Claystone	1000	18	1802.2	3177.24	9065.48	2364.64	6700.84
23	36.8539	234466	Claystone	1000	18	1636.55	2885.21	7117.26	1315.17	5802.09
24	36.8539	126042	Claystone	1000	18	1315.82	2319.77	4140.15	78.3174	4061.83
25	32.3122	39173.5	Native Soils	10	30.5	521.818	919.954	1544.79	0	1544.79

Global Minimum Query (janbu corrected) - Safety Factor: 1.66532

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	1.49051	255.623	Cover Soils	78	25.7	55.0783	91.723	28.5142	0	28.5142
2	34.5506	80053.9	Waste	200	32	551.599	918.589	1149.98	0	1149.98
3	34.5506	198121	Waste	200	32	1432.48	2385.54	3497.59	0	3497.59
4	34.5506	287293	Waste	200	32	2209.98	3680.32	5569.67	0	5569.67
5	34.5506	358378	Waste	200	32	2900.58	4830.4	7410.18	0	7410.18
6	8.97973	103603	Native Soils	10	30.5	3092.56	5150.11	8726.15	0	8726.15
7	35.6868	468612	Claystone	1000	18	2649.56	4412.36	10980	477.855	10502.2
8	35.6868	550630	Claystone	1000	18	2847.98	4742.8	13501.4	1982.23	11519.2
9	35.6868	614713	Claystone	1000	18	3001.89	4999.11	15539.4	3231.38	12308
10	35.6868	663188	Claystone	1000	18	3116.01	5189.16	17151.5	4258.61	12892.9
11	35.6868	697967	Claystone	1000	18	3195.13	5320.92	18385.5	5087.1	13298.4

12	35.6868	720934	Claystone	1000	18	3245.42	5404.67	19289.3	5733.1	13556.2
13	35.6868	732325	Claystone	1000	18	3265.67	5438.38	19867.8	6207.83	13660
14	35.6868	732473	Claystone	1000	18	3255.72	5421.82	20127.9	6518.91	13609
15	35.6868	721727	Claystone	1000	18	3216.04	5355.73	20076.5	6670.98	13405.6
16	35.6868	700262	Claystone	1000	18	3146.62	5240.13	19715.8	6666.01	13049.8
17	35.6868	668098	Claystone	1000	18	3047.07	5074.34	19042.9	6503.37	12539.5
18	35.6868	625101	Claystone	1000	18	2916.53	4856.96	18050.3	6179.81	11870.5
19	35.6868	570961	Claystone	1000	18	2753.71	4585.81	16724.7	5688.67	11036
20	35.6868	505174	Claystone	1000	18	2556.79	4257.87	15045.9	5019.21	10026.7
21	35.6868	427309	Claystone	1000	18	2325.08	3872	12994.8	4155.65	8839.12
22	35.6868	348367	Claystone	1000	18	2127.53	3543.02	10908.1	3081.47	7826.6
23	35.6868	255685	Claystone	1000	18	1890.78	3148.75	8395.46	1782.28	6613.18
24	35.6868	134196	Claystone	1000	18	1519	2529.62	4946.7	239.002	4707.7
25	24.6276	27637.2	Native Soils	10	30.5	594.379	989.831	1663.42	0	1663.42

Global Minimum Query (spencer) - Safety Factor: 1.74926

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.21077	379.147	Cover Soils	78	25.7	61.1523	106.971	60.198	0	60.198
2	37.8604	72584.9	Waste	200	32	469.674	821.582	994.74	0	994.74
3	37.8604	179855	Waste	200	32	1137.09	1989.07	2863.11	0	2863.11
4	37.8604	266776	Waste	200	32	1765.8	3088.85	4623.11	0	4623.11
5	37.8604	338778	Waste	200	32	2353.82	4117.45	6269.24	0	6269.24
6	37.8604	393176	Waste	200	32	2861.1	5004.8	7689.3	0	7689.3
7	11.8647	132073	Native Soils	10	30.5	2903.75	5079.42	8606.19	0	8606.19
8	35.6941	438007	Claystone	1000	18	2385.55	4172.95	10020.6	255.259	9765.32
9	35.6941	493195	Claystone	1000	18	2494.53	4363.58	11724.3	1372.31	10352
10	35.6941	535656	Claystone	1000	18	2584.21	4520.46	13145.8	2311	10834.8
11	35.6941	566709	Claystone	1000	18	2655.28	4644.77	14303.2	3085.74	11217.4
12	35.6941	587776	Claystone	1000	18	2710.27	4740.97	15220.6	3707.12	11513.5
13	35.6941	599236	Claystone	1000	18	2747.81	4806.64	15898.4	4182.74	11715.7
14	35.6941	601047	Claystone	1000	18	2764.91	4836.55	16325.8	4518.12	11807.7
15	35.6941	593484	Claystone	1000	18	2760.45	4828.74	16500.4	4716.79	11783.7
16	35.6941	576707	Claystone	1000	18	2733.04	4780.79	16416.6	4780.53	11636.1
17	35.6941	550784	Claystone	1000	18	2680.96	4689.69	16065.3	4709.57	11355.7
18	35.6941	515684	Claystone	1000	18	2602.1	4551.75	15433.5	4502.35	10931.2
19	35.6941	471277	Claystone	1000	18	2493.83	4362.36	14503.4	4155.09	10348.3
20	35.6941	417320	Claystone	1000	18	2352.89	4115.82	13250.5	3661.04	9589.51
21	35.6941	353453	Claystone	1000	18	2175.03	3804.7	11642.6	3010.58	8631.99
22	35.6941	287057	Claystone	1000	18	2003.84	3505.24	9903.62	2193.3	7710.32
23	35.6941	219280	Claystone	1000	18	1846.58	3230.14	8067.13	1203.45	6863.68
24	35.6941	119037	Claystone	1000	18	1488.71	2604.14	4976.36	39.3186	4937.05

25	33.2707	40340.5	Native Soils	10	30.5	701.851	1227.72	2067.27	0	2067.27

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.74868

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.21077	379.147	Cover Soils	78	25.7	63.3	110.691	67.928	0	67.928
2	37.8604	72584.9	Waste	200	32	515.815	901.996	1123.43	0	1123.43
3	37.8604	179855	Waste	200	32	1213.1	2121.32	3074.76	0	3074.76
4	37.8604	266776	Waste	200	32	1814.15	3172.36	4756.76	0	4756.76
5	37.8604	338778	Waste	200	32	2350.01	4109.41	6256.36	0	6256.36
6	37.8604	393176	Waste	200	32	2801.26	4898.51	7519.18	0	7519.18
7	11.8647	132073	Native Soils	10	30.5	2818.86	4929.29	8351.3	0	8351.3
8	35.6941	438007	Claystone	1000	18	2324.04	4064	9685.3	255.259	9430.04
9	35.6941	493195	Claystone	1000	18	2412.96	4219.5	11280.9	1372.31	9908.58
10	35.6941	535656	Claystone	1000	18	2493.23	4359.87	12651.6	2311	10340.6
11	35.6941	566709	Claystone	1000	18	2568.83	4492.07	13833.2	3085.74	10747.5
12	35.6941	587776	Claystone	1000	18	2642.9	4621.58	14853.2	3707.12	11146.1
13	35.6941	599236	Claystone	1000	18	2712.35	4743.03	15702.6	4182.74	11519.8
14	35.6941	601047	Claystone	1000	18	2770.43	4844.59	16350.5	4518.12	11832.4
15	35.6941	593484	Claystone	1000	18	2810.49	4914.64	16764.8	4716.79	12048
16	35.6941	576707	Claystone	1000	18	2824.38	4938.94	16903.4	4780.53	12122.8
17	35.6941	550784	Claystone	1000	18	2803.15	4901.81	16718.1	4709.57	12008.5
18	35.6941	515684	Claystone	1000	18	2738.03	4787.94	16160.4	4502.35	11658.1
19	35.6941	471277	Claystone	1000	18	2621.67	4584.47	15187	4155.09	11031.9
20	35.6941	417320	Claystone	1000	18	2449.49	4283.37	13766.2	3661.04	10105.2
21	35.6941	353453	Claystone	1000	18	2220.74	3883.37	11884.7	3010.58	8874.1
22	35.6941	287057	Claystone	1000	18	1985.59	3472.17	9801.86	2193.3	7608.56
23	35.6941	219280	Claystone	1000	18	1760.97	3079.38	7603.15	1203.45	6399.7
24	35.6941	119037	Claystone	1000	18	1374.68	2403.88	4360.02	39.3186	4320.7
25	33.2707	40340.5	Native Soils	10	30.5	545.223	953.42	1601.61	0	1601.61

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.76298

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	553.494	5492.92	0	0	0
2	555.672	5489.31	138.326	0	0
3	592.838	5435.08	49103.7	0	0
4	630.005	5391.22	159188	0	0

5	667.171	5354.67	296721	0	0
6	704.338	5323.76	441327	0	0
7	741.504	5297.44	579254	0	0
8	753.326	5289.92	624024	0	0
9	790.18	5268.82	803536	0	0
10	827.034	5250.98	979992	0	0
11	863.888	5236.09	1.14053e+006	0	0
12	900.742	5223.92	1.27609e+006	0	0
13	937.596	5214.3	1.38044e+006	0	0
14	974.45	5207.12	1.44954e+006	0	0
15	1011.3	5202.27	1.481e+006	0	0
16	1048.16	5199.72	1.47397e+006	0	0
17	1085.01	5199.41	1.42912e+006	0	0
18	1121.87	5201.37	1.34859e+006	0	0
19	1158.72	5205.59	1.23602e+006	0	0
20	1195.57	5212.15	1.09677e+006	0	0
21	1232.43	5221.1	938120	0	0
22	1269.28	5232.57	769701	0	0
23	1306.13	5246.72	600389	0	0
24	1342.99	5263.74	438150	0	0
25	1379.84	5283.93	316430	0	0
26	1412.15	5304.54	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 1.66532

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	597.846	5490.71	0	0	0
2	599.337	5487.13	33.9672	0	0
3	633.888	5419.6	63607.7	0	0
4	668.438	5369.77	200539	0	0
5	702.989	5330.12	362228	0	0
6	737.539	5297.52	524611	0	0
7	746.519	5289.98	568825	0	0
8	782.206	5263.21	798697	0	0
9	817.893	5240.89	1.03505e+006	0	0
10	853.579	5222.38	1.25707e+006	0	0
11	889.266	5207.23	1.4508e+006	0	0
12	924.953	5195.13	1.60691e+006	0	0
13	960.64	5185.86	1.71929e+006	0	0
14	996.327	5179.27	1.78403e+006	0	0
15	1032.01	5175.25	1.79913e+006	0	0
16	1067.7	5173.74	1.76426e+006	0	0

17	1103.39	5174.71	1.68071e+006	0	0
18	1139.07	5178.19	1.55137e+006	0	0
19	1174.76	5184.23	1.38088e+006	0	0
20	1210.45	5192.91	1.17595e+006	0	0
21	1246.13	5204.39	945824	0	0
22	1281.82	5218.87	702859	0	0
23	1317.51	5236.63	455414	0	0
24	1353.19	5258.09	223129	0	0
25	1388.88	5283.83	48065.6	0	0
26	1413.51	5304.55	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.74926

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	569.061	5492.14	0	0	0
2	571.272	5488.53	112.984	24.9592	12.4571
3	609.132	5434.17	42323.7	9349.71	12.4571
4	646.993	5390.3	139514	30820.1	12.4572
5	684.853	5353.85	262905	58078.2	12.4571
6	722.714	5323.13	394023	87043.4	12.4571
7	760.574	5297.08	518025	114437	12.4572
8	772.439	5289.76	557305	123114	12.4571
9	808.133	5269.94	706485	156069	12.4571
10	843.827	5253.14	854608	188791	12.4571
11	879.521	5239.1	990686	218852	12.4571
12	915.215	5227.6	1.10653e+006	244442	12.4571
13	950.909	5218.51	1.19613e+006	264236	12.4571
14	986.603	5211.71	1.25507e+006	277258	12.4572
15	1022.3	5207.12	1.28036e+006	282844	12.4571
16	1057.99	5204.69	1.27033e+006	280629	12.4572
17	1093.69	5204.39	1.22467e+006	270542	12.4571
18	1129.38	5206.23	1.14441e+006	252811	12.4571
19	1165.07	5210.21	1.03205e+006	227990	12.4571
20	1200.77	5216.4	891809	197009	12.4571
21	1236.46	5224.84	729917	161246	12.4571
22	1272.16	5235.66	555189	122647	12.4572
23	1307.85	5248.98	375144	82872.9	12.4571
24	1343.54	5264.99	197926	43723.8	12.4571
25	1379.24	5283.94	60151.3	13288	12.4571
26	1412.51	5304.54	0	0	0

Global Minimum Query (gle/morgenstern-price) - Safety Factor: 1.74868

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	569.061	5492.14	0	0	0
2	571.272	5488.53	136.261	0.316086	0.132909
3	609.132	5434.17	47611	1994.43	2.39872
4	646.993	5390.3	151244	12194.7	4.60975
5	684.853	5353.85	277733	32707.8	6.71662
6	722.714	5323.13	408678	62350.8	8.67456
7	760.574	5297.08	530610	97811.7	10.4446
8	772.439	5289.76	569063	110153	10.9552
9	808.133	5269.94	713868	156332	12.3524
10	843.827	5253.14	857533	206280	13.5256
11	879.521	5239.1	989999	255284	14.4595
12	915.215	5227.6	1.10361e+006	298662	15.1428
13	950.909	5218.51	1.19236e+006	332201	15.5683
14	986.603	5211.71	1.25132e+006	352468	15.7313
15	1022.3	5207.12	1.27661e+006	357160	15.6301
16	1057.99	5204.69	1.26553e+006	345401	15.2659
17	1093.69	5204.39	1.21683e+006	317923	14.6424
18	1129.38	5206.23	1.13109e+006	277118	13.7663
19	1165.07	5210.21	1.01106e+006	226889	12.648
20	1200.77	5216.4	862107	172293	11.3017
21	1236.46	5224.84	692483	118946	9.74644
22	1272.16	5235.66	513573	72235.9	8.00634
23	1307.85	5248.98	335597	35928	6.11064
24	1343.54	5264.99	168922	12089.8	4.0937
25	1379.24	5283.94	46945.4	1634.7	1.99431
26	1412.51	5304.54	0	0	0

Probabilistic Analysis Results (Overall Slope)

Method: bishop simplified
Factor of Safety, mean: 1.745977
Factor of Safety, standard deviation: 0.147625
Factor of Safety, minimum: 1.223190
Factor of Safety, maximum: 2.328380
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 5.05320 (assuming normal distribution)
Reliability index: 6.56099 (assuming lognormal distribution)
* best fit = Gamma

Method: janbu corrected
Factor of Safety, mean: 1.659132

Factor of Safety, standard deviation: 0.149024
Factor of Safety, minimum: 1.127510
Factor of Safety, maximum: 2.301990
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 4.42298 (assuming normal distribution)
Reliability index: 5.60325 (assuming lognormal distribution)
* best fit = Gamma

Method: spencer
Factor of Safety, mean: 1.734859
Factor of Safety, standard deviation: 0.145918
Factor of Safety, minimum: 1.219160
Factor of Safety, maximum: 2.310510
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 5.03612 (assuming normal distribution)
Reliability index: 6.51970 (assuming lognormal distribution)
* best fit = Gamma

Method: gle/morgenstern-price
Factor of Safety, mean: 1.733984
Factor of Safety, standard deviation: 0.145996
Factor of Safety, minimum: 1.217310
Factor of Safety, maximum: 2.310530
Probability of Failure: 0.000% (= 0 failed surfaces / 10000 valid surfaces)
Reliability index: 5.02742 (assuming normal distribution)
Reliability index: 6.50684 (assuming lognormal distribution)
* best fit = Gamma

Critical Probabilistic Surface

Method: bishop simplified
Normal Reliability Index: 4.44411
Probability of Failure: 0
Mean Factor of Safety: 2.04847
Center: 1182.78, 6011.71
Radius: 711.441
Left Slip Surface Endpoint: 704.102, 5485.39
Right Slip Surface Endpoint: 1324.85, 5314.6
Lognormal Reliability Index: 6.09058
Probability of Failure: 0
Mean Factor of Safety: 1.84025
Center: 997.344, 5727.86
Radius: 591.103
Left Slip Surface Endpoint: 452.783, 5497.96
Right Slip Surface Endpoint: 1409.87, 5304.52

Method: janbu corrected
Normal Reliability Index: 4.13275
Probability of Failure: 0
Mean Factor of Safety: 1.69493
Center: 1025.16, 5644.38

Radius: 514.673
Left Slip Surface Endpoint: 532.961, 5493.95
Right Slip Surface Endpoint: 1411.67, 5304.53
Lognormal Reliability Index: 5.28206
Probability of Failure: 0
Mean Factor of Safety: 1.69493
Center: 1025.16, 5644.38
Radius: 514.673
Left Slip Surface Endpoint: 532.961, 5493.95
Right Slip Surface Endpoint: 1411.67, 5304.53

Method: spencer
Normal Reliability Index: 4.45636
Probability of Failure: 0
Mean Factor of Safety: 2.04602
Center: 1192.05, 6011.71
Radius: 710.197
Left Slip Surface Endpoint: 715.874, 5484.8
Right Slip Surface Endpoint: 1326.02, 5314.27
Lognormal Reliability Index: 6.04014
Probability of Failure: 0
Mean Factor of Safety: 1.80887
Center: 1006.62, 5752.91
Radius: 603.184
Left Slip Surface Endpoint: 460.133, 5497.59
Right Slip Surface Endpoint: 1410.07, 5304.52

Method: gle/morgenstern-price
Normal Reliability Index: 4.45105
Probability of Failure: 0
Mean Factor of Safety: 2.05205
Center: 1182.78, 6011.71
Radius: 711.441
Left Slip Surface Endpoint: 704.102, 5485.39
Right Slip Surface Endpoint: 1324.85, 5314.6
Lognormal Reliability Index: 5.99895
Probability of Failure: 0
Mean Factor of Safety: 1.82492
Center: 1006.62, 5727.86
Radius: 584.954
Left Slip Surface Endpoint: 469.085, 5497.14
Right Slip Surface Endpoint: 1410.29, 5304.52

List Of Coordinates

Water Table

X	Y
0	5294.43

5.7929	5294.36
13.2976	5294.28
20.8023	5294.19
35.8118	5294.03
50.8212	5293.87
65.8306	5293.72
95.8495	5293.41
125.868	5293.11
185.906	5292.52
215.925	5292.23
245.944	5291.94
275.963	5291.65
305.981	5291.37
320.991	5291.24
336	5291.1
351.01	5290.97
366.019	5290.84
381.029	5290.72
396.038	5290.6
411.047	5290.49
426.057	5290.38
441.066	5290.28
443.107	5290.27
448.571	5290.23
451.492	5290.21
456.076	5290.17
459.877	5290.14
463.58	5290.11
468.262	5290.06
471.085	5290.02
476.647	5289.92
478.59	5289.89
485.032	5289.73
486.095	5289.71
493.599	5289.51
508.609	5289.09
516.113	5288.88
523.618	5288.68
531.123	5288.48
538.628	5288.29
546.132	5288.1
553.637	5287.91

AEC

SLIDEINTERPRET 6.039

Project	East Regional Landfill 2024 EDOP Slope Stability		
Analysis Description	Profile 3 - Module 1 Final Cover and Waste		
Drawn By	Michael Bucari-Tovo	*Company*	American Environmental Consulting
Date	8/23/2024, 7:47:53 AM	*File Name*	Profile3 - 0.1 SD.slim

561.142	5287.73
568.646	5287.56
576.151	5287.39
583.656	5287.22
591.161	5287.06
598.665	5286.9
606.17	5286.75
613.675	5286.6
621.18	5286.45
628.684	5286.31
636.189	5286.18
643.694	5286.04
651.198	5285.91
658.703	5285.78
666.208	5285.66
673.713	5285.54
681.217	5285.42
688.722	5285.3
696.227	5285.19
703.731	5285.08
711.236	5284.97
718.741	5284.86
726.245	5284.76
741.255	5284.55
756.264	5284.36
771.274	5284.17
786.283	5283.99
801.293	5283.81
816.302	5283.64
831.311	5283.47
846.321	5283.32
861.33	5283.16
876.34	5283.01
891.349	5282.86
906.359	5282.72
921.368	5282.58
951.387	5282.3
1011.42	5281.76
1041.44	5281.49
1056.45	5281.35
1071.46	5281.2
1086.47	5281.05

1101.48	5280.9
1116.49	5280.74
1124	5280.66
1131.5	5280.57
1139	5280.48
1146.51	5280.39
1154.01	5280.3
1161.52	5280.2
1169.02	5280.1
1176.53	5280
1184.03	5279.89
1191.54	5279.78
1199.04	5279.66
1206.55	5279.53
1214.05	5279.4
1221.56	5279.26
1229.06	5279.11
1236.57	5278.95
1244.07	5278.78
1251.58	5278.6
1259.08	5278.41
1266.58	5278.2
1274.09	5277.99
1281.59	5277.77
1289.1	5277.53
1296.6	5277.29
1298.37	5277.23
1304.11	5277.04
1306.76	5276.94
1311.61	5276.78
1315.14	5276.66
1319.12	5276.52
1323.53	5276.36
1326.62	5276.26
1331.91	5276.07
1334.13	5276
1340.3	5275.78
1348.68	5275.5
1357.07	5275.23
1365.45	5274.96
1371.65	5274.78
1379.16	5274.56

1386.66	5274.35
1394.16	5274.16
1437.96	5272.75

External Boundary

X	Y
1437.96	5304.92
1431.5	5305.03
1423.51	5304.67
1417.13	5304.58
1408.06	5304.5
1407.88	5304.5
1407.83	5304.51
1402.21	5305.03
1399.94	5304.97
1398.07	5304.95
1393.3	5304.85
1385.13	5308.87
1383.34	5308.87
1381.22	5307.87
1368.67	5301.61
1365.67	5301.61
1359.66	5304.61
1352.76	5306.63
731.954	5484
426.954	5499.25
426.849	5499.25
340.745	5495.65
21.2871	5485.07
0	5484.73
0	5481.23
0	5308.27
0	5301.94
0	5294.43
0	5126.86
1437.96	5126.86
1437.96	5272.75
1437.96	5283.32

Material Boundary

X	Y
0	5481.23
21.2871	5481.57
340.745	5492.15
426.849	5495.75
426.954	5495.75
731.954	5480.5
1333.31	5308.68
1352.76	5306.63

Material Boundary

X	Y
0	5308.27
20.6283	5308.02
47.5115	5307.68
71.9532	5307.36
94.5619	5307.06
115.811	5306.78
143.309	5306.42
166.843	5306.1
178.111	5305.94
202.458	5305.6
226.252	5305.26
252.761	5304.88
275.67	5304.55
312.39	5304.01
340.361	5303.59
367.125	5303.17
389.918	5302.82
417.79	5302.38
437.629	5302.07
441.707	5302
464.411	5301.64
471.412	5301.54
506.814	5301
533.704	5300.61
549.007	5300.38
575.105	5299.98
590.457	5299.79
594.265	5299.73
643.274	5299

691.964	5298.3
712.639	5298
816.371	5296
825.773	5295.74
851.821	5295
886.156	5294
911.845	5293.24
1039.17	5291.96
1133.09	5291
1229.53	5290.03
1275.48	5289.57
1275.95	5289.74
1325.02	5306
1333.31	5308.68

Material Boundary

X	Y
0	5301.94
17.6706	5301.57
41.4817	5301.08
51.3602	5300.87
71.6355	5300.45
85.0497	5300.18
101.789	5299.83
118.739	5299.49
131.943	5299.22
152.429	5298.81
162.097	5298.61
192.251	5298.01
222.405	5297.41
252.559	5296.82
282.713	5296.23
312.866	5295.66
343.02	5295.09
373.174	5294.52
403.328	5293.97
421.945	5293.63
455.635	5293.03
463.636	5292.9
489.324	5292.55
493.79	5292.48

523.943	5292.14
554.097	5291.82
584.251	5291.5
614.405	5291.2
644.559	5290.91
674.713	5290.62
704.866	5290.35
725.151	5290.16
758.841	5289.87
792.531	5289.59
826.22	5289.31
855.636	5289.07
859.91	5289.04
885.79	5288.83
893.599	5288.77
915.943	5288.59
927.289	5288.49
946.097	5288.34
960.979	5288.21
976.251	5288.08
994.668	5287.91
1006.41	5287.81
1028.36	5287.61
1036.56	5287.53
1062.05	5287.28
1066.71	5287.24
1096.87	5286.92
1127.02	5286.6
1157.17	5286.27
1196.81	5285.83
1217.48	5285.61
1247.64	5285.29
1277.79	5285
1437.96	5283.32

Appendix P
Gas Probe Installation Logs

AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
6885 S. MARSHALL ST., SUITE 3
LITTLETON, COLORADO 80128
Phone: 303-948-7733 Fax: 303-948-7739

LOG OF BORING NUMBER: GP-4
SHEET NUMBER: 1 of 1

LOCATION DIAGRAM

CLIENT: Five Part Development	DRILLING METHOD:
PROJECT NAME: East Regional Landfill	SSA 5"
PROJECT NUMBER:	BOREHOLE SIZE: 5"
PROJECT LOCATION: 8201 Schumaker Road , Adams County, Colorado	Lithology from MW-04 Boring Log
	SAMPLING METHODS: spt/cuttings
BORING LOCATION: GP-4	
	GRD.SURFACE ELEV:5308.28
	TOP OF CSG ELEV:5310.46
START DATE:11/4/2010 FINISH DATE:11/4/2010	**SURVEYED** or ESTIMATED
START TIME:1340 FINISH TIME:1440	

SAMPLER TYPE	SAMPLE NO. AND DEPTH	OVA READING	SPT DRIVE/ RECOVERY	DEPTH IN FEET	SOIL GRAPH	SOIL DESCRIPTION AND DRILLING CONDITIONS
Cuttings	N/A	N/A	N/A	0-4		Soft, light yellowish, fine grain, some silt, little clay, clayey silty SAND(SP), slightly moist, medium dilatancy, ALLUVIUM.
Cutting	N/A	N/A	N/A	4-8		Soft, light yellowish brown, fine grain some silt, some very fine sand, sandy CLAY (CL), slightly moist, low to medium plasticity, ALLUVIUM.
Cuttings	N/A	N/A	N/A	8-15		Stiff, dark brown, fine grain, some silt, little sand, silty CLAY (CL), moist, low to medium plasticity.
SPT	15-17	N/A	100	15-20		Stiff, moderate yellowish brown, fine to medium, trace clay, little silt, SAND (SW), slightly moist, ALLUVIUM.
SPT	20-22	N/A	100	20-25		Very stiff, medium grayish brown, medium to coarse grain, SAND (SP), very moist, ALLUVIUM.
SPT	25-27	N/A	100	25-30		Very hard, olive gray, fine grain, CLAY(CL), slightly moist, medium plasticity, ALLUVIUM/Weathered CLAYSTONE.
SPT	30-32	N/A	100	30-32		Very hard, weathered, olive gray, homogeneous, fine grain, CLAYSTONE, slightly moist. T.D. @ 32' bgs.

COMPLETED BY: NQT CHECKED BY: MAM

DRILLING CONTRACTOR: Site Services

NOTES:

WATER LEVELS: DATE TIME DEPTH TO WATER DATUM

AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
6885 S. MARSHALL ST., SUITE 3
LITTLETON, COLORADO 80128
Phone: 303-948-7733 Fax: 303-948-7739

LOG OF BORING NUMBER: GP-2
SHEET NUMBER: 1 of 1

LOCATION DIAGRAM

CLIENT: Five Part Development	DRILLING METHOD: Solid Stem Auger
PROJECT NAME: East Regional Landfill	
PROJECT NUMBER:	BOREHOLE SIZE: 4"
PROJECT LOCATION: East Regional Landfill	
	SAMPLING METHODS:
BORING LOCATION: GP-2 (Five feet east of MW-2)	Drill Cuttings
	GRD.SURFACE ELEV: 5305.47
	TOP OF CSG ELEV: 5307.93
START DATE: 7/26/2010 FINISH DATE: 7/26/2010	**SURVEYED** or ESTIMATED
START TIME:11:30 FINISH TIME:12:30	

SAMPLER TYPE	SAMPLE NO. AND DEPTH	OVA READING	SPT DRIVE/ RECOVERY	DEPTH IN FEET	SOIL GRAPH	SOIL DESCRIPTION AND DRILLING CONDITIONS
Cuttings	N/A	N/A	N/A	0-5		Soft, medium yellowish brown, fine grain, little fine sand, some clay, clayey SILT (ML), slightly moist, no to low plasticity, low dilatancy, EOLIUM/ALLUVIUM.
Cuttings	N/A	N/A	N/A	5-14		Stiff, light grayish brown, fine grain, some fine sand, sandy CLAY (CL), slightly moist, low plasticity, no dilatancy, EOLIUM/ALLUVIUM.
Cuttings	N/A	N/A	N/A	14-20		Stiff, dark olive brown, fine grain, CLAY (CL-CH), slightly moist, medium plasticity, no dilatancy, (highly weathered CLAYSTONE). TD@20

COMPLETED BY: NQT CHECKED BY: MAM

WATER LEVELS: N/A DATE TIME DEPTH TO WATER DATUM

DRILLING CONTRACTOR: Dakota Drilling

NOTES:

AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
6885 S. MARSHALL ST., SUITE 3
LITTLETON, COLORADO 80128
Phone: 303-948-7733 Fax: 303-948-7739

LOG OF BORING NUMBER: GP-3
SHEET NUMBER: 1 of 1

LOCATION DIAGRAM

CLIENT: Five Part Development	DRILLING METHOD: Solid Stem Auger
PROJECT NAME: East Regional Landfill	
PROJECT NUMBER:	BOREHOLE SIZE: 4"
PROJECT LOCATION: East Regional Landfill	
	SAMPLING METHODS:
BORING LOCATION: GP-3 (Five feet south of MW-3)	Drill Cuttings
	GRD.SURFACE ELEV: 5297.88
	TOP OF CSG ELEV: 5300.15
START DATE: 7/26/2010 FINISH DATE: 7/26/2010	**SURVEYED** or ESTIMATED
START TIME:9:00 FINISH TIME:11:00	

SAMPLER TYPE	SAMPLE NO. AND DEPTH	OVA READING	SPT DRIVE/ RECOVERY	DEPTH IN FEET	SOIL GRAPH	SOIL DESCRIPTION AND DRILLING CONDITIONS
Cuttings	N/A	N/A	N/A	0-5		Soft, dark grayish brown, fine grain, little sand, CLAY (CL), slightly moist, low to medium plasticity, no dilatancy, EOLIUM/ALLUVIUM
Cuttings	N/A	N/A	N/A	5-15		Stiff, light brown, fine grain, some silt, little sand, silty CLAY (CL), slightly moist, low to medium plasticity, no dilatancy, EOLIUM/ALLUVIUM.
Cuttings	N/A	N/A	N/A	15-30		Stiff, light greenish brown, fine grain, some silt, trace sand, silty CLAY (ML-CL), slightly moist, low to medium plasticity, no dilatancy, TD@30

COMPLETED BY: NQT CHECKED BY: MAM	WATER LEVELS: N/A DATE TIME DEPTH TO WATER DATUM
DRILLING CONTRACTOR: Dakota Drilling	
NOTES:	

July 30, 2010

Mr. Craig Tessmer
Department of Planning and Development
Adams County
12200 North Pecos Street
3rd Floor
Westminster, Colorado 80234

Ms. Deanne Kelly
Tri-County Health Department
4201 East 72nd Ave. Suite D
Commerce City, Colorado 80022

Mr. Curt Stovall
Colorado Department of Public Health and Environment
HMWMD B-2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Re: Landfill Gas Probe Documentation
East Regional Landfill (formerly the Five Part Disposal Facility)
Adams County, Colorado

Dear Mr. Tessmer, Mr. Stovall, and Ms. Kelly:

American Environmental Consulting, LLC (AEC) is pleased to present the following report describing and documenting the landfill gas probe installation and the initial monitoring procedures employed at the East Regional Landfill (ERL), located approximately 7 miles northwest of the Town of Bennett, Adams County, Colorado. The following sections include the installation summary and the first gas probe monitoring event.

Gas Probe Installation

In July 26, 2010 AEC was retained by Five Part Development to drill and install two landfill gas probe for monitoring purposes at the East Regional Landfill facilities prior to beginning waste acceptance operations.

Gas Probes GP-2 and GP-3 were installed immediately adjacent to the corresponding groundwater monitoring wells, MW-2 and MW-3 respectively, as required by the approved Engineering Design and Operation Plan. Each of the gas probes were drilled and completed to depth above the groundwater at its respective location and to a depth corresponding to the base of the disposal cell adjacent to the probe. GP-3 was completed to an approximate elevation of 5267 feet below ground surface (bgs) and is adjacent to the Cell 10 sump with a bottom elevation of approximately 5271 feet bgs. The disposal cell in the area of GP-2 has not yet been designed, but GP-2 was completed to a total depth of 20 feet, which is at or deeper than the anticipated cell depth to be designed in that area. Construction of the gas probes was conducted by Dakota Drilling out of Denver, Colorado, under the supervision of an AEC representative. The boreholes were drilled using a CME 55 truck mounted drill rig with 4 inch solid stem augers and logging of the soils was conducted by AEC based on examination of the drill cuttings. Once the borehole was completed, a 1 inch schedule 40 PVC pipe was lowered to the total borehole depth for well casing, which consisted of a 0.010 inch factory slotted section from the total depth of the borehole to 8 feet bgs

with a slip cap at the bottom, followed by a solid (non-slotted) casing section to approximately 2 feet above ground surface. A 10-20 silica sand filter pack was placed in the annular space from the total depth of the borehole to 5 feet bgs followed by a environmental bentonite plug (hydrated 3/8 bentonite chips) to approximately 1 foot bgs. The gas probe were completed with a steel protective casing and a 2 by 2 feet concrete pad at surface. Slip caps were placed on the top of the PVC casing and drilled out for the installation of monitoring ports equipped with valves.

Monitoring

Monitoring was conducted at Gas Probes GP-2 and GP-3 on July 28, 2010. Methane monitoring was performed using a portable combustible gas monitor (MINI RAE). The portable gas monitor was lab calibrated in accordance with the manufacturer's recommendations prior to use. Gas measurements were recorded, along with the date and time, on a field form.

Results

Methane monitoring occurred in the afternoon of July 28, 2010. The results are summarized in Table 1. No methane was detected at any of the site's sampling locations.

TABLE 1
EAST REGIONAL LANDFILL
GAS PROBE MONITORING

PROJECT OWNER:	FIVE PART DEVELOPMENT	PROJECT TITLE:	EAST REGIONAL LANDFILL		
LOCATION:	BENNETT, CO	MONITORING PROBE:	MINIRAE		
COUNTY:	ADAMS		Monitor:	NQT	
WEATHER:	SUNNY		Date:	7/28/2010	

Section 2.3, 6 CCR 1007-2 Monitoring	Probe CH4 %	Probe CH4 %LEL	O2 %	CO2%	Remarks
GP-2	0	0	20.9	2	None
GP-3	0	0	20.9	12	None

Conclusions

GP-2 and GP-3 were installed and monitored prior to the acceptance of waste as requested by the Colorado Department of Public Health and Environment (CDPHE). The gas probes will be surveyed at the ground surface and top of PVC pipe and will be placed at the precise locations on a site map. The facility is in compliance with the requirements of Section 2.3.1 of 6 CCR 1007-2 and is ready to accept waste upon approved of the Cell 10-Phase 1 construction report. If you have any questions or need additional information, please do not hesitate to contact the undersigned.

Respectfully Submitted,

American Environmental Consulting, LLC

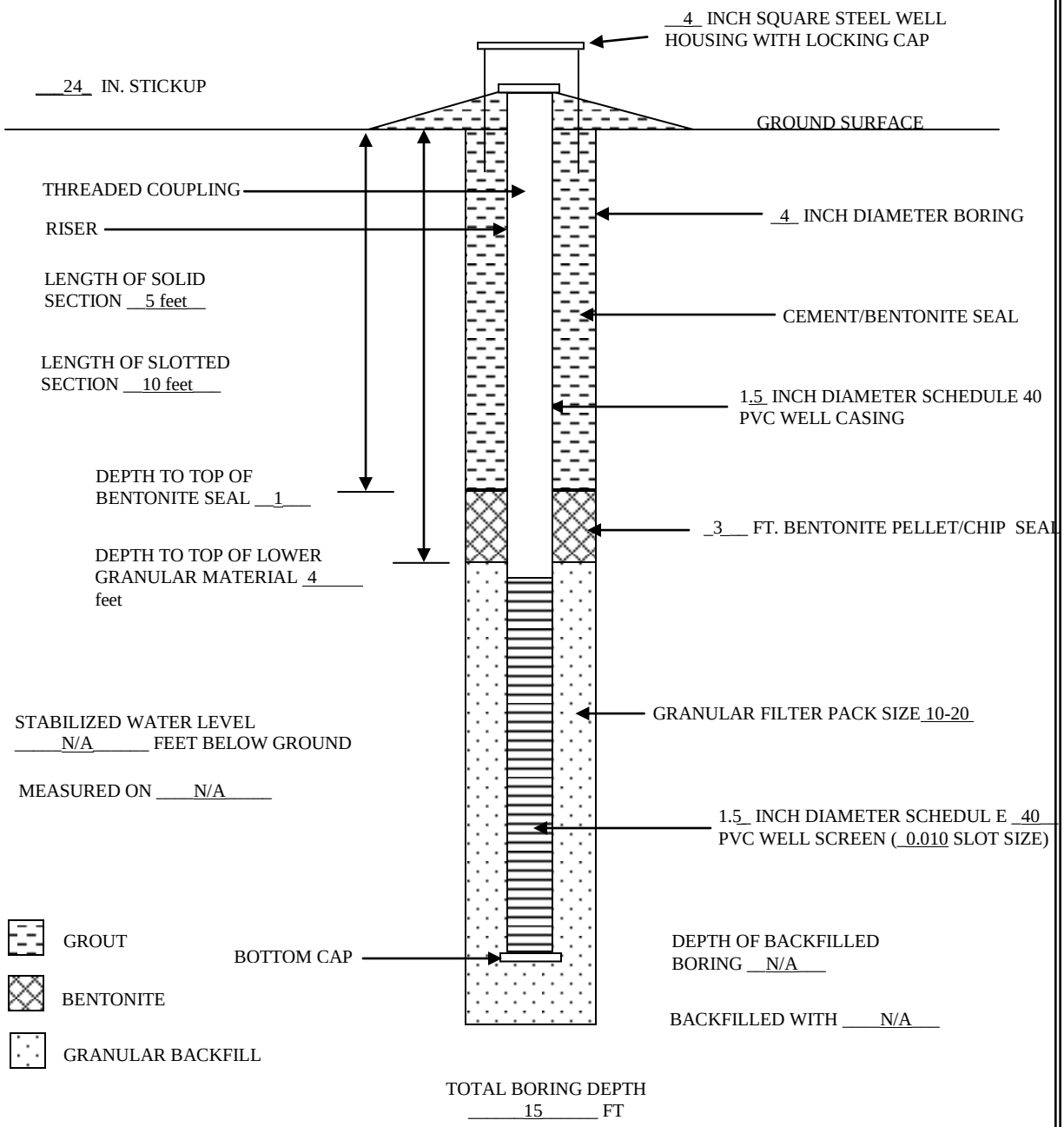
Mark A. McMullen
Principal/Project Manager

Attachments: Boring Logs
Probe Completion Logs

cc: Mr. Alek Orloff, Five Part
Mr. Jeremy Groves, Five Part

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

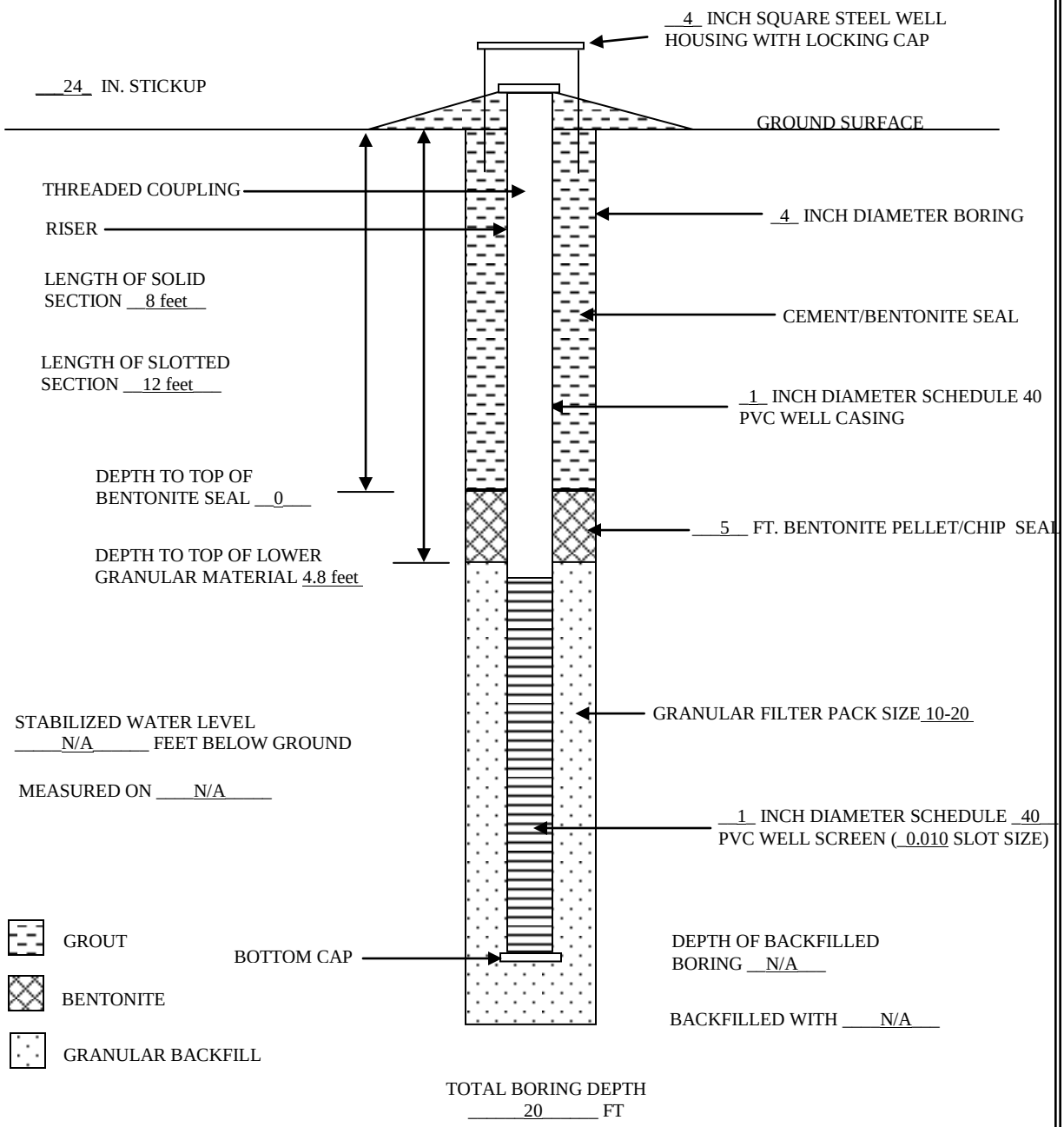
JOB NAME: EAST REGIONAL LANDFILL		WELL NUMBER:GP-1
JOB NUMBER:	INSTALLATION DATE:3/31/2021	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: N/A		
DATUM ELEVATION:Not Surveyed	GROUND SURFACE ELEVATION: Not Surveyed	
SCREEN DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		SLOT SIZE:0.010
RISER DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		BOREHOLE DIAMETER: 4"
GRANULAR BACKFILL MATERIAL:N/A		REPRESENTATIVE:JR
DRILLING TECHNIQUE:SOLID STEM AUGER	DRILLING CONTRACTOR: Authentic Drilling, Inc	



AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

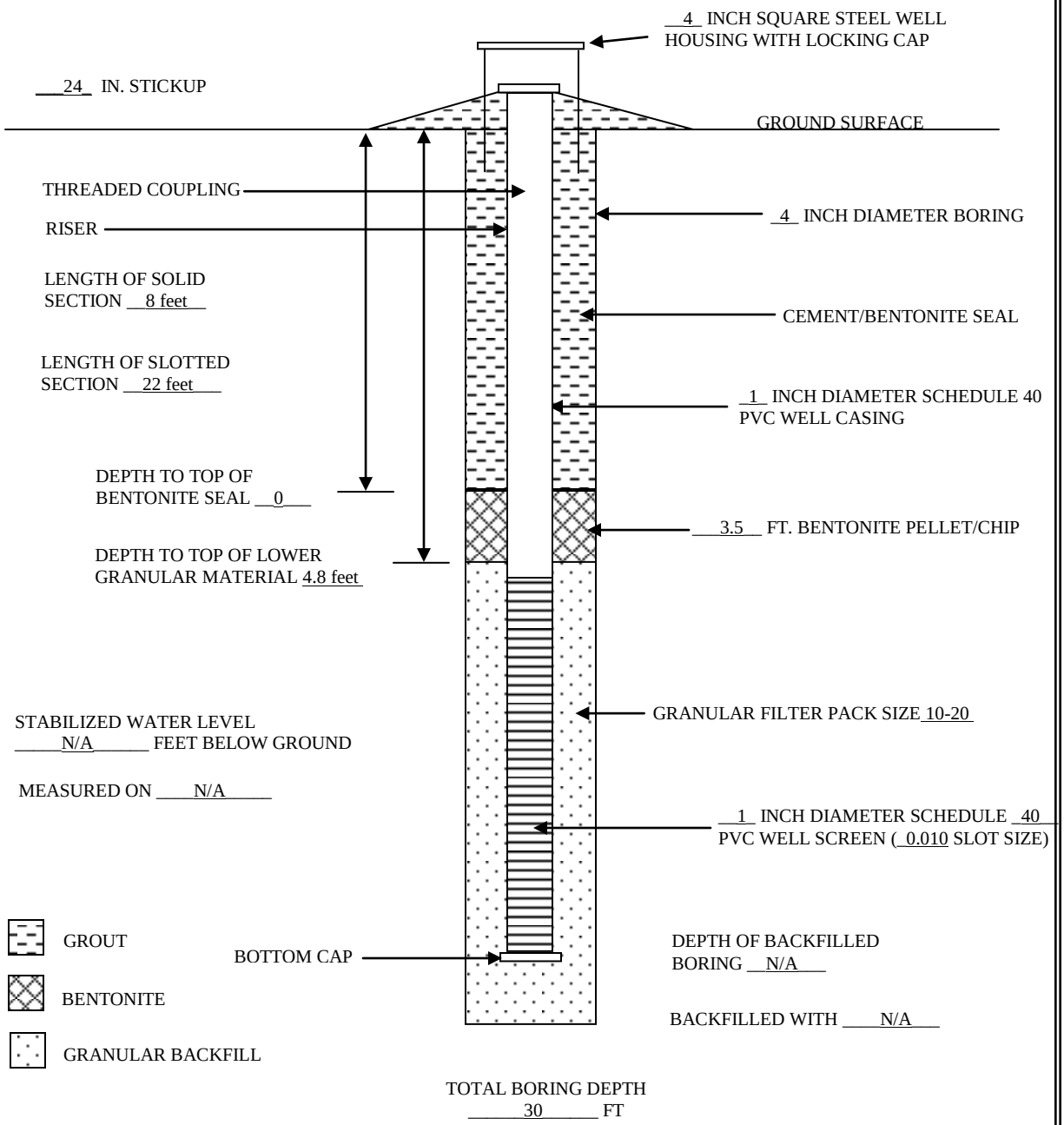
JOB NAME: EAST REGIONAL LANDFILL		WELL NUMBER:GP-2
JOB NUMBER:	INSTALLATION DATE:7/26/2010	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: TOP OF PVC		
DATUM ELEVATION: 5307.93	GROUND SURFACE ELEVATION: 5305.47	
SCREEN DIAMETER AND MATERIAL: 1INCH/SCH.40 PVC		SLOT SIZE:0.010
RISER DIAMETER AND MATERIAL: 1 INCH/SCH.40 PVC		BOREHOLE DIAMETER: 4"
GRANULAR BACKFILL MATERIAL:10-20 WASHED SILICA SAND		REPRESENTATIVE: NQT
DRILLING TECHNIQUE:SOLID STEM AUGER	DRILLING CONTRACTOR: DAKOTA DRILLING	



AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

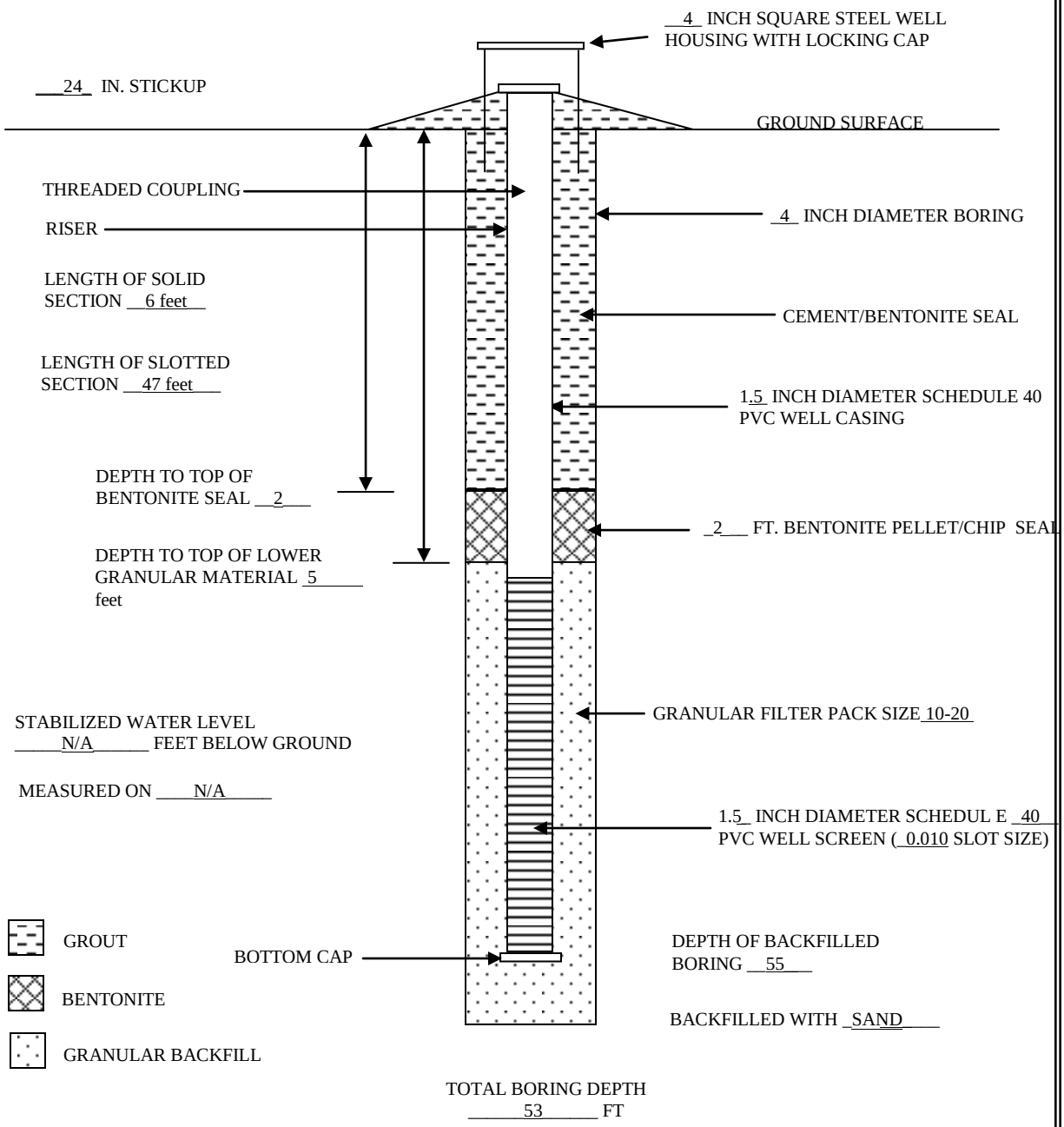
JOB NAME: EAST REGIONAL LANDFILL		WELL NUMBER:GP-3
JOB NUMBER:	INSTALLATION DATE:7/26/2010	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: TOP OF PVC		
DATUM ELEVATION: 5300.15	GROUND SURFACE ELEVATION: 5297.88	
SCREEN DIAMETER AND MATERIAL: 1INCH/SCH.40 PVC		SLOT SIZE:0.010
RISER DIAMETER AND MATERIAL: 1 INCH/SCH.40 PVC		BOREHOLE DIAMETER: 4"
GRANULAR BACKFILL MATERIAL:10-20 WASHED SILICA SAND		REPRESENTATIVE: NQT
DRILLING TECHNIQUE:SOLID STEM AUGER	DRILLING CONTRACTOR: DAKOTA DRILLING	



AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

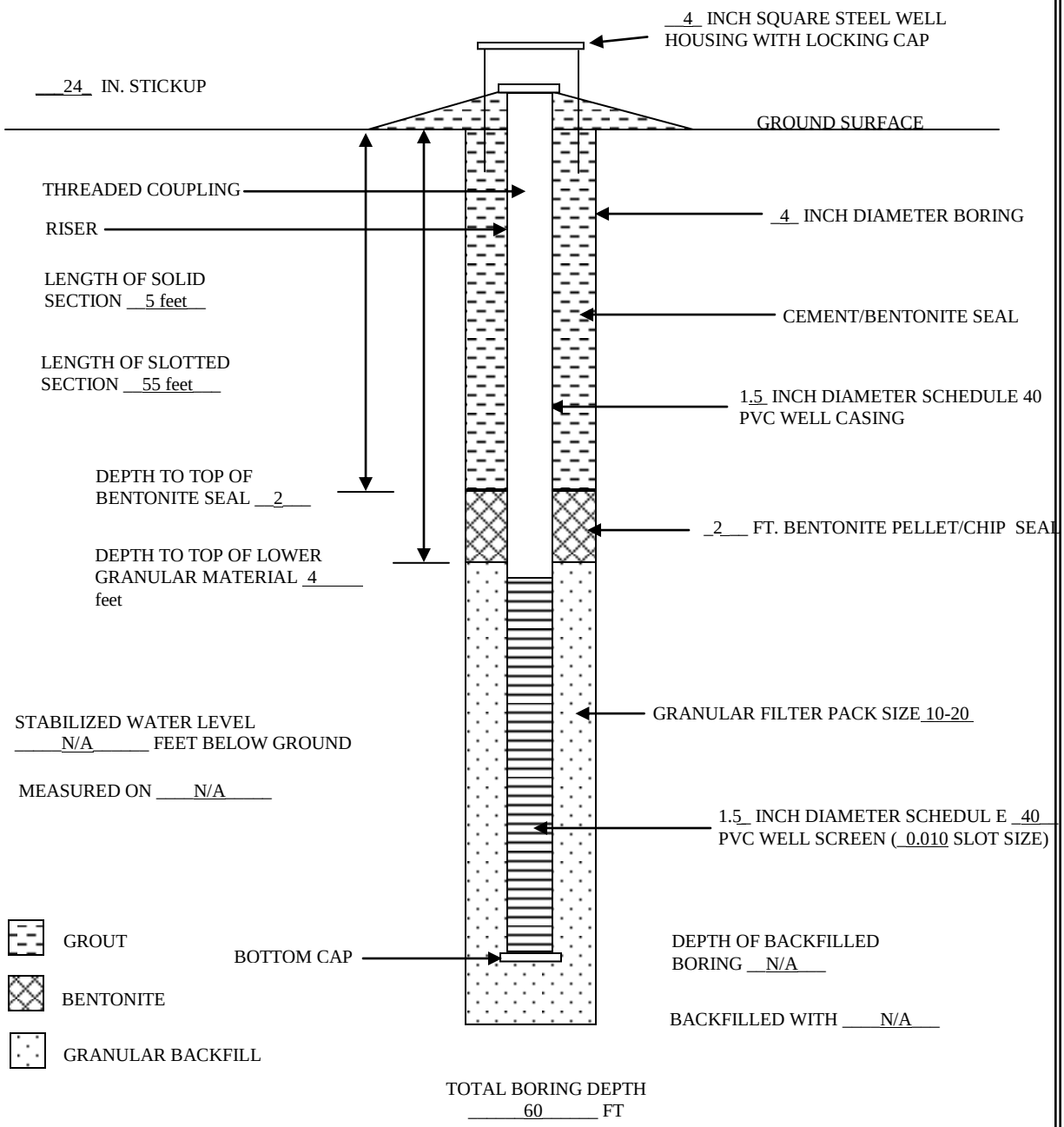
JOB NAME: EAST REGIONAL LANDFILL		WELL NUMBER:GP-5
JOB NUMBER:	INSTALLATION DATE:3/29/2021	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: N/A		
DATUM ELEVATION:Not Surveyed	GROUND SURFACE ELEVATION: Not Surveyed	
SCREEN DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		SLOT SIZE:0.010
RISER DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		BOREHOLE DIAMETER: 4"
GRANULAR BACKFILL MATERIAL:N/A		REPRESENTATIVE:JR
DRILLING TECHNIQUE:SOLID STEM AUGER		DRILLING CONTRACTOR: Authentic Drilling, Inc



AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

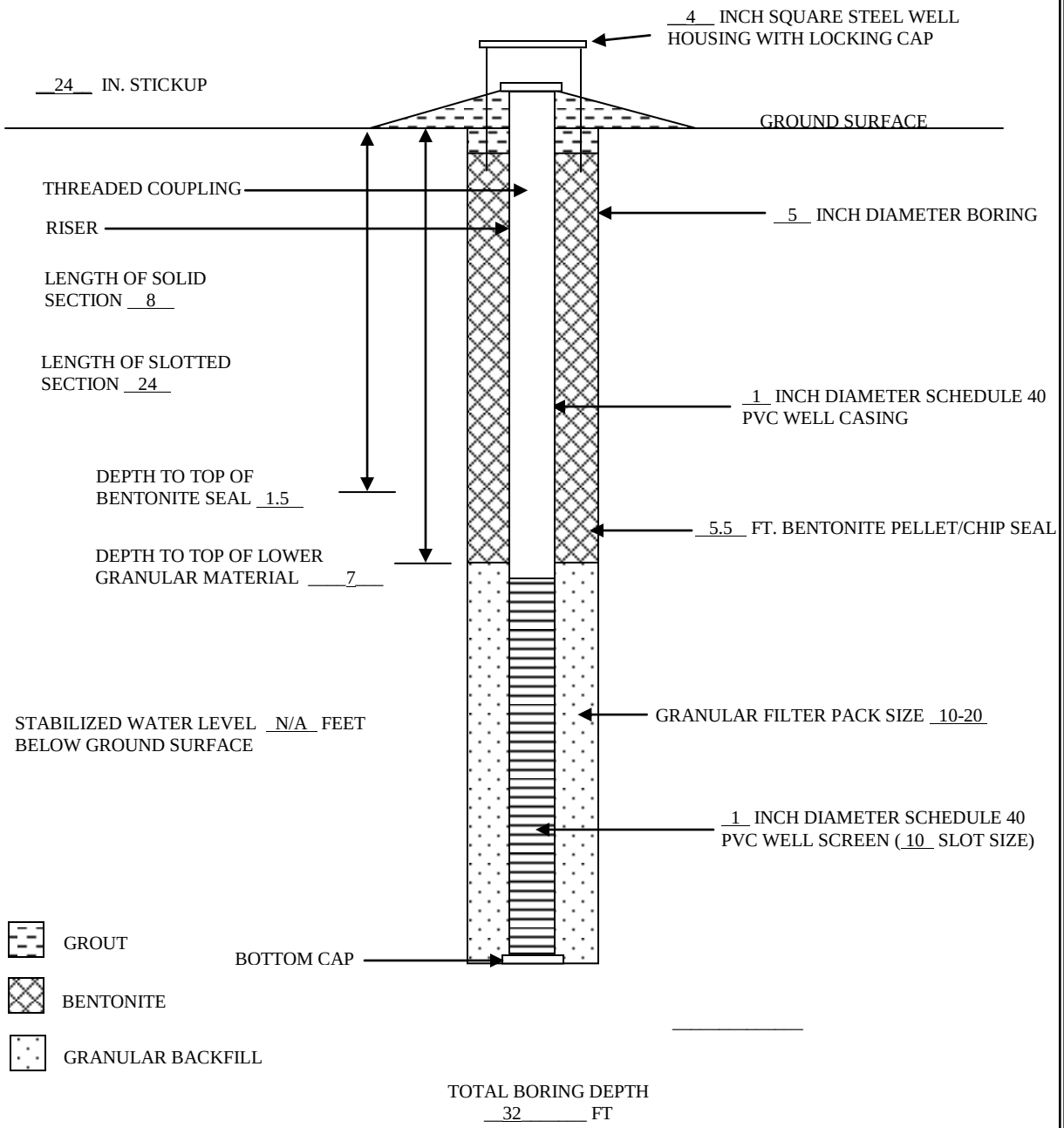
JOB NAME: EAST REGIONAL LANDFILL		WELL NUMBER:GP-6
JOB NUMBER:	INSTALLATION DATE:3/27/2021	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: N/A		
DATUM ELEVATION:Not Surveyed	GROUND SURFACE ELEVATION: Not Surveyed	
SCREEN DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		SLOT SIZE:0.010
RISER DIAMETER AND MATERIAL: 1.5 INCH/SCH.40 PVC		BOREHOLE DIAMETER: 4"
GRANULAR BACKFILL MATERIAL:N/A		REPRESENTATIVE:JR
DRILLING TECHNIQUE:SOLID STEM AUGER		DRILLING CONTRACTOR: Authentic Drilling, Inc



AEC

AMERICAN ENVIRONMENTAL CONSULTING, LLC
WELL COMPLETION FORM

JOB NAME: EAST REGIONAL LANDFILL		GAS PROBE NUMBER: GP-4
JOB NUMBER:	INSTALLATION DATE:11/4/2010	LOCATION: EAST REGIONAL LANDFILL
DATUM FOR WATER LEVEL MEASUREMENT: N/A		
DATUM ELEVATION: 5310.46	GROUND SURFACE ELEVATION: 5308.28	
SCREEN DIAMETER AND MATERIAL: 1INCH, SCHEDULE 40, PVC		SLOT SIZE: .010
RISER DIAMETER AND MATERIAL: 1 INCH, SCHEDULE 40, PVC		BOREHOLE DIAMETER: 5 INCH
GRANULAR BACKFILL MATERIAL: 10-20 SILICA SAND		REPRESENTATIVE: NQT
DRILLING TECHNIQUE: SOLID STEM AUGER	DRILLING CONTRACTOR: SITE SERVICES	



AEC

3/26/2021 AEC E. Regional LF
Mobe to site and meet Mark McMullen of AEC, around noon. Mark gives me tour of LF and we both look @ cuttings near completion zone of MW-6.
Drill to 75 and set PVC from 75-55 WL ≈ 66' bgs.
Bring sand to 54. Will grout 3/27.
Visit other locations and discuss completion level of gas wells.
Leave site @ a little after 4PM.

3/27/2021 AEC E. Regional LF
Arrive onsite @ 7:55 AM. Drillers arrive shortly after 8 AM.
Place bentonite seal in MW-6. Using chips, so placed about 4' to be sure no cement gets to sandpack. Grouting is a very slow process for these guys.
Finish grouting @ 10:30.
Moving rig over to set up on GP-6.

3/27/2021 cont. AEC E. Regional UF

Drill to 60'. Material changes from clean fine to med. gr. sand to cls between 10 and 15 ft. Center bit dry (in sand) at 60'.

Run 55' of 1.5" screen. Screen is from 59-4' bgs. Sand to 3' bgs and 2' bent. seal.

Mobe to GP-5. After discussion w/ MM we decide that GP-5 can be 55 ft deep w/ 50' screen. Sand at top of hole is clean fine to med gr. w/ change between 15-20' bgs to cls. Got firm between 20-25' bgs. Then a bearing broke on the Kelley, so I think we are done for the day. They will try to get it repaired today or Sunday and be ready to go on Monday. Left site about 4 PM.

3/29/2021 AEC E. Regional LF

Arrive onsite @ 8AM. Have safety mtg. w/ drillers. Discuss trying to get as much done today as possible because weather going to change by tomorrow.

Continue drilling at GP-5, from 25' bgs. Drillers adding water to outside of augers to make cuttings come out easier. They are nervous after breaking Kelley bearing on Saturday.

Complete hole to 55' and there is a little over 1' of water in the bottom. Bring sand to 52' and will place screen from 52'-6' bgs, so 47' of screen.

Meet Justin and go check access to MW-1 location. Still pretty wet there.

WL @ MW-6 is 65.8' bgs.

GP-5 sand to 5' bgs. Bent. 5'-2' bgs

3/29/21 AEC E. Regional LF

Set up on MW-5. Water @ ≈ 52-53 so will drill to 65'.

Drives: 5'
10'
15'
20'
25'
} No SS 0-25'

30'	4-4-6-6	67% recovery
35'	4-8-9-6	88% recovery
40'	4-7-6-7	92% recovery
45'	7-12-18-19	100% recovery
50'	16-31-43 (18")	100% recovery
55'	17-31-43 (18")	100% recovery
60'	18-27-32 (18")	72% recovery
65'	24-37-38/2" (14")	67% recovery

SP 0-16 Sand, fine gr., well sorted, light brown, soft, some silt, dry to 7.5 then sl. moist

SW 16-23 Sand, fine to coarse, poorly sorted, medium brn., moist, with some fine gravel, firm

CL 23-33 Clay, sandy, brown, moist, dense, some calcareous mineralization

3/29/21 AEC E. Regional LF

SC
33-38 Sand, clayey, silty, fine grained sand, lt. brown, sl. moist, dense, Calcareous

CL
38-45 Clay, some fine sand and silt, brown, firm, sl. moist, Calcareous, Fe staining
grades to cls @ 43'

45-65 Sand, fine grained, sl. silty, tan w/ Fe staining, v. dense, moist to wet @ 55'

WL @ 56-57' bgs in augers after drilling. Tough well completion w/ flowing sands. Had to pull the well out and clean out the augers.

Screen is set from 64'-44' w/ sand to 42'. Had to use time release bentonite pellets due to amt. of water we added to clean out augers. Seal from 42'-38'.

Will grout tomorrow. Leave site @ 6:30 PM.

Shut down 3/30/21 due to weather.

3/31/2021 AEC E. Regional LF

Grout MW-5 to surface on top of bentonite seal. W.L. = 54.8' bgs

Mobe to GP-1.
Drill to 15' per spec.
0-15 Sand, fine grained, silty, occasional thin clay seams, moist 0-5, sl. moist and hard 5-10, moist 10-15, brown

Set screen @ 15-5' bgs. Sand to 4'. Bentonite from 4'-1' bgs.

Get materials together to start to set well pads.

WL @ MW-6 = 66.2' bgs

Set well pads @ MW-5, GP-5 location. And bollards; 4 @ each pad. Slow process. 2 well pads and 8 bollards took about 3-3½ hrs.

Finish up 4/1. Leave site about 4:30 PM.

4/1/2021 AEC E. Regional LF

Arrive onsite @ 11:10 AM.
Drillers have been working on pads and bollards for MW-6/GP-6 cluster since this AM.

MW-5 W.L. = 54.7' bgs

Make equipment to GP-1 location to set pad and bollards. Hydrate bentonite seal. These 4 bollards will be slightly closer to the pad due to space consideration wrt the proximity of the access road.

Hit the 1" irrigation line in SW bollard hole. We were told by a LF employee that could happen @ this location and not to worry about it.

The well protector @ GP-1 has a piece of the clasp broken. Greg said he could come back out and repair it.

Appendix Q
Waste Characterization Plan

Sustainability in Action

WASTE CHARACTERIZATION AND ACCEPTANCE PLAN
EAST REGIONAL LANDFILL
BENNETT, COLORADO

Prepared for:

Five Part Development, LLC
East Regional Landfill
8201 Schumaker Road
Bennett, CO 80102

Prepared by:
American Environmental Consulting, LLC
8191 Southpark Lane, Unit 107
Littleton, CO 80120

February 2025

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1.0 INTRODUCTION

Five Part Development, LLC (Five Part) has operated East Regional Landfill (ERL), located at 8201 Schumaker Road, Bennett, Colorado, 80102, approximately 7 miles northwest of the town of Bennett, Adams County, Colorado.

Five Part has developed and implemented waste screening procedures to assist in preventing prohibited wastes from entering ERL and has established waste acceptance procedures and acceptance levels for industrial solid wastes and other special wastes requiring additional handling. ERL accepts non-hazardous special wastes that have been properly sampled, analyzed, and found to be acceptable for disposal at the landfill as defined in this Waste Characterization Plan (WCP).

It is the policy of Five Part that all requests for disposal of non-hazardous industrial waste and other special wastes requiring additional handling be evaluated and approved by authorized persons within Five Part's corporate Special Waste Approvals Group or other authorized company representative prior to disposal. The objective of this policy is to prevent the disposal of hazardous and/or other prohibited wastes at ERL and protect Five Part's employees, the health and safety of the public, and the environment in and around the landfill. Five Part may, at its discretion, decline to accept a specific waste stream at ERL based on physical characteristics, analytical results, or other means of evaluating chemical composition, waste type/source, project volume, and/or frequency of the waste to be delivered, and/or other factors.

1.1 Definitions

As used within this document, these terms have the definitions as defined in Section 20.2 of 6 CCR 1007-1 Part 20, unless otherwise noted, as follows:

"Background radiation" means radiation from:

A. Extraterrestrial sources;

B. Naturally occurring radioactive material (which has not been technologically enhanced), including radon (except as a decay product of source or special nuclear material); and

C. Global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that are not under the control of the licensee or registrant.

Background radiation does not include sources of radiation from radioactive materials regulated by NRC.

Additionally, as provided by Colorado Department of Public Health and Environment (CDPHE) in 6 CCR 1007-1 Part 20, Addendum B: Site-specific Background Determination, a guidance document pertaining to Colorado's technologically enhanced naturally occurring radioactive material (TENORM) rules, background concentrations for TENORM radionuclides are established, wherein:

- The default natural background for Ra-226 is 1.4 pCi/g;
- The default natural background for Ra-228 is 1.3 pCi/g;
- The default natural background for Pb-210 is 1.4 pCi/g; and
- The default natural background for Po-210 is 1.4 pCi/g.

Practically, this means that waste containing up to 6.4 pCi/g of Ra-226, or 6.3 pCi/g of Ra-228, or 6.4 pCi/g of Pb-210, or 6.4 pCi/g of Po-210 could be accepted at ERL, provided all other waste acceptance criterion are met.

"Byproduct material" means:

A. Any radioactive material, except special nuclear material, yielded in or made radioactive by exposure to the radiation incident to the process of producing or using special nuclear material;

B. The tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium or thorium solution extraction processes (underground ore bodies depleted by these solution extraction operations do not constitute "byproduct material" within this definition);

C.

1. Any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or

2. Any material that:
    a. Has been made radioactive by use of a particle accelerator; and
    b. Is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; and

D. Any discrete source of naturally occurring radioactive material, other than source material, that:

1. The NRC, in consultation with the administrator of the Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security, and the head of any other appropriate federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety; and

2. Before, on, or after August 8, 2005, is extracted, or converted after extraction, for use for a commercial, medical, or research activity.

"Dry weight" means the mass of materials excluding the mass of any water or moisture present within the materials.

"Exploration and production waste (E&P waste)" means those wastes associated with operations to locate or remove oil or gas from the ground or to remove impurities from such substances and which are uniquely associated with and intrinsic to oil and gas exploration, development, or production operations that are exempt from regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA), 42 USC Sections 6921, et seq. For natural gas, primary field operations include those production-related activities at or near the wellhead and at the gas plant (regardless of whether or not the gas plant is at or near the wellhead), but prior to transport of the natural gas from the gas plant to market. In addition, uniquely associated wastes derived from the production stream along the gas plant feeder pipelines are considered E&P wastes, even if a change of custody in the natural gas has occurred between the wellhead and the gas plant. In addition, wastes uniquely associated with the operations to recover natural gas from underground storage fields are considered to be E&P waste.

"Industrial wastes" are defined in Section 1 of the Colorado Department of Public Health and Environment (CDPHE) Regulations Pertaining to Solid Waste Sites and Facilities 6 CCR 1007-2 Part 1 [latest version], as follows:

> **"Industrial wastes"** means all solid wastes, including mill tailings and mining wastes, resulting from the manufacture of products or goods by mechanical or chemical processes that are not a hazardous waste regulated under 6 CCR 1007-3, the Colorado Hazardous Waste Regulations. Such waste may include, but is not limited to, construction and demolition debris, and waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp

and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include oil and gas wastes regulated by the Colorado Oil and Gas Conservation Commission."

"Naturally occurring radioactive material" (NORM) means any nuclide that is radioactive in its natural physical state and is not manufactured. "Naturally occurring radioactive material" does not include source material, special nuclear material, byproduct material, or by-products of fossil-fuel combustion, including bottom ash, fly ash, and flue-gas emission by-products.

"Nuclear Regulatory Commission" (NRC) means the U.S. Nuclear Regulatory Commission or a duly authorized representive.

"Oil and gas operation" means exploring for oil and gas, including conducting seismic operations and the drilling of test bores; siting, drilling, deepening, recompleting, reworking, plugging, or abandoning a well; producing operations related to any well, including installing flowlines; the generating, transporting, storing, treating, or disposing exploration and production wastes; and any constructing, site preparing, or reclaiming activities associated with such operations.

"Source material" means uranium or thorium, or any combination of uranium or thorium, in any physical or chemical form, including ores that contain, by weight, one-twentieth of 1 percent (0.05 percent) or more, of uranium, thorium or any combination thereof. Source material does not include special nuclear material.

"Tank bottom" means extraneous materials which may settle to the bottoms of tanks.

Note: In this WCP, this includes extraneous materials which may settle to the bottom of vessels, especially in oil and gas operations.

"Technologically enhanced naturally occurring radioactive material" (TENORM) means naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices. "TENORM" does not include:

A. Background radiation or the natural radioactivity of rocks or soils;
B. "Byproduct material" or "source material", as defined by Colorado statute or rule; or
C. Enriched or depleted uranium as defined by Colorado or federal statute or rule.

"TENORM Radionuclides" means Radium-226, Radium-228, Lead-210, and Polonium-210.

1.2 Forms

The forms included as part of this WCP are intended to be representative of the forms and documents used in the waste characterization process. Unless substantive changes are made to the forms and/or documents, additional approvals from Colorado Department of Public Health and Environment (CDPHE) beyond the approval of this WCP to use modified forms are not required.

2.0 NOTIFICATION PROCEDURES

Five Part has developed two primary methods for notifying generators of wastes subject to this WCP of the procedures for review and acceptance of non-hazardous solid wastes, as follows:

1. The preferred approach is to initiate contact with representatives from the generator to describe the ERL program for managing non-hazardous industrial waste or other special wastes that require additional testing and/or handling.

2. The second form of notification may occur when waste is delivered to ERL for disposal without prior authorization. The generator will be contacted immediately informing them of the current regulations and requirements governing the disposal of industrial waste or other special wastes that require additional testing and/or handling and the reasons for Five Part's rejection of the waste in question.

3.0 APPLICATION FOR NON-HAZERDOUS WASTE APPROVAL

3.1 Prohibited Wastes

ERL will not accept the following types of solid wastes:

- Hazardous waste, as defined or classified as such by the Hazardous Waste Commission pursuant to 25-15-302, C.R.S., as amended;
- Residentially generated used lead-acid batteries, used oil, and waste tires (see Section 4.13);
- Solid wastes, electric equipment, or oils containing polychlorinated biphenyls (PCBs) in concentrations greater than or equal to 50 parts per million;
- Radioactive wastes, as defined and governed by Part 14 of the Colorado Radiation Control Regulations (6 CCR 1007-1);
- TENORM-impacted wastes in concentrations of greater than 5 pCi/g above background (See the definition for Background Radiation for implications of "above background"), as defined and governed by Part 20 of the Colorado Radiation Control Regulations (6 CCR 1007-1) - these are often found in waste streams from oil and gas, water treatment plants, and some mining operations;
- Residentially generated electronics waste (see Section 4.25); and
- Refrigerators, freezers, air conditioners, and similar items, if Freon is present.
- Friable asbestos waste (see Section 4.10)
- Bulk liquids (see Section 4.12)

3.2 Waste Screening Program

The detection and prevention of disposal of prohibited or unacceptable wastes at ERL is accomplished through a waste screening program that consists of the following approach:

1. Generator waste characterization and Special Waste Profile form (provided as Attachment 1).
2. Critical review of waste characterization by the Special Waste Approvals Group or authorized company representative.
3. Approval of waste through Special Waste Department Decision form (provided as Attachment 3).
4. Screening at the landfill, using the Special Waste Inspection Sheet (provided as Attachment 6).
5. Waste stream re-testing and re-certification.

3.3 Generator Waste Characterization and Waste Profile

When an initial contact has been made by a waste generator who is interested in disposal of a non-hazardous industrial waste or other special waste requiring additional testing and/or handling at ERL, an Five Part representative may either meet with the generator or provide a copy of the facility's procedures for the characterization, acceptance, and disposal of the waste. The written procedures and/or meetings are used to identify the information that must be provided by the generator to Five Part for review and consideration prior to the approval of the waste for disposal at ERL.

3.3.1 Waste Profile

Five Part requires a Special Waste Profile form or Express Waste Profile form (provided as Attachments 1 and 2) to be completed in its entirety and signed by an authorized company representative. The Special Waste Profile form requires detailed information concerning the following:

- The waste generator (name, address, and contact information)
- Description of the waste stream (name, type, source, and estimated volume)
- Waste characterization data (physical characteristics, chemical characteristics, special handling instructions)
- Generator certification that all samples were collected in accordance with the requirements of the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version] or the United States Environmental Protection Agency (EPA) guidelines provided in SW-846

3.3.2 Waste Characterization

Consistent with the applicable provisions of the federal Resource Conservation and Recovery Act (RCRA) and the Colorado Hazardous Waste Act, a generator is required to characterize their waste. Additional sampling and analysis is also required in Part 20 of 6 CCR 1007-1, where there is potential for TENORM impact. Five Part has developed waste characterization criteria that are used in the evaluation of manifested waste requests. Depending on the type of waste, a generator is required to characterize one or both of the following waste characteristics by submitting a Special Waste Profile form:

- Physical characteristics through observations of the waste generation process and the waste material.
- Chemical characteristics through standard analytical procedures and/or other sources of information. The types of information and various tests that may be transmitted with the Special Waste Profile form, depending on the particular waste streams, include:

  – Safety Data Sheets (SDSs)

– Chemical composition analysis
– Toxic characteristic leaching procedure (TCLP) test results
– Paint filter liquids test results
– Reactivity, corrosivity, and ignitability tests results
– Radiochemistry analysis

3.3.3 Sampling Requirements

Sampling procedures and sample handling are key portions of accurately determining the chemical makeup of a waste. The sampler or generator is required to verify by his/her signature that the samples collected for waste characterization are a true representation of the waste as defined by Colorado Hazardous Waste Regulations and/or 6 CCR 1007-1 Part 20 (and related guidance), where TENORM impact is a possibility. Representative samples must be obtained by following the sampling methods specified in the following document or an equivalent method selected by the generator or his/her authorized representative and be pre-approved by ERL:

- Appendix I of the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version], and/or
- For waste streams potentially impacted by TENORM, Addendum A (Implementation Guidance) [latest version] of Part 20 of 6 CCR 1007-1, which requires three to six samples and the use of CDPHE's approved SW-846 calculator to make a TENORM determination.

The number of samples required, the volume of each sample, the sample container size and type, shipping requirements, and holding times are dependent on the waste analyses to be conducted. Generators are instructed to consult with the analytical laboratory conducting the sample analyses for complete information concerning sample container size and type, sample handling, and sample preservation requirements. It is a Five Part policy that no Five Part employee collect samples, transport samples, or handle waste characterization samples in any way. All samples are to be collected for analysis and transported to the laboratory independently by the generator or the generator's representative.

Chain-of-custody forms must be used with each sample collected. The chain of custody shall include information about the sample size, required testing, date and time of sample collection, name of sampling personnel, name of waste generator, identification of waste stream/type, and signatures of persons sampling and accepting custody of sample for analysis.

3.3.4 E&P Exempt Waste – Similar Waste Streams at Various Locations

Generators of E&P exempt waste streams that are similar in matrix and composition (generated by the same process but at various locations) may be able to characterize and profile the waste stream on a broad basis (including for TENORM) by submitting a sampling and analysis plan to CDPHE for their approval. Once the plan has been reviewed and approved by CDPHE, the

generator may complete sampling and analysis. The analytical results should then be forwarded to CDPHE for their review and approval of the sufficiency of the broad basis characterization effort. Finally, the analytical results, along with approval from CDPHE, may be forwarded to the Special Approvals Group for final waste acceptance. Note: This scenario is common with oil and gas producers who generate similar waste streams as part of the same processes across multiple well sites/locations/facilities. Note: This approach does **not** require every site/location/facility to be sampled and reported, so long as CDPHE has approved the sampling and analysis plan. However, the generator must comply with any additional sampling requirements and frequency of sampling as required by their CDPHE approval.

3.4 Waste Profile Review and Pre-Approval

The Special Waste Approvals Group or other authorized company representative will review the Special Waste Profile form and analytical results for completeness and compliance with facility acceptance standards. Five Part reserves the right to require re-sampling and analysis of any waste submitted for disposal consideration. Submitted Special Waste Profile forms and waste characterization test results (including rejected wastes with notation of the cause for rejection) will be maintained by Five Part as a part of the permanent operating record.

If the waste stream is determined to be acceptable, a Special Waste Department Decision form (Attachment 3) will be issued to the waste generator. The Special Waste Department Decision form includes the approved waste name/type and approved volume and assigns a unique waste approval code. The criteria that will be used to determine the chemical/radiochemistry acceptability of the waste include the following:

- The presence of any listed or characteristic wastes (i.e., ignitability, corrosivity, reactivity, or toxicity).
- The presence of any hazardous waste identified in accordance with the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version] and any applicable 40 Code of Federal Regulations (CFR) Part 261 (Identification and Listing of Hazardous Waste) [latest version] standards.
- The presence of chemical characteristics in excess of the ERL acceptance criteria, as specified in applicable sections of Section 4 of this WCP.
- The presence of TENORM radionuclides greater than 5 pCi/g above background (See the definition for Background Radiation for implications of “above background”) as specified in 6 CCR 1007-1 Part 20 (and related guidance) where TENORM impact is a possibility.

3.5 Screening Program

Five Part has adopted a three-part waste inspection and detection program for non-hazardous industrial waste or other special waste brought in for disposal at ERL.

3.5.1 Gatehouse Inspection

The first level of inspection occurs as the first waste load arrives at the facility gatehouse. For each applicable waste load, the gate attendant will receive a Non-Hazardous Special Waste and Asbestos Manifest form (provided as Attachment 4) from the waste hauler. The manifest will contain the name of the generator, type and volume of waste, and the name of the transporter. The gate attendant will compare the manifest to the Special Waste Department Decision information to verify that the waste type and packaging requirements are consistent with the approved Special Waste Profile form and any specified approval conditions. When possible, the gate attendant will visually screen the load to verify that it appears representative of the waste description in the approved profile. If visual screening at the gate house is not possible, a visual inspection will occur upon unloading at the working face. If the information contained in the Non-Hazardous Special Waste and Asbestos Manifest form does not match the approved profile or if the waste visually appears to not match the approved waste type, the waste will not be accepted for disposal and the load rejected from ERL until an additional investigation into the discrepancy has been conducted and a satisfactory resolution has been reached. The screening will be documented using the Special Waste Inspection Sheet (Attachment 6).

3.5.2 Radiation Portal Detectors at Scale

Stationary radiation monitors are installed at the scales to survey each load for radiological activity. The monitors are re-calibrated on an annual basis. In the event of an alarm, the load will be redirected to pass through the monitors a second time to confirm the level of the initial reading. If the reading is confirmed, a hand-held gamma survey meter will be used to survey the surface of the load (and the load driver) to identify the source of maximum radiological activity. CDPHE will be contacted, and the load will be staged pending further direction from CDPHE.

3.5.3 Random Inspections at Working Face

Additional inspection is performed on a random basis by ERL equipment operators when the waste is unloaded near the active working face. Random inspections are performed at a frequency of eight per week, as outlined below:

- Three special waste profile inspections per week, and
- Five municipal solid waste and/or construction and demolition debris waste inspections per week.

If a load is chosen for inspection, the operators will direct the unloading of the waste away from the working face and visually inspect the load for the presence of any waste that looks uncharacteristic when it is unloaded. Examples of waste that may look uncharacteristic may be an unmarked barrel in a load of mixed municipal refuse, a container of liquids or the presence of free liquids, placarded containers, containers bearing warning labels, powders or dusts, unusually strong or irritating odors not associated with typical acceptable waste types. If the waste is found to be unacceptable for disposal, ERL equipment operators will attempt to identify the source of

the unacceptable waste and notify the ERL manager (or their designee) immediately. The ERL manager (or their designee) will require the transporter to make the necessary arrangements to collect the waste and return it to the generator.

If unacceptable wastes are identified after the transporter leaves the facility, the waste will be separated from the active working face and identification of the generator will be attempted. If the generator is identified, a Five Part representative will contact the generator and request that the waste be removed and properly disposed of. If the generator cannot be identified, Five Part will contract to have the waste removed and disposed of at a permitted facility. If identified as a hazardous, radioactive, or TENORM-impacted waste, Five Part will follow containment, labeling, manifesting, and handling requirements for proper disposal.

3.5.4 Frequency of Testing/Recertification

The frequency of follow-up waste characterization for an approved non-hazardous waste will be based on the type of waste material, the process that is used to generate the waste, and the chemicals/constituents of concern in the waste. A Special Waste Profile – Recertification form (provided as Attachment 5) from the generator will generally be required every 3 years. Waste profile recertifications will require certification from the generator that the waste remains the same as the initial characterization, and additional waste characterization data supporting the certification, as applicable.

4.0 WASTE ACCEPTANCE CRITERIA

This section provides information regarding analytical testing requirements, acceptance criteria, and handling procedures for commonly received non-hazardous industrial waste and other special wastes requiring additional handling.

4.1 General Requirements

The analytical testing requirements specified herein do not relieve a generator from conducting any additional testing necessary to properly characterize their waste based on specific knowledge of the waste generating process and applicable regulations. Additionally, alternate or modified analytical requirements and/or waste handling procedures may be developed for wastes in these categories from a specific generator based on the Special Waste Profile form received from any such generator.

4.1.1 Alternatives to TCLP Testing

Generally, non-hazardous waste testing requirements are specified by TCLP parameter groups. Total analysis performed on a solid may be substituted for TCLP analysis in certain cases. For example, when testing a solid material, if the total analysis result divided by 20 yields a value below the regulatory limit for acceptance, the waste can be considered nonhazardous (20 times dilution of the waste exists when the extraction fluid is added during the TCLP). However, if a total analysis result divided by 20 equals or exceeds the regulatory limit for acceptance, it does not necessarily mean a TCLP of the waste will also exceed the regulatory limit. In these situations, the TCLP analysis may be requested in an effort to assess whether the waste is hazardous.

4.1.2 Safety Data Sheets

For unused products that have not been spilled, mixed with any other products, or contaminated in any way (and that do not contain TENORM), generators may be able to provide an SDS for the waste in lieu of analytical testing. However, Five Part reserves the right to require analytical testing even when an SDS is supplied for the waste stream.

4.2 Exempt E&P Wastes

RCRA-exempt oil and gas E&P wastes are defined in 40 CFR 261.4 (b)(5) as “drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy,” that are exempt from regulation as hazardous wastes under RCRA Subtitle C (40 CFR Parts 260 to 279). This exemption, however, does not cover TENORM isotopes. Oil and gas waste streams have been identified by CDPHE as having the potential to contain TENORM; therefore, generators will be required to submit sufficient analytical data with the Special Waste Profile Form to demonstrate compliance with the waste acceptance criteria specified in Section 3.4 of this WCP. Alternatively, generators may have previously presented analytical data to CDPHE and received an exemption for certain waste

streams from the TENORM rules; this may also be accepted by the Special Waste Approvals Group.

In order to be classified as RCRA-exempt, the E&P waste must have been generated from a material or process uniquely associated with the exploration, development, and production of crude oil or natural gas. Waste may also be generated during activities or processes such as transportation or delivery of crude or finished products to refineries and/or other treating facilities; these are known as midstream activities and may include transportation via truck, rail, ship, or pipeline. Downstream activities include refineries and final treating facilities, as well as delivery systems to consumers, including such things as traditional consumer and commercial gas stations and transport of natural gas to homes. Waste generated during midstream and downstream activities/processes is not E&P exempt and additional analytical may be required by Five Part's Special Waste Approvals Group. In addition to the information in Table 1 below, see Section 4.3 for a detailed list of oil and gas waste streams.

Examples of E&P exempt waste streams are delineated below, separated into columns by exempt exploration, production, and "either" exploration or production wastes, where "either" could be exploration or production, depending upon the location and use of the equipment or material.

Table 1: Exempt Exploration and Production (E&P) Wastes

Exempt Exploration Wastes	Exempt Production Wastes	Either Exploration or Production Wastes
Drill cuttings and muds	Accumulated materials such as hydrocarbons, solids, sand, and emulsion from production separators, fluid treating vessels, and production impoundments	Spent filters, filter media, and backwash solids (assuming the filter itself is not hazardous and the residue in it is from an exempt waste stream)
Rig wash solids	Solids from production sites, including filter cake from oil reclamation and water recycling operations	Constituents removed from flowback and produced water before it is injected or otherwise disposed of (e.g., filters, tank bottom sediments)
Sediment and other tank bottoms from exploration activities, including wastes generated by closed loop recycling	Gas plant dehydration wastes and sweetening wastes; filter media and backwash solids	Debris (crude oil soaked or stained)
Pit sludges and solids generated during exploration and drilling activities	Pipe scale, pigging wastes (from gathering lines), hydrocarbon solids, hydrates, and other deposits removed from piping and production equipment prior to transportation	Mixtures of exempt exploration and exempt production wastes
Proppant/sand wastes and flowback (excluding unused product)	Hydrogen sulfide abatement wastes from geothermal energy production	Crude oil contaminated solids generated during exploration, drilling, and production activities (prior to transportation from a reclamation facility)

Note: The term "solids" refers to wastes that occur in a solid, semi-solid, or sludge form and/or that may contain free liquids.

Table 1 is a list of typical exempt E&P solid waste types/streams that may be accepted, but are not all-inclusive. Variations or additions to the list will be evaluated on a case-by-case basis using the same criteria. If uncertainty exists regarding the acceptability of a particular waste, CDPHE will be contacted for guidance and/or approval, as appropriate. The mixture of an exempt waste with another exempt waste remains exempt.

4.2.1 Acceptance of Exempt E&P Wastes

Exempt exploration waste will be accepted at ERL, provided it meets all the following requirements:

1. The generator certifies that the material is RCRA-exempt (i.e., that it was generated from a material or a process "uniquely associated with the exploration, development, and production of crude oil and/or natural gas");
2. The material meets the TENORM criteria outlined in Section 4.3; and
3. The material has successfully passed a Paint Filter Test (USEPA Method 9095B or equivalent).

Please see Attachment 1 – Special Waste Profile Form for additional information regarding requirements for disposal at ERL.

4.2.2 Acceptance of Non-exempt E&P and Other Oil and Gas Wastes

Oil and gas wastes that are not E&P exempt include waste that may be generated outside of primary field operations, and include wastes generated as a result of spills during treatment and transport. Non-exempt E&P wastes may be considered for acceptance at ERL provided it meets the following criteria:

1. Is not a listed hazardous waste (i.e., is not a waste generated from any process, source, or discarded products categorized under waste codes F, K, P or U per 6 CCR 1007-3 Part 261 (see Section 3.1, above);
2. Is not a hazardous waste by characteristics for toxicity, ignitability, reactivity, or corrosivity;
3. The ignitability (flash point) is equal to or greater than 140 °F and will not pose a chemical reaction hazard;
4. Contains no free petroleum or other liquids and has successfully passed a Paint Filter Test (USEPA Method 9095B)
5. Meets the TENORM criteria found in Section 3.4; and
6. Does not contain PCBs in concentrations equal to or greater than 50 parts per million (see Section 3.1, above).

For the purposes of this WCP, personal protective equipment (PPE) generated in direct association with the acceptance and handling of NORM/TENORM-containing waste will be considered an exempt waste and may be disposed of in ERL without screening, analytical testing, or a separate profile.

All wastes identified as non-exempt oil and gas wastes will be deemed acceptable only if they meet each and every criterion identified above. If uncertainty exists regarding the acceptability of a particular waste, CDPHE will be contacted for guidance and/or approval, as appropriate. In no event will ERL accept any waste if they are listed hazardous wastes, more specifically if they are generated from any process, source, or discarded products categorized under waste codes F, K, P or U per 6 CCR 1007-3 Part 261, or if the waste exhibits hazardous waste characteristics.

4.3 Acceptance of Mill Tailings and Mining Wastes

Mill tailings and mining wastes will only be accepted for disposal on a case-by-case basis with approval from Adams County and the CDPHE and if it meets the following criteria:

1. Is not a listed hazardous waste (i.e., is not a waste generated from any process, source, or discarded products categorized under waste codes F, K, P or U per 6 CCR 1007-3 Part 261 (see Section 3.1, above);
2. Is not a hazardous waste by characteristics for toxicity, ignitability, reactivity, or corrosivity as defined in 6 CCR 1007-3 Part 261 Subpart C, as amended;
3. Meets the TENORM criteria found in Sections 3.4 and 4.5; and

4.4 Acceptance of Domestic Wastewater Treatment Residuals

Domestic wastewater treatment residuals will only be accepted for disposal on a case-by-case with approval from Adams County and the CDPHE and it meets the following criteria:

1. Is not a hazardous waste by characteristics for toxicity, ignitability, reactivity, or corrosivity as defined in 6 CCR 1007-3 Part 261 Subpart C, as amended;
2. Meets the TENORM criteria found in Sections 3.4 and 4.5.

4.5 TENORM and Unimportant or Exempt Quantities of Source Material

Wastes that are reasonably expected to contain TENORM and/or unimportant or exempt quantities of source material must be characterized for radiological content prior to acceptance for disposal at the landfill. This may include materials produced as a result of concentrating solids/metals, such as:

- Drinking water treatment media and residuals
- Domestic wastewater treatment facility residuals
- Industrial wastewater treatment residuals
- Mine water treatment residuals
- Oil and gas E&P wastes
- Natural gas pigging line wastes

- Filter socks from saltwater disposals or flowback operations
- Natural gas filters
- Oil and gas processing waste such as tank bottoms, filter solids or cake, condensate sludges, molecular sieve residuals, and amine filters
- Oily waste such as condensate and pit sludge
- Pipes, pipe scale, and other processing equipment, also known as surface contaminated objects (SCO)

Note: ERL will only accept waste streams that are exempt as per Section 20.4 of 6 CCR 1007-1 Part 20 (see exempt levels below).

The landfill will accept wastes containing exempt levels of TENORM as follows:

- Must not exhibit hazardous characteristics, as defined in the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version], and

- Must exhibit concentrations at or below the following radioactivity acceptance thresholds:

  - Ra-226 less than or equal to 5 pCi/g (dry weight) above background where default background is 1.4 pCi/g
  - RA-228 less than or equal to 5 pCi/g (dry weight) above background where default background is 1.3 pCi/g
  - Pb-210 less than or equal to 5 pCi/g (dry weight) above background where default background is 1.4 pCi/g
  - Po-210 less than or equal to 5 pCi/g (dry weight) above background where default background is 1.4 pCi/g

See Table A.1.2 in CDPHE's Addendum A: TENORM Characterization of their Guidance for Implementation of the Final Rule for 6 CCR 1007-1 Part 20 rules for a list of recognized laboratory methods for TENORM sample analysis of various matrices.

See Table 2 below for a summary of analytical requirements for each waste stream.

Table 2: Industry and Waste-Specific TENORM Isotopic Characterization Requirements

Industry Waste	Characterization Requirements
Drinking water treatment sludge/residuals/filter media, in particular where raw water is sourced from groundwater wells	Ra-226, Ra-228, U-nat, Th-nat
Domestic wastewater grit, intermediate process solids [1] *(only if TENORM is accepted as an influent)*	Ra-226, Ra-228
Industrial wastewater residuals 2	Ra-226, Ra-228, Pb-210, Po-210
Oil exploration & production wastes – tank bottoms, filter socks, flowback	Ra-226, Ra-228
Gas exploration & production wastes – pigging, rinsewater, filters, spent amine, condensate, molecular sieve residuals, condensate [3]	Pb-210, Po-210
Mine water treatment residuals	Ra-226, Ra-228, U-nat, Th-nat
Pipe, tank debris, heater treaters, fire tubes, used equipment (SCO)	Survey in accordance with Section 20.4.5 of 6 CCR 1007-1 Part 20, Registration and Licensing of Technologically Enhanced Naturally Occurring Radioactive Material and associated Guidance, which may change from time to time.

Notes: SCO = surface contaminated objects

[1] Also analyze for Pb-210 and Po-210 if these levels are expected to exceed Ra-226 levels

[2] Not all isotopes may need to be analyzed depending on process knowledge

3 Some gas waste streams may also contain hazardous or other RCRA constituents and additional analytical may be required

4.6 Empty Containers

Containers that previously contained hazardous waste must be "empty" as defined in the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261, Section 261.7 [latest version] before they will be accepted for disposal at ERL. The regulatory definitions for "empty container" vary depending on the previous contents of the container (i.e., acute or non-acute hazardous wastes or compressed gas). The requirements regarding empty containers only apply to tanks that meet the definition of a container. The definition of container currently contained in the CDPHE Hazardous Waste Regulations, 6 CCR 1007-3 [latest version] is "any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled." The generator must declare that the waste is an "empty container" on the Special Waste Profile form.

Aerosol cans in shipments known to contain empty containers or that were discovered during the random inspection program shall be punctured by the generator prior to shipment to ERL. For gas cylinders, the generator must remove the valves and allow it to air out for at least 24 hours.

All empty containers, regardless of what they previously contained, need to meet the following procedures:

- Warning labels depicting hazardous waste, hazardous materials, chemicals or substances, radioactive materials, and commercial chemical products or trade names on empty containers shall be painted over or removed prior to shipment to ERL.
- Containers shall be received crushed, or if whole, one end must be removed to allow ERL personnel the ability to verify that they are "RCRA empty."

4.7 Animal Carcasses

Animal carcasses delivered in bulk or on an ongoing basis from veterinary clinics, educational facilities, laboratories, city animal control facilities, or similar facility will be profiled. The Express Waste Profile Form (Attachment 2) requires that the generator certify that the animal carcass is non-infectious.

4.8 Paint Waste

Paint wastes accepted at ERL include paint filters, paint residues or sludge, and paint dust or dry paint chips. These paint wastes will only be accepted in a non-liquid state. Paint wastes accepted in drums will be fitted with removable/resealable lids.

Paint filters, paint residues or paint sludge should be analyzed for the appropriate TCLP constituents. Also, paint sludge should be tested for free liquids via a paint filter test.

When accepting paint dust or dry paint chip waste, controls should be implemented to reduce the amount of dusting that could occur during transport and disposal. These wastes should be analyzed for appropriate TCLP constituents based on the constituents of the paint chips.

4.9 Sludge

As with all industrial wastes, the process generating the waste sludge must be accurately characterized, including material-specific information. If the particular sludge is a listed waste or a listed waste mixture pursuant to any "mixture" rates applicable at that time, then the sludge will not be approved for disposal.

Because a majority of sludge may include excessive water, additional care shall be taken by the generator to ensure that excessive free moisture has been removed prior to the acceptance of the sludge for disposal. All sludge must pass the paint filter test administered by the generator.

Additional analyses may be necessary for the various sludge types (including those not listed below) based on the nature of the sludge and the process that generated the sludge. Sludges (and tank bottoms) from oil and gas operations, drinking water, and wastewater treatment may contain TENORM. Any sludges from oil E&P activities, as well as from water treatment, must be

analyzed for Ra-226 and Ra-228. Any sludges from natural gas pipeline pigging operations must be analyzed for Pb-210 and Po-210.

4.9.1 Ink Sludge

Ink sludge has the potential of containing metals and organics that are found in the solvents used to prepare the ink. If the process does not employ "listed" constituents, ink sludge must be tested for appropriate TCLP constituents. Ink sludge must also pass the paint filter test.

4.9.2 Lime Sludge

In addition to having a potential for high moisture content, lime sludge can sometimes have heavy metals present. For this reason, lime sludge must be tested for appropriate TCLP constituents. Lime sludge must also pass the paint filter test.

4.9.3 Paper Mill Sludge

Paper mill sludge must be tested for appropriate TCLP constituents and must pass the paint filter test. These sludges should also be tested for TENORM radionuclides (Ra-226, Ra-228, Pb-210, and Po-210).

4.9.4 Sand Trap Wastes

Sand trap wastes must be tested for appropriate TCLP constituents and must pass the paint filter test. If the sand trap is associated with produced water from oil and gas operations or from other oil and gas activities, the sand trap waste must also be analyzed for TENORM radionuclides.

4.9.5 Alum Sludge/Ferric Chloride Sludge

Alum sludge or ferric chloride sludge from water treatment facilities may be acceptable for disposal at ERL provided the provisions of the CDPHE Regulations Pertaining to Solid Waste Sites and Facilities 6 CCR 1007-2 Part 1, Section 12 [latest version] are met. Additionally, the sludge must pass the paint filter test. The generator should also test for TENORM radionuclides. Also, refer to Section 4.19 of this WCP.

4.10 Glass Waste

Several types of glass wastes may be accepted at ERL, including granular, powder, and broken pieces. Prior to disposal approval, a component inventory review is required. If lead or other heavy metals are used in the production process, then a TCLP metal analysis must be conducted (these types of glass typically include optical glass and windshields). Window glass will not typically require TCLP analysis prior to disposal. Powdered glass and glass dust will require prompt burial and cover.

4.11 Spent Filters

Filters can be used to remove solids, organics, or metals from water and other liquids. The analytical requirements for the various filter types will be based on the media that were filtered and the nature of the filtration process. For example, filters that have removed metals must be tested for TCLP heavy metals and filters used to remove organics must be tested for TCLP organic constituents. Analytical may also be required for TENORM radionuclides.

Used motor oil filters can be accepted for disposal following the provisions of the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261, Section 261.4(b)(13) [latest version].

Spent filters from oil E&P facilities, as well as natural gas pipelines and facilities and including compressor and meter stations, will require laboratory analytical according to Table 2.

4.12 Asbestos-Containing Materials

Non-friable asbestos waste will be accepted for disposal at the Landfill. Friable asbestos waste will not be accepted for disposal at the Landfill. A generator of non-friable asbestos waste will be required to submit a profile form (Attachment 1 or 2) for approval.

Within 24 hours of receipt of non-friable asbestos waste and any storage thereof in accordance with CDPHE Regulations Pertaining to Solid Waste Sites and Facilities, 6 CCR 1007-2 [latest version], Part 1, Section 5.4, the waste will be covered with a minimum of nine inches of soil or 18 inches of non-asbestos cover material. The Landfill operators will minimize the potential for release from, and exposure to, non-friable asbestos waste after placement in the disposal area (i.e., the working face) and will not compact the waste prior to application of cover materials. Landfill compaction equipment will not come into contact with non-friable asbestos waste, containers, or packaging. Non-friable asbestos waste management will be accomplished in a manner that minimizes any change in the friability of the waste.

It is the responsibility of the generator to determine if the asbestos waste is friable or non-friable. If the determination is not made, the waste will not be accepted.

Storage of asbestos waste at an asbestos waste disposal area, prior to burial, will be conducted in accordance with the following requirements:

- Asbestos shall be stored only in rigid containers and in segregated locations used solely for the purpose of such storage where asbestos waste packages can be handled, stored, and maintained without being opened or disturbed.
- Asbestos waste will be stored at an asbestos waste disposal area for no more than 20 calendar days prior to burial.
- A warning sign will be posted on each side of an area where asbestos waste is stored prior to burial. Such signs shall conform to CDPHE Regulations Pertaining to Solid

Waste Sites and Facilities 6 CCR 1007-2 Part 1, Section 5.3.4. The legend of each such sign will conform to CDPHE Regulations Pertaining to Solid Waste Sites and Facilities 6 CCR 1007-2 Part 1, Section 5.3.4, except that the first line will read, "Asbestos Waste Storage".

The spill contingency plan, in the event that asbestos waste is spilled or requires repackaging, is as follows:

- The area will be secured and the Operations Manager or designee will be contacted.
- Responders will wear the required PPE.
- The leaking container will be secured, sealed, and/or wetted to prevent any further escape of asbestos fibers.
- All visible asbestos waste will be collected by either hand equipment or heavy equipment and placed in a bag provided for spills. For spills on soil, the top layer of soil that may be contaminated may also be collected. A second bag will be used to double wrap the spilled asbestos waste.
- The bag will be sealed and the required labels applied. The bag will be placed in the asbestos waste disposal area.

4.13 Petroleum-Contaminated Soils

Petroleum-contaminated soils will be accepted at ERL if the soil does not exhibit hazardous or radioactive (TENORM) characteristics, as defined in the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version] and 6 CCR 1007-1 Part 20, respectively, except as qualified below for underground storage tank (UST) corrective actions.

Contaminated soils resulting from UST corrective actions regulated by 40 CFR Part 280 (Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks) [latest version] are exempted from the TCLP volatile and semi-volatile analysis if the constituent(s) of concern was the original component(s) of product released. However, as provided in 40 CFR Part 280, soils resulting from UST corrective action must meet the following:

- Soils contaminated with leaded gasoline must have less than 100 ppm total lead, unless the TCLP lead concentration is less than 5.0 milligrams per liter (mg/L); and
- Soils contaminated by waste oils must be evaluated for TCLP lead, cadmium, and chromium.

For contaminated soils of known origin not resulting from UST corrective actions, the following analyses may be required, depending on the source or type of contamination:

- TCLP lead, cadmium, and chromium for soil contaminated with used oils

- TCLP lead for soil contaminated with leaded gasoline
- Total organic halide (TOX) for volatile and semi-volatile compounds (if above 1000 ppm, TCLP volatile organic compound (VOC) and semi-volatile organic compound (SVOC) are required)
- Benzene, ethylbenzene, toluene, and xylenes (BTEX) concentrations

4.14 Liquids

ERL will not accept bulk waste liquids for disposal.

Wastes that previously contained free liquids that have been solidified, stabilized, or dried to pass the paint filter test will be accepted for disposal. If appropriate, EPA paint filter tests (EPA Method 9095B) will be used to determine the presence of free liquids in a waste.

4.15 Residential Generated Used Batteries, Used Oil, and Waste Tires

Disposal of residentially generated used lead-acid batteries, used oil, and waste tires in ERL is prohibited. The procedure to minimize the disposal of these items includes signage at the entrance of the landfill notifying customers that these items are prohibited.

4.16 Incinerator Ash

Incinerator ash means the bottom ash, fly ash, or air pollution control residues and other residues of the combustion process from the operation of an incinerator or energy recovery facility, including the combustion of any municipal, commercial, or industrial solid waste.

Incinerator ash is generally composed of oxides of silicon, aluminum, iron, and calcium. Incinerator ash may also contain other trace elements that vary by type and level, depending on the ash particle size and source of the combustion material. Many of these elements are in the form of oxides tied up in complex silicates. Therefore, incinerator ash being considered for disposal at ERL will be required to be analyzed for TCLP metals.

Additional analyses may be required, depending on the nature of the incinerated material and the incineration process.

Loads of incinerator ash will typically be wetted to prevent fugitive dust emissions (but not to the point where they contain free liquids) and the generators will be instructed that the load must be properly contained to prevent leakage, spillage, or dispersion during transport.

4.17 Coal-Fired Utility Ash

Coal-fired utility ash must pass the paint filter test and be analyzed for appropriate TCLP constituents. Loads of coal-fired utility ash will typically be wetted to prevent fugitive dust emissions (but not to the point where they contain free liquids) and the generators will be

instructed that the load must be properly contained to prevent leakage, spillage, or dispersion during transport.

4.18 Solid Wastes from Other Land Disposal Activities

Waste excavated from other land disposal activities, such as closed landfills, may be disposed at ERL. Representative samples must be submitted for waste characterization. If available, groundwater and/or surface-water monitoring test results may also be submitted with the Special Waste Profile form.

4.19 Fluorescent Light Bulbs/Ballasts

Fluorescent light bulbs and ballasts may be disposed at ERL. Waste acceptance guidelines are provided below.

4.19.1 Segregated Fluorescent Light Bulbs

Generators of fluorescent bulbs, high intensity discharge (HID) lamps or mercury vapor bulbs are required to test their waste for appropriate TCLP constituents or submit SDS information to verify that the bulbs are non-hazardous.

4.19.2 Segregated Ballasts

For management of light ballasts, the generator must determine whether the ballasts to be disposed of are PCB-containing or non-PCB-containing ballasts. The generator must indicate "non-PCB" on the Special Waste Profile form or provide additional information.

4.19.3 PCB Ballasts

PCB-containing ballasts will be managed in accordance with 40 CFR Part 761 (Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions [latest version], Parts 761.60(b)(2)(ii) and 761.62).

4.20 Sanitary Sewer Grit or Bar Screenings

Sanitary sewer grit or bar screenings may contain excessive amounts of liquids. Therefore, they must pass the paint filter test. Sanitary sewer grit or bar screenings must also be analyzed for appropriate TCLP constituents. Bar screenings do not need to be analyzed for TENORM isotopes. Grit also does not need to be analyzed for TENORM isotopes, unless the wastewater treatment plant accepts nonexempt TENORM, in which case the grit must be analyzed for Ra-226, Ra-228, Pb-210, and Po-210.

4.21 Treated Wood

Treated wood is wood that has been treated with preservatives such as creosote, pentachlorophenol, or chromate copper arsenate. Treated wood can be fresh or weathered. Fresh treated wood has the potential to have semi-volatile constituents; therefore, it must be

analyzed for TCLP semi-volatile for creosols, pentachlorophenol, hexachlorobenzene, and TCLP metals for arsenic and chromium, depending on the type of preservative used.

Weathered treated wood does not need to be tested for disposal in the landfill, but the waste needs to be profiled by the generator prior to acceptance.

4.22 Treated Formerly Characteristic Hazardous Waste

Treated formerly characteristic hazardous waste, which has been rendered nonhazardous in accordance with accepted treatment standards, will be accepted upon review of the following analyses:

- TCLP for toxicity characteristic (D code) constituents or total analysis, whichever is indicated at 40 CFR 268.40;
- Underlying hazardous constituents (UHCs) for utilizing universal treatment standards for applicable UHCs based on the generator's knowledge of process, materials, and analysis; and
- Description of the treatment process used referencing 40 CFR 268 (Land Disposal Restrictions) [latest version] acceptable hazardous waste treatment standards.

4.23 Foundry Sand and Dust, Sand Blast Waste, and Ceramic Waste

Foundry sand and dust are generated from metallurgical processes, typically in the forging of casting of metal products. Such residues can be disposed of at ERL. Required testing by the generator includes TCLP metals of concern. Ceramic waste must be tested for these same constituents.

4.24 Treated Medical Waste

In accordance with the CPDHE Regulations Pertaining to Solid Waste Sites and Facilities 6 CCR 1007-2 Part 1, Section 13.8.3 [latest version], solid waste disposal facilities can accept medical waste that has been treated so as to render the waste non-infectious. Appropriate treatment methods by the generator may include, but are not limited to, autoclaving, decontamination, sterilization, or other methods approved by CDPHE.

4.25 Automobile Bodies and Shredder Fluff

Automobile bodies can be accepted for disposal if potentially hazardous components such as batteries, antifreeze, oils, and gasoline have been removed. The car body will be transported to the active face and crushed by ERL equipment.

Auto shredder fluff is generated through the processing and/or demolition of automobiles and trucks. The fluff includes the non-metallic components of the vehicle, including seats and other interior items. Generators are required to have this waste analyzed for appropriate TCLP constituents and total PCBs prior to disposal.

4.26 Other Industrial Wastes and Wastes Requiring Additional Handling

Other industrial wastes or wastes requiring additional handling will be subject to the review process outlined below.

- Wastes and process-specified characteristics must be indicated on a Special Waste Profile form (Attachment 1). Appropriate SDSs must be submitted for review. No hazardous waste, as identified pursuant to the CDPHE Identification and Listing of Hazardous Waste Regulation, 6 CCR 1007-3 Part 261 [latest version] or applicable federal regulations, will be approved for disposal.

- Wastes must be characterized properly. Appropriate analytical test results must be submitted for review or additional representative samples submitted for the required analysis. Five Part reserves the right to require resampling and analysis of any waste submitted for approval.

- Physical properties of the waste will be considered for determining safe handling and disposal procedures.

- Upon receipt of the Profile Approval Notification, generators are required to provide a Non-Hazardous Special Waste and Asbestos Manifest form (Attachment 4) for each load of approved waste to be delivered to ERL.

- Pigging sludge (from natural gas maintenance operations) and filters from natural gas meter stations, compressor stations, or gas plants must be analyzed for Pb-210 and Po-210 at a minimum. Sludges may also contain other regulated chemicals/constituents such as mercury, arsenic, and other hazardous materials.

4.27 Electronics Waste

Disposal of residentially generated electronics waste (e-waste) in ERL is prohibited. Electronics waste includes household electronics such as televisions, computers, computer monitors, computer peripherals (i.e., keyboards and mice), laptops, notebooks/ultrabooks/ netbooks, electronic tablets, printers, fax machines, DVD/VCR players, radios/stereos, video game consoles, and video display devices with viewing screens greater than 4 inches diagonally.

Devices including appliances, non-hazardous industrial or commercial devices, motor vehicle components, or any type of telephone are permitted to be disposed of in ERL.

ERL will post a sign at the entrance of the landfill stating that disposal of e-waste devices is prohibited. ERL staff will direct customers needing to dispose of e-waste to an appropriate local e-waste recycling facility. A list of electronics drop-off locations and recyclers can be found on the CDPHE website.

5.0 RECORDKEEPING AND REPORTING

Copies of facility personnel training records and approved Special Waste Profile forms, SDSs, analytical results, Special Waste Approvals Group decisions, profile rejection notifications, and manifests will be maintained in a file at the ERL facility and/or at Five Part administrative offices during the active site life and post-closure period. Records of random load inspections will be maintained in accordance with Section 2.1.2(B)(1) of 6 CCR 1007-2 Part 1 of the CDPHE Regulations Pertaining to Solid Waste Sites and Facilities.

Facility personnel must be appropriately trained to identify unacceptable waste streams. If an unacceptable waste stream is discovered, specific information will be documented and maintained onsite. The information includes the following:

- Date and time of detection
- Name of transporter
- Name of generator
- Notice of rejection of load to transporter/generator
- Material detected (if known)
- Actions taken to manage material, if generator or transporter is not known
- Final disposal location, if managed by an independent contractor

If waste is determined to be hazardous, CDPHE will be notified pursuant to applicable regulatory requirements.

ATTACHMENT 1
SPECIAL WASTE PROFILE FORM

Special Waste Profile

Disposal Facility: --Select Facility--

Waste Profile #:

Sales Rep #:

I. Generator Information

Generator Name:

Generator Site Address:

City: County: State: Colorado Zip:

State ID/Reg No: State Approval/Waste Code: NAICS #:

Generator Mailing Address ☐ (if different)

City: County: State: --Select State-- Zip:

Generator Contact Name: Email:

Phone Number: Ext: Fax Number:

II. Billing Information

Bill To: Contact Name:

Billing Address: Email:

City: State: --Select State-- Zip: Phone:

III. Waste Stream Information

Name of Waste:

Process Generating Waste:

Type of Waste: --Select Waste Type-- Physical State: --Select Physical State Method of Shipment: --Select Shipment Metho

Estimated Volume: Volume Type: --Select Volume Type--

Frequency: --Select Frequency-- Disposal Consideration: --Select Disposal Consideration--

IV. Representative Sample Certification

☐ **No Sample Taken**

☐ **Sample Taken** **Type of Sample** --Select Sample Type--

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent? ☐ **Yes** ☐ **No**

Sample Date:

Sample ID Numbers or SDS:

Remember to attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

Special Waste Profile

REPUBLIC SERVICES

V. Physical Characteristics of Waste

Characteristic Components (must equal 100%:)	% By Weight (out of 100% - ranges acceptable):
1.	
2.	
3.	
4.	
5.	

Color:	Odor (describe):	Does Waste Contain Free Liquids?	% Solids:	pH:	Flash Point:
		☐ Yes ☐ No			°F

Attach Laboratory Analytical Report (and/or Material Safety Data Sheet) including Chain of Custody and required parameters provided for this profile.

RCRA Regulatory Questions

1. Does this waste or generating process contain regulated concentrations of the following Pesticides and/ or Herbicides: Chlordane, Endrin, Heptachlor (and its epoxides), Lindane, Methoxychlor, Toxaphene, 2,4-D, or 2,4,5-TP Silvex as defined in 40 CFR 261.33?	☐ Yes ☐ No
2. Does this waste contain reactive sulfides (greater than 500 ppm) or reactive cyanide (greater than 250 ppm) [reference 40 CFR 261.23(a)(5)]?	☐ Yes ☐ No
3. Does this waste contain regulated concentrations of Polychlorinated Biphenyls (PCBs) as defined in 40 CFR Part 761?	☐ Yes ☐ No
4. Does this waste contain concentrations of listed hazardous wastes defined in 40 CFR 261.31, 261.32, 261.33, including RCRA F-Listed Solvents?	☐ Yes ☐ No
5. Has this waste been delisted under 40 CFR 260.20 and 260.22? If yes, attach the final decision to delist the waste as published in the Federal Register.	☐ Yes ☐ No
6. Does this waste exhibit a Hazardous Characteristic as defined by Federal and/or State regulations? If Yes, identify the applicable waste code and specify if the waste is hazardous as defined by Federal, State or both?	☐ Yes ☐ No
7. Does this waste contain regulated concentrations of 2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCCD), or any other dioxin as defined in 40 CFR 261.31?	☐ Yes ☐ No
8. Is this a regulated Medical or Infectious Waste as defined by Federal and/or State regulations?	☐ Yes ☐ No
9. Is this a regulated Radioactive Waste as defined by Federal and/or State regulations?	☐ Yes ☐ No
10. Is this a solid waste that is not a hazardous waste in accordance with 40 CFR 261.4(b)? If yes, please provide the corresponding regulatory citation.	☐ Yes ☐ No

Republic Services Waste Handling Questions

1. Does this waste generate heat or react when contacted with water/moisture?	☐ Yes ☐ No
2. Does the waste contain sulfur or sulfur by-products?	☐ Yes ☐ No
3. Is this waste generated at a State or Federal Superfund cleanup site subject to regulation under CERCLA?	☐ Yes ☐ No
4a. Is this waste from a TSD facility, TSD-like facility or consolidator (i.e. multiple wastes/multiple generators)?	☐ Yes ☐ No

4b. If yes to the above question, please provide clarification.

VI. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste.

I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original.

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process.

I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

Authorized Representative Name (Printed)	Title (Printed)	Company Name

Representative Signature	Date

ATTACHMENT 2
EXPRESS WASTE PROFILE FORM

Express Waste Profile

Disposal Facility: --Select Facility--

Waste Profile #

Sales Rep #

I. Generator Information

Generator Name:

Generator Site Address:

City: County: State: --Select State-- Zip:

State ID/Reg No: State Approval/Waste Code: NAICS #:

Generator Mailing Address ☐ (if different)

City: County: State: --Select State-- Zip:

Generator Contact Name: Email:

Phone Number: Ext: Fax Number:

II. Billing Information

Bill To: Contact Name:

Billing Address: Email:

City: State: --Select State-- Zip: Phone:

III. Waste Stream Information

Name of Waste:

☐ Weathered Wood ☐ RCRA Empty Containers ☐ Treated Medical Waste ☐ Animal Carcass (non-infectious)

☐ Friable Asbestos ☐ Nonfriable Asbestos ☐ Tires ☐ Meth Contaminated Debris

Has a sample of this waste been taken? ☐ Yes ☐ No

Process Generating Waste:

Method of Shipment: --Select Shipment Method-- Complete if "other"

Frequency: --Select Frequency--

Estimated Annual Volume: Volume Type: --Select Volume Type--

Color: Odor:

IV. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue. I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original."

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process

Authorized Representative Name (Printed)	Title (Printed)	Company Name

Authorized Representative Signature	Date

ATTACHMENT 3
SPECIAL WASTE DEPARTMENT DECISION FORM

Republic Services

18500 N. Allied Way, Phoenix, AZ 85054

SPECIAL WASTE DEPARTMENT DECISION

	Waste Profile #	**Expiration Date**	
I. Decision Request:	☐ **Initial** ☐ **Recertification** ☐ **Change**		
Disposal Facility:			
Generator Name:			
Generator Site Address:			
City:	**County:**	**State:**	**Zip:**
Name of Waste:			
Estimated Annual Volume:			

II. Special Waste Department Decision: ○ **Approved** ○ **Rejected**

Management Method(s): ☐ Landfill ☐ Solidification ☐ Bioremediation ☐ Deep Well ☐ Transfer Facility

Problematic Special Waste according to Republic? ○ Yes ○ No

If yes, which one?

Approved by Special Waste Review Committee? ○ Yes ○ No ○ Not Applicable

Precautions, Conditions or Limitations on Approval

Special Waste Analyst Signature: _____ **Name (Printed):** _____

Date:

III. Facility Decision: ○ **Approved** ○ **Rejected**

Precautions, Conditions or Limitations on Approval

By signing below, the General Manager or Designee agrees that a fully executed Special Waste Service Agreement is on file for this profile and that the special waste file is complete.

General Manager or Designee: _____ **Name (Printed):** _____

Date:

ATTACHMENT 4
NON-HAZARDOUS SPECIAL WASTE AND ASBESTOS MANIFEST

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

3168000

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
d. Generator's Name and Location: f. Phone:	e. Generator's Mailing Address: g. Phone:	
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:	

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: b. Phone:		
c. Driver Name (Print)	d. Signature	e. Date

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address: b.	c. US EPA Number	d. Discrepancy Indication Space:

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address: b. Phone:	c. Responsible Agency Name and Address: d. Phone:
e. Special Handling Instructions and Additional Information:	
f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable	

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

ATTACHMENT 5
SPECIAL WASTE PROFILE – RECERTIFICATION

Special Waste Profile - Recertification

Disposal Facility: --Select Facility--

Waste Profile #:

Sales Rep #:

I. Generator Information

Generator Name:

Generator Site Address:

City: County: State: --Select State-- Zip:

State ID/Reg No: State Approval/Waste Code: NAICS:

Generator Mailing Address ☐ (if different)

City: County: State: --Select State-- Zip:

Generator Contact Name: Email:

Phone Number: Ext: Fax Number:

II. Waste Stream Information

Name of Waste:

Check Section 1 or 2 below

1. ☐ ***There has been a change*** in the characteristics of the waste stream due to the following:
   a. Change of a raw material used in the waste generating process.
   b. Change in the waste generating process itself.
   c. Change in a physical characteristic of the waste.
   d. New information has been documented concerning the human health effects of exposure to the waste.

   If any of these changes have occurred, a new profile sheet must be completed, and new analysis and/or SDS must be provided as appropriate.

2. ☐ ***There have been no changes*** that would alter the physical characteristics of the special waste stream. Updated analytical may be required.

III. Representative Sample Certification

☐ **No Sample Taken**

☐ **Sample Taken** **Type of Sample** --Select Sample Type--

Is the representative sample collected to prepare this profile and laboratory analysis, collected in accordance with U.S. EPA 40 CFR 261.20(c) guidelines or equivalent? ☐ **Yes** ☐ **No**

Sample Date:

Sample ID Numbers:

Special Waste Profile - Recertification

IV. Certification

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true, complete and accurate description of the waste material being offered for disposal and all known or suspected hazards have been disclosed. All Analytical Results/Material Safety Data Sheets submitted are truthful and complete and are representative of the waste.

I further certify that by utilizing this profile, neither myself nor any other employee of the company will deliver for disposal or attempt to deliver for disposal any waste which is classified as toxic waste, hazardous waste or infectious waste, or any other waste material this facility is prohibited from accepting by law. I shall immediately give written notice of any change or condition pertaining to the waste not provided herein. Our company hereby agrees to fully indemnify this disposal facility against any damages resulting from this certification being inaccurate or untrue.

I understand that attaching an electronic signature, I am signing this document, consent to complete this transaction and receive all related communication electronically, and agree this document will be binding as though I had physically signed it. A printout of this document may be accepted with the same authority as the original."

If electronic signature is preferred, please submit completed (unsigned) form to your Special Waste Coordinator or Special Waste Sales Executive to initiate signature process.

I further certify that the company has not altered the form or content of this profile sheet as provided by Republic Services.

Authorized Representative Name (Printed)	Title (Printed)	Company Name

Authorized Representative Signature	Date

ATTACHMENT 6
SPECIAL WASTE INSPECTION SHEET

REPUBLIC SERVICES

Date: _____

Time: _____

SPECIAL WASTE INSPECTION SHEET

☐ **Initial** ☐ **Random** ☐ **Suspicious** ☐ **Recertification**

Disposal Facility: _____ Waste Profile # _____

Generator Name: _____

Name of Waste: _____

Transporter Name: _____

Transporter Phone Number: _____

Driver Name: _____

Vehicle License Plate Number and State: _____

Physical Screening

INDICATE **YES** OR **NO** FOR EACH OF THE FOLLOWING TESTS AND NOTE ANY DESCREPANCIES. DO THE CHARACTERISTICS OF THE WASTE MATCH THE PROVIDED INFORMATION ON THE SPECIAL WASTE PROFILE?

Characteristics	Profile	Yes	No	Comments and/or Observations:
Color	_____	☐	☐	_____
Odor	_____	☐	☐	_____
Physical State	_____	☐	☐	_____
Free Liquids	_____	☐	☐	_____

Is a Photograph Attached? ☐ ☐ Initial Load Must Include Photograph

IF WASTE FAILS ONE OR MORE OF THE PHYSICAL SCREENING TESTS, THE WASTE IS DEEMED UNACCEPTABLE FOR DISPOSAL AND SHOULD BE REJECTED.

Waste Accepted

_____

Inspector Printed Name Date

Waste Rejected (If Rejected then a Photograph MUST be attached.)

Reasons for Rejection

☐ Extraneous and/or Unauthorized Material ☐ Suspected Hazardous Waste ☐ Does Not Match Profile

☐ Suspected PCB Waste ☐ Free Liquids

Comments

_____

_____

_____

Inspector Printed Name Date

_____

General Manager or Designee Printed Name Date

Appendix R
Alternative Daily Cover Request and Approval

COLORADO
Department of Public
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

September 22, 2016

Mr. Justin Keever
Site Manager
Five Part Development, LLC
8201 E. Schumaker Road
Bennett, Colorado 80102

Re: **Approval**: EDOP Amendment for use of 12-Inch Nominal Shredded Tires as Alternative Daily Cover, East Regional Landfill
SW/ADM/FIV 2.2

Dear Mr. Keever,

The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment has received the following document:

> *EDOP Amendment for use of 12-Inch Nominal Shredded Tires as Alternative Daily Cover, East Regional Landfill* (Amendment). Document dated: September 15, 2016.

The Division has reviewed the above-referenced Amendment. Based on the success you reported using shredded tire material as ADC in the field trial demonstration and the appropriate and comprehensive conditions contained in the Amendment, the Division hereby **approves** the Amendment.

The Division is authorized to bill for its review of technical submittals at $125 per hour, pursuant to Section 1.7 of the Solid Waste Regulations. An invoice for the Division's review of the subject document will be sent under separate cover.

Please contact me at 303-691-4049, Andrew.Todd@state.co.us if you have any questions.

Sincerely,

Andy Todd

Andy Todd
Solid Waste Permitting Unit
Solid Waste and Materials Management Program
Hazardous Materials and Waste Management Division

Ec: Lisa Oliveto, Tri-County Health Department
Jen Rutter, Adams County Planning Department
Mark McMullen, American Environmental Consulting, LLC
Jennifer Reynolds, Division Compliance Assurance Unit

Community & Economic
Development Department
www.adcogov.org

ADAMS COUNTY
COLORADO

4430 South Adams County Parkway
1st Floor, Suite W2000
Brighton, CO 80601-8204
PHONE 720.523.6800
FAX 720.523.6998

September 22, 2016

Justin Keever
Site Manager
East Regional Landfill
Alpine Waste & Recycling
8201 Schumaker Road
Bennett, CO 80102

Re: Minor Amendment to a Certificate of Designation (Case # EXG2009-00001)
Modification to the Engineering Design and Operations Plan to allow an
Alternative Daily Cover of 12-Inch Nominal Shredded Tires

Dear Mr. Keever,

This Department has completed its review of your application titled *EDOP Amendment for use of 12-Inch Nominal Shredded Tires as Alternative Daily Cover, East Regional Landfill* (Amendment), dated September 15, 2016. This application revises the Engineering Design and Operations Plan (EDOP) to allow 12-inch nominal shredded tires as Alternative Daily Cover for East Regional Landfill. The subject site previously received land use approval through Case # EXG2009-00001, Alpine Waste & Recycling. All conditions contained within Case # EXG2009-00001 shall remain in full effect.

CDPH&E approved the plan on September 22, 2016. Based upon the review of the application by this Department and CDPH&E's approval, the Adams County Community & Economic Development Department issues East Regional Landfill a Notice to Proceed to begin using shredded tires as alternative daily cover.

Sincerely,

Norman Wright
Director
Community & Economic Development Department

BOARD OF COUNTY COMMISSIONERS

Eva J. Henry — DISTRICT 1
Charles "Chaz" Tedesco — DISTRICT 2
Erik Hansen — DISTRICT 3
Steve O'Dorisio — DISTRICT 4
Jan Pawlowski — DISTRICT 5

ADAMS COUNTY
COLORADO

Community & Economic Development Department
4430 South Adams County Parkway,
1st Floor, Suite W2000
Brighton, CO 80601-8205
PHONE 720.523.6800 FAX 720.523.6998

MEMORANDUM

TO:	**Norman Wright, Director of the Community & Economic Development Department** **Kristin Sullivan, Deputy Director of the Community & Economic Development Department**
FROM:	**Jen Rutter, Senior Environmental Analyst**
SUBJECT:	**Minor Amendment to a Certificate of Designation to Allow the Use of 12-Inch Nominal Shredded Tires as Alternative Daily Cover at East Regional Landfill**
DATE:	**September 22, 2016**

East Regional Landfill, operated by Alpine Waste & Recycling, is located adjacent to and west of Schumaker Road, approximately south of 88th Avenue in south central Adams County. On June 29, 2009, the Board of County Commissioners approved a Certificate of Designation (CD) to allow the use of the property as a municipal solid waste landfill. On August 3, 2011, the Board of County Commissioners approved a major amendment to the CD to allow composting operations on the property.

On September 15, 2016, an application for a minor amendment to the Certificate of Designation was submitted to Adams County by American Environmental Consulting, LLC on behalf of East Regional Landfill to allow for the use of 12-inch nominal shredded tires as alternative daily cover (ADC). The minor amendment would allow the operator to use 12-inch pieces of shredded tires, instead of the typical earthen material to cover the active face of the municipal solid waste landfill at the end of each operating day. The cover is used to control vectors, fires, odors, blowing litter, and scavenging. Shredded tires are a commonly used ADC in many states. The County approved a similar request on April 7, 2016 for smaller sized tire shreds as ADC.

The Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment (CDPHE) approved the ADC plan on September 22, 2016 as an amendment to the Engineering Design and Operations Plan (EDOP). CDPHE determined the amendment to the EDOP to be a "non-significant" change. East Regional Landfill was required to perform a field trial demonstration to determine the effectiveness of using shredded tire material as ADC. CDPHE acknowledged the reported success of the field trial and based their approval on that information.

According to Section 2-02-03-05, 10.a.(4)(a) of the Adams County Development Standards and Regulations, the Director of the Community and Economic Development Department has the authority to determine whether the change is a minor amendment to the CD and approve, deny, or approve with conditions. After reviewing the application and the CDPHE approval letter, Staff has determined that the change in operations is minor and therefore recommends an administrative approval of the amendment to the Certificate of Designation

to allow the use of 12-imch nominal tire sheds as alternative daily cover at East Regional Landfill.

AEC *AMERICAN ENVIRONMENTAL CONSULTING, LLC*

September 15, 2016

Mr. Andrew Todd, P.E.
Colorado Department of
Public Health and Environment
Solid Waste Permitting Unit
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Ms. Jennifer Rutter
Adams County Department of
Planning and Development
4430 South Adams County Parkway
1st Floor, Suite W2000A
Brighton, Colorado 80601

Re: EDOP Amendment for use of 12-Inch Nominal Shredded Tires as Alternative Daily Cover
East Regional Landfill
Adams County, Colorado

Dear Mr. Todd and Ms. Rutter:

The enclosed document is an amendment to the approved Engineering Design and Operations Plan (EDOP) to permit the use of 12-inch nominal size shredded tires as an Alternative Daily Cover (ADC) at the East Regional Landfill (ERL). The ERL is already approved for use of 8-inch maximum size shredded tires as ADC.

This Amendment and the September 15, 2016 30-day Field Trial Documentation Report submitted concurrently with this request supports the approval of the use of 12-inch nominal size shredded tires as ADC in conformance with Section 3.3.4(B) of 6 CCR 1007-2, Part 1 and allows occasional 18-inch (in the longest dimension) shreds. The ERL has received certification from the CDPHE as a Waste Tire Collection Facility and End User and is prepared to implement this ADC program following approval from the CDPHE and Adams County.

Please call me or Mr. Justin Keever (Landfill Manager) at (303)-685-2700 if you have any questions.

Respectfully,

American Environmental Consulting, LLC

Mark A. McMullen, P.G.
Principal/Project Manager

Enclosure: Amendment to the EDOP

cc: Mr. Justin Keever, Landfill Manager-ERL

8191 Southpark Lane, Suite 107, Littleton, CO 80120 phone 303-948-7733 fax 303-948-7739

AMENDMENT TO THE ENGINEERING DESIGN AND OPERATIONS PLAN EAST REGIONAL LANDFILL

USE OF 12-INCH NOMINAL SHREDDED TIRES AS ALTERNATIVE DAILY COVER

Prepared for:

Alpine Waste/East Regional Landfill
8201 Schumaker Road
Bennett, Colorado

Prepared by:

American Environmental Consulting, LLC
8191 Southpark Lane, Unit 107
Littleton, Colorado 80120

September 15, 2016

This document amends the approved Engineering Design and Operations Plan (EDOP, Doty & Associates, LLC dated June 1, 2006) for the use of 12-inch nominal shredded tires size (with occasional shreds up to 18-inches in the longest dimension) as an Alternative Daily Cover (ADC) at the East Regional Landfill (ERL) in conformance with Section 3.3.4 (B) of 6 CCR 1007-2, Part 1. The ERL has completed a 30-day field trial demonstration to validate the effectiveness of these shredded tires as ADC. The results of the 30-day field trial demonstration are submitted with this amendment request to the Colorado Department of Public Health and Environment (CDPHE) and Adams County in a letter report dated September 15, 2016.

The ERL will adhere to the following conditions for the use of shredded tires as ADC that are consistent with the requirements approved in the March 19, 2016 CDPHE approval letter for the 8-inch tire shreds:

1. The ERL understands that the Division reserves the right to review the effectiveness of the tire shreds as an ADC at the Facility.

2. The use of tire shreds as an ADC will be discontinued should it not prevent nuisance conditions pursuant to Sections 1.2, 2.1.3, and 3.3.2 of the Solid Waste Regulations, 6 CCR 1007-2, Part 1.

3. Tire shreds shall be applied in the manner found to be effective during the field trial.

4. Because of a statutory prohibition on disposal of this tire-derived material, placement of the tire shreds in a lift thicker than necessary to achieve the purpose of daily cover is prohibited.

5. Tire shreds shall be consistent in size with those used in the field trial and shall be a maximum size of 12-inch nominal with occasional shreds up to 18 inches in the longest dimension.

6. At the end of each operating week, or more frequently if conditions warrant, a minimum of six (6) inches of soil cover shall be placed over any areas where tire shreds have been used as an ADC and are exposed.

7. Tire shreds used at the end of the working day to meet the daily cover requirements may only be used on days when the landfill is to be open the following day. If the landfill is scheduled to be closed on the following day, a minimum of six (6) inches of soil cover shall be placed at the end of the working day over any area of exposed waste.

8. For each day of alternative daily cover use the Facility will record the following information and place it into the operating record: (1) date, (2) type of alternative daily cover material used, (3) name of person applying the alternative daily cover, (4) and weather conditions.

9. The tire shreds will be placed only on interior slopes such that stormwater or snow-melt that comes into contact with the ADC is controlled in accordance with the requirements of Section 2.1.6 of 6 CCR 1007-2, Part 1.

10. The tire shreds used as ADC will be applied in the smallest practicable area consistent with Section 2.1.10 of 6 CCR 1007-2, Part 1.

11. The tire shreds will only be placed in areas where they will be covered with solid waste during the following business day; otherwise a minimum six inches of soil or other approved ADC (Posi-Shell is currently approved) will be used as daily cover.

12. Tire shreds will not be used as ADC during periods when heavy rain or heavy snow is forecasted.

The ERL will maintain the records required in #8 above in the Operating Record for all approved ADC materials and will be made available for regulatory inspection upon request.

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC

May 9, 2011

Mr. Roger Doak
Colorado Department of Public
Health and Environment
HMWMD B-2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Re: Request for Approval for Alternative Daily Cover
East Regional Landfill
Bennett, Colorado

Dear Mr. Doak:

Five Part Development, LLC, the owner of the East Regional Landfill (ERL) in Adams County, Colorado is requesting approval for use of an Alternative Daily Cover (ADC) material at the ERL in compliance with the definition of "Adequate Cover" in Section 1.2 of 6 CCR 1007-2, Part 1, *Regulations Pertaining to Solid Waste Sites and Facilities* (Regulations) and the provision for alternative materials in Section 3.3.4 of the Regulations.

The ERL is proposing to use a spray-on product known as Posi-Shell® from Posi-Shell Environmental Coatings as an alternative to six-inches of soil used to cover exposed waste at the end of each day. The ERL will continue to use a six-inch thick soil cover once per week to mitigate fly infestation in accordance with guidance provided by the Colorado Department of Public Health and Environment (CDPHE) for other facilities using an ADC. The weekly application of soil cover will also help provide periodic fire breaks within the refuse mass. In accordance with regulations, any refuse disposal area that is unused for a period of 30 days or longer will have a minimum of one-foot of daily cover soil applied.

The ERL is located in an area of the eastern Colorado Plains that often experiences windy conditions and has residentially used property adjacent to the south of the landfill. ERL believes that the use of an effective ADC such as Posi-Shell® that can be applied quickly will greatly assist in their litter control efforts under these conditions.

Posi-Shell® is a non-hazardous, non-flammable, fibrous material that includes a dye for a more aesthetically pleasing appearance. It may be used with its basic formulation, but also has the flexibility to incorporate a Portland cement if needed to enhance the durability of the ADC. A Material Safety Data Sheet (MSDS) for the proposed ADC material and results of TCLP and flammability testing conducted on the Posi-Shell® Advanced Formulation containing Portland cement is included in Attachment 1.

6885 South Marshall St., Suite 3, Littleton, CO 80128 phone 303-948-7733 fax 303-948-7739

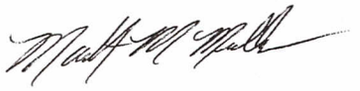
Posi-Shell® ADC has gained wide regulatory acceptance at Colorado landfills as a viable and functional ADC. Posi-Shell® is applied by spraying, typically with hydroseeding equipment or similar mobile sprayer systems. The main benefit to using an ADC such as Posi-Shell® is the conservation of airspace, and a spray on material like Posi-Shell® has the added benefit of the ease and quickness of application relative to a soil cover and its ability to "anchor" loose refuse and minimize blowing litter by its superb adherence to refuse. A batch can be prepared before it is needed and be made readily available in case of sudden winds. In addition, a spray-on material can often be used to reach places that may be inaccessible or hard to reach with typical earthmoving equipment or tarps. AEC has observed demonstrations of both types of Posi-Shell® products and was particularly impressed with its ability to adhere to and anchor paper and other light weight refuse that is susceptible to wind.

The Landfill Manager of the ERL has observed a demonstration of the proposed ADC at another Colorado landfill and was impressed with the results and Posi-Shell's ability to meet the performance requirements in the Regulations.

ERL feels confident that Posi-Shell will greatly enhance the ability to contain blowing litter in compliance with the Regulations and is requesting approval for its use as described in this letter. Please feel free to contact me or Mr. Jeremy Groves at the ERL if you have any questions and we look forward to your approval.

Respectfully,

American Environmental Consulting, LLC



Mark A. McMullen
Principal

cc: Mr. Jeremy Groves, ERL
Mr. Craig Tessmer, Adams County

Attachments: MSDS and Test Results

Adirondack Environmental Services Inc

Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

RECEIVED
JUL 17 2006

July 13, 2006

Joel E. Lanz
Landfill Service Corporation
2183 Pennsylvania Avenue
Apalachin, NY 13732

TEL: (607) 625-3050
FAX: (607) 625-2689

Work Order No: 060630045

RE: Product testing

Dear Joel E. Lanz:

Adirondack Environmental Services, Inc received 3 samples on 6/30/2006 for the analyses presented in the following report.

There were no problems with the analyses and all associated QC met EPA or laboratory specifications, except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels
Laboratory Manager

ELAP#: 10709
AIHA#: 100307

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quanititation limits	R - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	T - Tentitively Identified Compound-Estimated Conc.
	X - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Adirondack Environmental Services, Inc

Date: *13-Jul-06*

CLIENT: Landfill Service Corporation
Work Order: 060630045
Project: Product testing
PO#:

Client Sample ID: Posi-AF Petri#2
Collection Date:
Lab Sample ID: 060630045-002
Matrix: SOLID

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
TCLP ICP METALS SW6010B/1311 (**Prep: SW1311 - 7/5/2006**)						Analyst: **SM**
Aluminum-TCLP	< 1.0	1.0		mg/L	1	7/13/2006 1:18:00 PM
Antimony-TCLP	< 0.60	0.60		mg/L	1	7/13/2006 1:18:00 PM
Arsenic-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Barium-TCLP	1.3	0.10		mg/L	1	7/13/2006 1:18:00 PM
Beryllium-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Boron-TCLP	< 0.50	0.50		mg/L	1	7/13/2006 1:18:00 PM
Cadmium-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Chromium-TCLP	0.16	0.050		mg/L	1	7/13/2006 1:18:00 PM
Cobalt-TCLP	< 0.50	0.50		mg/L	1	7/13/2006 1:18:00 PM
Copper-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Iron-TCLP	< 0.50	0.50		mg/L	1	7/13/2006 1:18:00 PM
Lead-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Magnesium-TCLP	< 0.50	0.50		mg/L	1	7/13/2006 1:18:00 PM
Manganese-TCLP	< 0.20	0.20		mg/L	1	7/13/2006 1:18:00 PM
Molybdenum-TCLP	< 0.10	0.10		mg/L	1	7/13/2006 1:18:00 PM
Nickel-TCLP	< 0.20	0.20		mg/L	1	7/13/2006 1:18:00 PM
Selenium-TCLP	< 0.050	0.050		mg/L	1	7/13/2006 1:18:00 PM
Silver-TCLP	< 0.10	0.10		mg/L	1	7/13/2006 1:18:00 PM
Thallium-TCLP	< 0.10	0.10		mg/L	1	7/13/2006 1:18:00 PM
Titanium-TCLP	< 0.10	0.10		mg/L	1	7/13/2006 1:18:00 PM
Vanadium-TCLP	< 0.20	0.20		mg/L	1	7/13/2006 1:18:00 PM
Zinc-TCLP	< 0.10	0.10		mg/L	1	7/13/2006 1:18:00 PM
Zirconium-TCLP	< 0.50	0.50		mg/L	1	7/13/2006 1:18:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
T - Tentitively Identified Compound-Estimated Conc.
E - Value above quantitation range

FLI
FRIEND LABORATORY INC

32 ITHACA STREET
TELEPHONE (607) 565-3500

WAVERLY, NY 14892 - 1532
FAX (607) 565 - 4083

NY 10252 NJ 73168
PA 68180 EPA NY00033

Certificate of Analysis

Landfill Service Corp.
2183 Pennsylvania Ave
Apalachin, NY 13732
Attn: Nancy Crane

Order Number: 0607-01218
Date Reported: 7/26/2006
Date Received: 7/25/2006
Invoice Number: 32761
Customer Number: L083
Customer PO:
Certification Date: 7/26/2006

Subject:
Flamabilitiy

SMP	Analysis Performed	Result	Units	Detection Limit	Method	Analysis Information
001	**Posi-Shell Advanced Formulation**	**7/11/2006 13:00 Client**				
	Flamability Potential	negative			ASTM D 4982	7/25/06, 14:22, JHR

RECEIVED
JUL 31 2006

Approved By: Richard Hammer, Managing Director

Key: E = estimated value
ND or U = analyte not detected
B = analyte was detected in the method or trip blank
< = less than the indicated value
ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million)
mg/Kg = milligrams per kilogram (equivalent to parts per million)

The information in this report is accurate to the best of our knowledge and ability. In no event shall our liability exceed the cost of these services. Your sample will be discarded after 14 days unless we are advised otherwise.

LSC
ENVIRONMENTAL
PRODUCTS, LLC

MATERIAL SAFETY DATA SHEET

MATERIAL: **OSHA 29CFR 1910.1200**

POSI-SHELL® FINISHED SLURRY **DATE OF PREPARATION:** **APRIL 2006**

SECTION I -- IDENTITY

Distributor's Name and Address:	LSC Environmental Products, LLC 2183 Pennsylvania Avenue Apalachin, NY 13732
Emergency Telephone:	(607) 625-3050
Chemical Name and Synonyms:	Aqueous clay based slurry
Generic Name:	N/A
Trade Name:	Posi-Shell®

SECTION II -- HAZARDOUS INGREDIENTS

N/A

SECTION III -- PHYSICAL DATA

Boiling Point (ºF) (Aqueous Portion):	212 (100º C)
Vapor Pressure (mm. Hg):	N/A
Vapor Density (Air=1):	N/A
Solubility in Water:	N/A
Percent Volatile by Volume (%):	N/A
Specific Gravity (H2O=1):	1.21
Evaporation Rate:	N/A
Appearance and Odor:	Brown viscid liquid slurry with a smell similar to liquid clay and wet cement if Portland cement is used.

SECTION IV -- CHEMICAL DATA

Chemical family:	N/A
Formula:	The major constituents are water (or landfill leachate), sodium montmorillinite clay, cellulosic polymers, soda ash, P.E.T. fibers, iron oxide coloring, and optional Portland cement.
Hazardous mixtures of other liquids, solids, or gases:	N/A

SECTION V -- FIRE AND EXPLOSION HAZARD DATA

Non-explosive, Non-flammable

SECTION VI -- HEALTH HAZARD DATA

Threshold Limit Value: N/A

Effects of Overexposure:

Acute: Can dry skin and cause alkali burns. May cause eye and skin irritation to those with sensitive skin.

Chronic: Non-observed, if properly handled. If cured material is pulverized and dispersed, fugitive dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Emergency and First Aid Procedures: Irrigate eyes with water. Wash exposed skin areas with soap and water.

SECTION VII -- REACTIVITY DATA

Stability:	Product is stable.
Hazardous Polymerization:	Will not occur.
Incompatibility:	None known.
Hazardous Decomposition Products:	None known.

SECTION VIII -- SPILL PROCEDURES

Steps to be Taken if Material is Released or Spilled: Handle as normal non-hazardous solid waste.

SECTION IX -- EXPOSURES OF CONCERN

N/A

SECTION X -- HANDLING AND USE PRECAUTIONS

Waste Disposal Methods: Material can be disposed of as common waste in approved landfill.

SECTION XI -- INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements: Local exhaust may be used.

Respiratory Protection: A dust mask is recommended during mixing procedures.

Eye Protection: Use of safety glasses is recommended during application.

Skin Protection: Avoid skin contact with wet slurry. Wear leather gloves.

Other Protective Clothing or Equipment: Use barrier creams; wear coveralls; shower with soap and water.

SECTION XII -- SPECIAL PRECAUTIONS

No special precautions need to be taken in handling and storing.

SECTION XIII -- DISPOSAL AND SHIPPING INFORMATION

Shipping Name:	N/A (Not Regulated)
Hazardous Substance:	N/A
Hazard Class:	N/A
Caution Labeling:	N/A

N/A = Not Applicable. **N/D = Not Determined

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances.
No warranty or guarantee, expressed or implied, is made by LSC Environmental Products, LLC as to this information or as to the safety, toxicity, or effect of the use of this product.

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

July 7, 2011

Mr. Alek M. Orloff
Alpine Disposal, Inc.
7475 E. 84th Avenue
Commerce City, CO 80022

Re: Approval, Subject to Conditions, of Request to use
Posi-Shell® Spray-On Slurry as Alternative Daily Cover
East Regional Landfill, Bennett, Colorado

Dear Mr. Orloff:

The Hazardous Materials and Waste Management Division ("the Division") of the Colorado Department of Public Health and Environment received on May 12, 2011 a letter from American Environmental Consulting, LLC (AEC) dated May 9, 2011 regarding a request to use Posi-Shell® spray-on slurry as alternative daily cover ("ADC") at East Regional Landfill. The Division has reviewed your request pursuant to Section 3.3.4(B) of the Regulations Pertaining to Solid Waste Sites and Facilities 6 CCR 1007-2 and the facilities approved Engineering Design and Operations Plan. The Division hereby approves, subject to the following conditions, your request to use Posi-Shell® spray-on slurry as ADC at East Regional Landfill:

1. Posi-Shell® must be mixed and applied in accordance with manufacturer's recommendations.

2. Posi-Shell® must be applied from various vantage points to minimize a shadowing effect.

3. At the end of each operating week, or more frequently if conditions warrant, a minimum of six (6) inches of soil cover shall be placed over any areas of exposed Posi-Shell® and the working face.

4. Posi-Shell® shall not be used as ADC when heavy or prolonged rain or snow is forecast.

5. Posi-Shell® shall be applied only to interior slopes of the landfill where stormwater that comes in contact with the Posi-Shell® will be collected within the disposal cell and managed as leachate.

6. Posi-Shell® shall not be applied to haul roads.

7. Posi-Shell® shall not be applied while customers are unloading at the working face.

8. Each day that Posi-Shell® is used as ADC, the following information must be recorded and placed into the operating record: (1) application date and time, (2) name of person applying the Posi-Shell®, (3) weather conditions, (4) number of bags of Posi-Shell® setting agent used in slurry mixture, (5) amount of water used in slurry mixture, (6) quantities of optional materials used in slurry mixture (Posi-Paks, Portland Cement, etc.), (7) type of equipment used to apply the Posi-Shell®, (8) size of application area, and (9) location of application area.

The Division's approval of Posi-Shell® for use as ADC at East Regional Landfill is specific to the Posi-Shell® product. Any proposed use of alternative spray-on products as ADC must be reviewed and approved by the Division prior implementing such use.

The Division is authorized to bill, $125/hr, for its review of technical submittals, pursuant to 6 CCR 1007-2, Part 1, Section 1.7. An invoice for the Division's review of your request will be transmitted to Alpine Disposal, Inc. under separate cover.

Should you have questions regarding this correspondence, please call me at (303) 692-3437.

Sincerely,

Roger Doak, Unit Leader
Solid Waste Permitting Unit
Solid Waste and Materials Management Program
Hazardous Materials and Waste Management Division

cc: Jeremy Groves – East Regional Landfill
Deanne Kelly, Tri-County Health Department
Christopher La Rue, Adams County Planning and Development Department
Mark McMullen – AEC
Craig Tessmer, Adams County Planning and Development Department

ec: Darrell Dearborn – CDPHE, HMWMD

File: SW/ADM/FIV 2.2

Abel Montoya
DIRECTOR

ADAMS COUNTY
COLORADO

Planning & Development Department
4430 South Adams County Parkway
1st Floor, Suite W2000A
Brighton, CO 80601-8216
PHONE 720.523.6800
FAX 720.523.6998
www.adcogov.org

August 11, 2011

Mark A. McMullen
6885 South Marshall St., Suite 3
Littleton, CO 80128

Re: Use of Alternative Daily cover at the Alpine Waste East Regional Landfill
Minor Amendment to Case Number EXG2009-00001

Dear Mr. McMullen:

This Department has completed its review of your request to use an alternative cover material at the Alpine Waste's East Regional Landfill. The alternative cover material is a mineral mortar slurry supplied by Posi-Shell and applied by spraying.

Colorado Department of Public Health and Environment (CDPH&E) has approved the use of the alternative daily cover with conditions by letter dated July 7, 2011. Based upon CDPH&E's approval this Department approves the use of the Posi-Shell alternative daily cover as minor amendment to Case Number EXG2009-00001. All conditions listed in the CDPH&E letter of approval dated July 7, 2011, shall be followed.

Please do not hesitate calling me at 720-523-6841 should you have any questions regarding this approval of a Minor Amendment to allow the use of alternative daily cover at the East Regional Landfill.

Sincerely,

Craig Tessmer
Environmental Analyst

cc: Tri-County Health Department
CDPH&E
County Administrator

BOARD OF COUNTY COMMISSIONERS

W. R. "Skip" Fischer
DISTRICT 1

Alice J. Nichol
DISTRICT 2

Erik Hansen
DISTRICT 3

Appendix S
Post-Closure Inspection Form

EAST REGIONAL LANDFILL
POST-CLOSURE INSPECTION RECORD

INSPECTED BY:_____
DATE OF INSPECTION:_____
APPROXIMATE ACREAGE INSPECTED_____

COVER MAINTENANCE

1) Is Vegetative Cover Adequate Yes_____ No_____
(If No, describe Corrective Actions)

---

2) Any Settlement or Subsidence Greater than 1.6 ft Observed? Yes_____ No_____
(If Yes, describe Corrective Actions)

---

3) Any Erosion or Other Damage Observed? Yes_____ No_____
(If Yes, describe Corrective Actions)

ENVIRONMENTAL MONITORING

1) Groundwater

A) Has Groundwater Monitoring Been Performed? Yes_____ No_____

B) Have Monitoring Results Been Placed in Operating Record? Yes_____ No_____

2) Methane Monitoring

A) Was Methane Detected During Monitoring of Landfill Boundary? Yes_____ No_____

B) Was Methane Detected During Monitoring at Buildings? Yes_____ No_____

C) If Methane Was Detected, Was the Level Above the LEL? Yes_____ No_____
(If Yes, Describe Corrective Actions)

---

3) Leachate Monitoring

A) Was Moisture Detected In Sumps of a Depth Greater than 1-foot from the sump edge? Yes_____ No_____
(If Yes, State Actions Taken)

ACCESS CONTROL

1) Is Site Fencing In Good Condition? Yes_____ No_____
(If No, describe Corrective Actions)

---

2) Are Posted Signs Present and Readable? Yes_____ No_____
(If No, describe Corrective Actions)

3) Are Access Control Structures In Place? Yes_____ No_____
(If No, describe Corrective Actions)

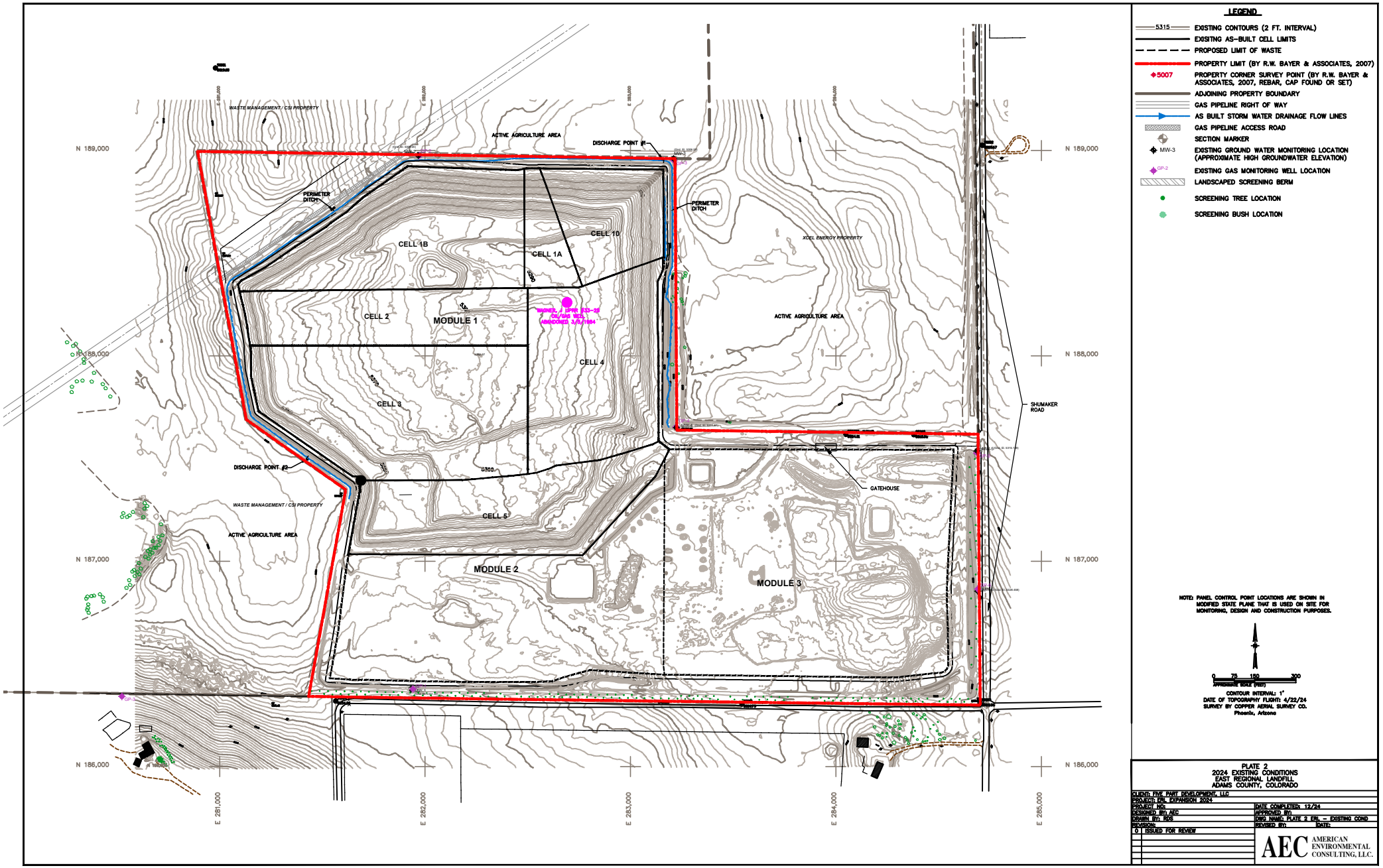
ADDITIONAL NOTES/ACTIONS TAKEN OR REQUIRED:

INSPECTED BY: _____ DATE: _____

SIGNATURE: _____

MANAGEMENT REVIEW: _____ DATE: _____
Name

Attachment 2-7
Oil and Gas Well Abandonment Paperwork



LEGEND

- EXISTING CONTOURS (2 FT. INTERVAL)
- EXISTING AS-BUILT CELL LIMITS
- PROPOSED LIMIT OF WASTE
- PROPERTY LIMIT (BY R.W. BAYER & ASSOCIATES, 2007)
- 5007 — PROPERTY CORNER SURVEY POINT (BY R.W. BAYER & ASSOCIATES, 2007, REBAR, CAP FOUND OR SET)
- ADJOINING PROPERTY BOUNDARY
- GAS PIPELINE RIGHT OF WAY
- AS BUILT STORM WATER DRAINAGE FLOW LINES
- GAS PIPELINE ACCESS ROAD
- SECTION MARKER
- MW-3 — EXISTING GROUND WATER MONITORING LOCATION (APPROXIMATE HIGH GROUNDWATER ELEVATION)
- GP-2 — EXISTING GAS MONITORING WELL LOCATION
- LANDSCAPED SCREENING BERM
- SCREENING TREE LOCATION
- SCREENING BUSH LOCATION

NOTE: PANEL CONTROL POINT LOCATIONS ARE SHOWN IN MODIFIED STATE PLANE THAT IS USED ON SITE FOR MONITORING, DESIGN AND CONSTRUCTION PURPOSES.

0 75 150 300
APPROXIMATE SCALE (FEET)

CONTOUR INTERVAL: 1'
DATE OF TOPOGRAPHY FLIGHT: 4/22/24
SURVEY BY COPPER AERIAL SURVEY CO.
Phoenix, Arizona

PLATE 2
2024 EXISTING CONDITIONS
EAST REGIONAL LANDFILL
ADAMS COUNTY, COLORADO

CLIENT: FIVE PART DEVELOPMENT, LLC	
PROJECT: ERL EXPANSION 2024	
PROJECT NO:	DATE COMPLETED: 12/24
DESIGNED BY: AEC	APPROVED BY:
DRAWN BY: RDS	DWG NAME: PLATE 2 ERL – EXISTING COND
REVISION:	REVISED BY: DATE:
0 ISSUED FOR REVIEW	

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.

ERL OIL AND GAS WELL- PLUGGED AND ABANDONED 1984

Related Insp MIT GIS Doc COA Wellbore Orders Bradenhead

Surface Location API# 05-001-08379	Well Classification: DA	Status: PA - 3/5/1984

Well Name/No:	WAGNER J. (UPRR) #33-25 (Click Well Name for Production Data)	Click Here for Transporter Gatherer Info	
Operator:	ROCKY MOUNTAIN PROD CO - 74890 (Click Operator Name for Company Detail Report)	Federal Or State Lease #:	
Facility Status:	PA	Status Date	3/5/1984
FacilityID:	**202973**	LocationID:	376901
County:	ADAMS #001	Location:	NWSE 25 2S64W 6
Field:	RADAR - #71300	Elevation:	5301 ft.
Basin:	DENVER (DJ) BASIN		
Planned Location:	1980FSL 1980 FEL	Lat/Long: 39.844892 / -104.496358	Lat/Long Source: Calculated From Footages

Expand Section

Wellbore And Formation Details -- select either a wellbore Or formation to expand.

Wellbore #00 Wellbore Classification: DA Status: PA - 3/5/1984 Measured
TD: 7950 ft. Vertical TD: 7950 ft.

Primary Well Designation: None		
All Designations		**Date**
Reported Plugged	Y	03/05/1984
Out Of Service Repurposed	N	
Out Of Service	N	
Inactive Exception	N	
Noticed Inactive	N	
Defined Inactive	N	
Low Producing	N	

BOE/MCFE/GOR Calculations Production for Previous 12 Months	
October 2024 - September 2025	
Total Oil Produced (Barrels)	0
Total Gas Produced (MCF)	0
GOR	
GOR Determination	
Average BOE per Day	0.000
Average MCFE per Day	0.000

Attachment 2-8
Trip Generation Analysis

AEC *AMERICAN ENVIRONMENTAL CONSULTING, LLC*

March 19, 2026

Adams County Community and Economic Development
4430 S. Adams County Parkway
Brighton, CO 80601

Re: Trip Generation Analysis
East Regional Landfill

Dear reviewer,

American Environmental Consulting, LLC (AEC) on behalf of Five Part Development, LLC is submitting this Trip Generation Analysis (TGA) for the East Regional Landfill (ERL). ERL personnel track the actual number of vehicles bringing waste for disposal at the facility and provided the following vehicle counts.

Year	Passenger Vehicles	Commercial Vehicles	Total Vehicles
2024	489	16,060	16,549
2025	396	14,922	15,318

The hours and days of operation for the ERL are Monday-Friday 7AM-4PM. These vehicle counts and operational hours are used to develop the trip generation estimates presented in the table below. The average number of vehicles per day of operations is multiplied by 2, one trip for entering and one trip for exiting the facility, and input as the daily (24 hour) trip generation rates. The rounded up average number of vehicles per hour of operations are input as the AM and PM Peak Hour trip generation rates. Additionally, 3-5 ERL employees are on-site during operational hours. It is assumed that 5 trips are generated by employee vehicles for both the AM Peak Hour and PM Peak Hour.

Land Use		Vehicle Type	Trip Generation Rates					Total Annual Trips Generated				
Type	Area (Acres)		24 Hr	AM Peak Hour		PM Peak Hour		24 Hr	AM Peak Hour		PM Peak Hour	
				Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit
Landfill	164.3	Passenger, Customer	3.4	1	1	1	1	885	260	260	260	260
		Commercial, Customer	119.2	7	7	7	7	30,982	1,820	1,820	1,820	1,820
		Passenger, Employee	10	5	0	0	5	2,600	1,300	0	0	1,300
		TOTALS	132.6	13	8	8	13	34,467	3,380	2,080	2,080	3,380

Commercial haulers are allowed to use State Route 79 to reach 88th Avenue (Irondale Road) then west on 88th Avenue and south on Schumaker Road to the site entrance. They may also use County Road 25 (Imboden Road) from the north or south to 88th Avenue, then east to Schumaker Road to the site entrance. The approved routes are shown on Figure 2 of the

Engineering Design and Operations Plan for the ERL and attached for reference. Based on a traffic study performed for a nearby facility, the three intersections of Imboden Road and 88th Avenue, 88th Avenue and Shumaker Road, and 88th Avenue and State Highway 79 are expected to operate at with less than 15 seconds of average vehicle control delay, levels of service of A or B or better as defined by the Highway Capacity Manual, through 2035.

Respectfully,

AMERICAN ENVIRONMENTAL CONSULTING, LLC

Ryan Smith

Ryan Smith, E.I.
Staff Engineer

COMMERCIAL HAULER
ACCESS ROUTES

AEC

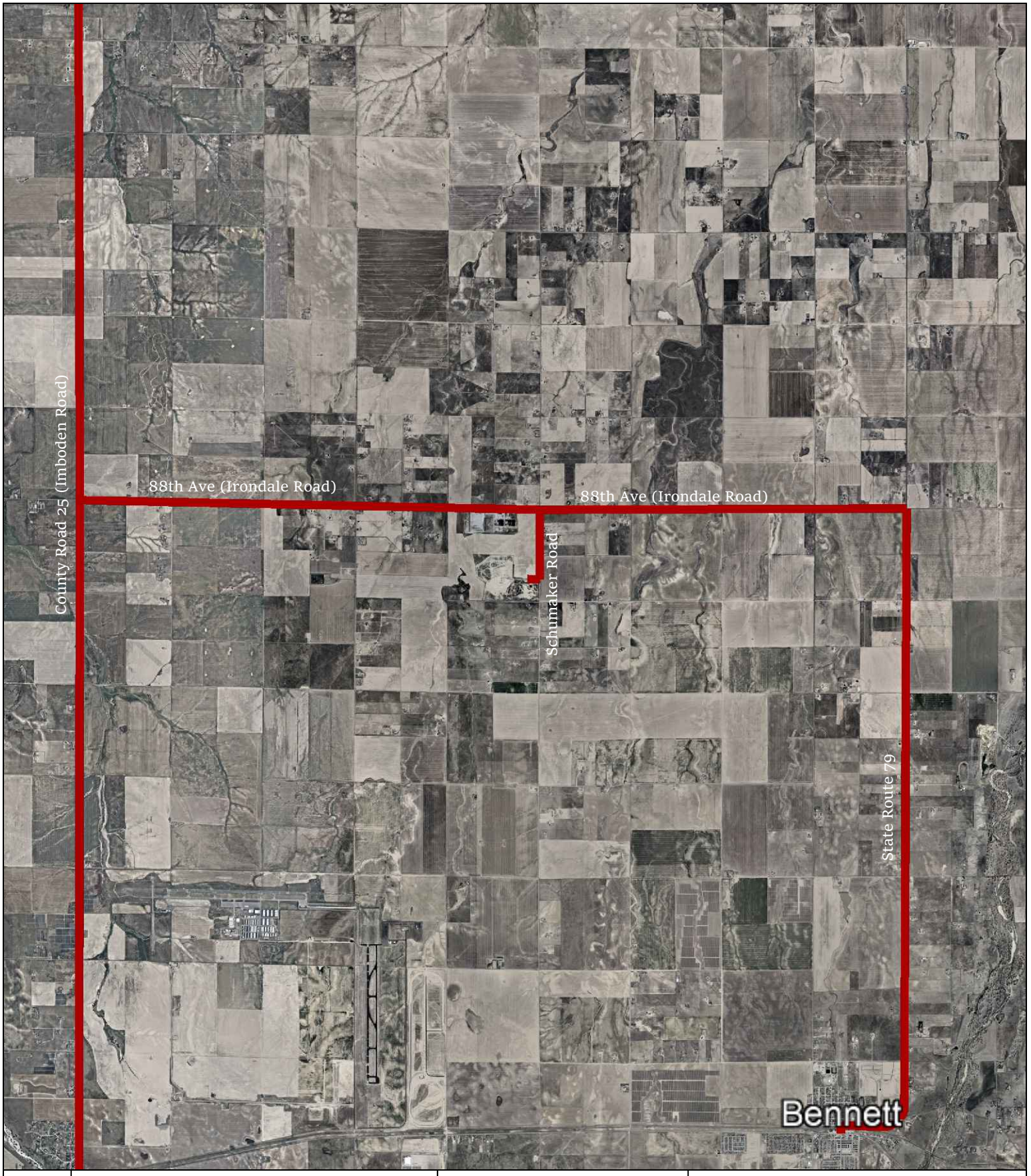


FIGURE 2 OF 2

ERL HAULING ACCESS ROUTES

ERL EXPANSION EDOP

ADAMS COUNTY

DATE: 12/4/2024 DRAWN BY: RDS

0 KM 5 KM

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.

8191 Southpark Lane, Suite 107, Littleton, CO 80120
phone 303-948-7733 fax 303-948-7739

ATTACHMENT 3: SITE PLAN AND PLAT

EAST REGIONAL LANDFILL – PROPERTY PARCEL LEGAL DESCRIPTIONS

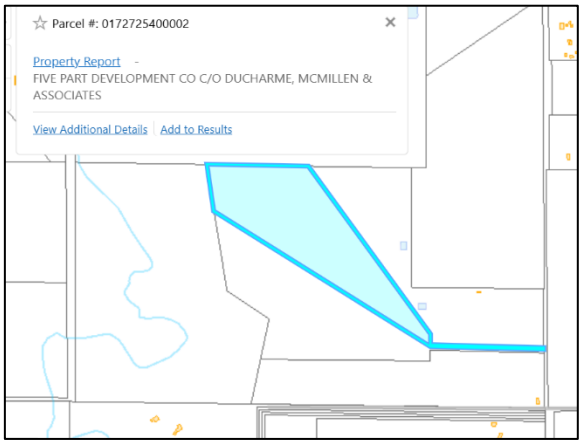
Parcel Number: 0172725400001
Account Type: Agricultural

Ownership Information	Property Address
FIVE PART DEVELOPMENT CO C/O DUCHARME, MCMILLEN & ASSOCIATES PO BOX 80615 INDIANAPOLIS IN 46280-0615	8201 SCHUMAKER RD

▾ Account Summary

Legal Description

SECT,TWN,RNG:25-2-64 DESC: PARCEL D PT OF THE S2 OF SEC 25 DESC AS BEG AT THE SE COR OF SD SEC 25 TH N 88D 37M W 30/01 FT TO THE W ROW LNOF SCHUMAKER MILE RD TH N 690/36 FT TO THE POB TH N 88D 35M W 1297/92 FT TH N 120 FT TH N 35D 10M W 2285/69 FT TH S 88D 28M E 1155/48 FT TH S 1322/44 FT TH S 88D 32M E 170/05 FT TH CONT S 88D 32M E 1297/15 FT TO THE W ROW LN OF SCHUMAKER MILE RD TH S 630/33 FT TO THE POB EXC RD (REC NO 2009000073226) 41/3653A



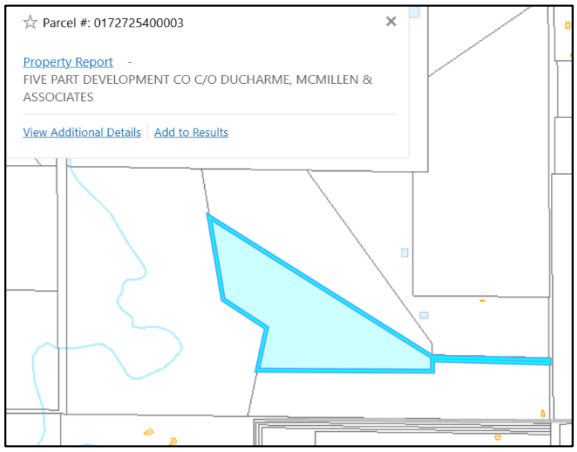
Parcel Number: 0172725400002
Account Type: Agricultural

Ownership Information	Property Address
FIVE PART DEVELOPMENT CO C/O DUCHARME, MCMILLEN & ASSOCIATES 7475 E 84TH AVE COMMERCE CITY CO 80022-5040	

▾ Account Summary

Legal Description

SECT,TWN,RNG:25-2-64 DESC: PARCEL C PT OF THE S2 OF SEC 25 DESC AS BEG AT THE SE COR SD SEC 25 TH N 88D 37M W 30/01 FT TO THE W ROW LN OF SCHUMAKER MILE RD TH N 660/35 FT TO THE POB TH N 88D 35M W 1297/96 FT TH N 57D 43M W 2832/16 FT TH N 09D 37M W 544/80 FT TH S 88D 28M E 1170/21 FT TH S 35D 10M E 2285/69 FT TH S 120 FT TH S 88D 35M E 1297/92 FT TO W ROW LN OF SCHUMAKER MILE RD TH S 30/01 FT TO THE POB EXC RD (REC NO 2009000073226) 42/9831A



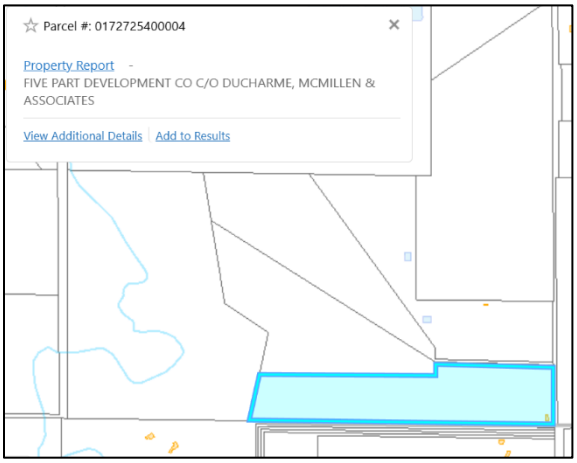
Parcel Number: 0172725400003
Account Type: Agricultural

Ownership Information	Property Address
FIVE PART DEVELOPMENT CO C/O DUCHARME, MCMILLEN & ASSOCIATES PO BOX 80615 INDIANAPOLIS IN 46280-0615	

▾ Account Summary

Legal Description

SECT,TWN,RNG:25-2-64 DESC: PARCEL B PT OF THE S2 OF SEC 25 DESC AS BEG AT THE SE COR SD SEC 25 TH N 88D 37M W 30/01 FT TO THE W ROW LN OF SCHUMAKER MILE RD TH N 630/34 FT TO THE POB TH N 88D 35M W 1298/00 FT TH S 120 FT TH W 1889/61 FT TH N 10D 50M E 571/30FT TH N 54D 08M W 593/30 FT TH N 09D 37M W 783 FT TH S 57D 43M E 2832/16 FT TH S 88D 35M E 1297/96 FT TO W ROW LN OF SCHUMAKER MILE RD TH S 30/01 FT TO THE POB EXC RD (REC NO 2009000073226) 39/9931A



Parcel Number: 0172725400004
Account Type: Agricultural

Ownership Information	Property Address
FIVE PART DEVELOPMENT CO C/O DUCHARME, MCMILLEN & ASSOCIATES 7373 WASHINGTON ST DENVER CO 80229-6301	

▾ Account Summary

Legal Description

SECT,TWN,RNG:25-2-64 DESC: PARCEL A PT OF THE S2 OF SEC 25 DESC AS BEG AT THE SE COR SD SEC 25 TH N 88D 37M W 30/01 FT TO W ROW LN OF SCHUMAKER MILE RD BEING THE POB TH CONT N 88D 37M W 2627/55 FT TH N 88D 29M W 644/01 FT TH N 10D 50M E 452/12 FT TH E 1889/61 FT TH N 120 FT TH S 88D 35M E 1298/00 FT TO THE W ROW LN OF SCHUMAKER MILE RD TH S 630/34 FT TO THE POB EXC RD (REC NO 2009000073226) 39/8553A

ENGINEERING DESIGN AND OPERATIONS PLAN

EAST REGIONAL LANDFILL

A PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO

AREA = 164.187 ACRES, MORE OR LESS.

LEGAL DESCRIPTION (PER TITLE COMMITMENT)

PARCEL A: (AS TAKEN FROM QUITCLAIM DEED RECORDED FEBRUARY 28, 2002 AT RECEPTION NO. C0933029)

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25, THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD, BEING THE POINT OF BEGINNING;

THENCE CONTINUING N88°37'05"W ALONG SAID SOUTH LINE, A DISTANCE OF 2627.55 FEET TO THE SOUTHEAST CORNER OF THE SW1/4 OF SAID SECTION 25;

THENCE N88°29'52"W ALONG THE SOUTH LINE OF SAID SW1/4, A DISTANCE OF 644.01 FEET;

THENCE N10°50'39"E, A DISTANCE OF 452.12 FEET;

THENCE N89°27'01"E, A DISTANCE OF 1889.61 FEET TO THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE N00°16'08"E ALONG SAID WEST LINE, A DISTANCE OF 120.00 FEET;

THENCE S88°35'00"E, A DISTANCE OF 1298.00 FEET TO THE WEST RIGHT-OF-WAY LINE OF SAID SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 630.34 FEET TO THE POINT OF BEGINNING.

BASIS FOR BEARINGS:
THE EAST LINE OF THE SE1/4 OF SECTION 25, T2S, R64W OF THE 6TH P.M. IS ASSUMED TO BEAR S00°11'50"W.

PARCEL B: (AS TAKEN FROM QUITCLAIM DEED RECORDED FEBRUARY 28, 2002 AT RECEPTION NO. C0933030)

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25, THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD; THENCE N00°11'50"E ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 630.34 FEET TO THE POINT OF BEGINNING;

THENCE N88°35'00"W, A DISTANCE OF 1298.00 FEET TO THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE S00°16'08"W ALONG SAID WEST LINE, A DISTANCE OF 120.00 FEET;

THENCE S89°27'01"W, A DISTANCE OF 1889.61 FEET;

THENCE N10°50'39"E, A DISTANCE OF 571.30 FEET;

THENCE N54°08'55"W, A DISTANCE OF 593.30 FEET;

THENCE N09°37'19"W, A DISTANCE OF 783.00 FEET;

THENCE S57°43'21"E, A DISTANCE OF 2832.16 FEET TO THE WEST LINE OF SAID SE1/4 OF THE SE1/4 OF SECTION 25;

THENCE S88°35'00"E, A DISTANCE OF 1297.96 FEET TO THE WEST RIGHT-OF-WAY LINE OF SAID SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 30.01 FEET TO THE POINT OF BEGINNING.

SUBJECT TO AND RESTRICTED BY JOINT USE OF THE BELOW COMMON ACCESS EASEMENT WITH PARCEL C:

COMMON ACCESS EASEMENT

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25; THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD; THENCE N00°11'50"E ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 630.34 FEET TO THE POINT OF BEGINNING;

THENCE N88°35'00"W, A DISTANCE OF 1358.00 FEET, BEING 60.00 FEET WEST OF THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE N00°16'08"E, PARALLEL WITH SAID LINE, A DISTANCE OF 60.02 FEET;

THENCE S88°35'00"E, A DISTANCE OF 1357.92 FEET TO THE WEST RIGHT-OF-WAY LINE OF SAID SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 60.02 FEET TO THE POINT OF BEGINNING.

BASIS FOR BEARINGS:

THE EAST LINE OF THE SE1/4 OF SECTION 25, T2S, R64W OF THE 6TH P.M., IS ASSUMED TO BEAR S00°11'50"W.

PARCEL C (AS TAKEN FROM QUITCLAIM DEED RECORDED FEBRUARY 28, 2002 AT RECEPTION NO. C0933031)

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25, THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD; THENCE N00°11'50"E ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 660.35 FEET TO THE POINT OF BEGINNING;

THENCE N88°35'00"W, A DISTANCE OF 1297.96 FEET TO THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE N57°43'21"W, A DISTANCE OF 2832.16 FEET;

THENCE N09°37'19"W, A DISTANCE OF 544.80 FEET TO THE NORTH LINE OF THE SW1/4 OF SAID SECTION 25;

THENCE S88°28'44"E ALONG SAID NORTH LINE, A DISTANCE OF 1170.21 FEET TO THE NORTHWEST CORNER OF THE SE1/4 OF SAID SECTION 25;

THENCE S35°10'02"E, A DISTANCE OF 2285.69 FEET TO THE WEST LINE OF SAID SE1/4 OF THE SE1/4 OF SECTION 25;

THENCE S00°16'08"W ALONG SAID WEST LINE, A DISTANCE OF 120.00 FEET;

THENCE S88°35'00"E, A DISTANCE OF 1297.92 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 30.01 FEET TO THE POINT OF BEGINNING;

SUBJECT TO AND RESTRICTED BY JOINT USE OF THE BELOW COMMON ACCESS EASEMENT WITH PARCEL B:

COMMON ACCESS EASEMENT

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25; THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD; THENCE N00°11'50"E ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 630.34 FEET TO THE POINT OF BEGINNING;

THENCE N88°35'00"W, A DISTANCE OF 1358.00 FEET, BEING 60.00 FEET WEST OF THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE N00°16'08"E, PARALLEL WITH SAID LINE, A DISTANCE OF 60.02 FEET;

THENCE S88°35'00"E, A DISTANCE OF 1357.92 FEET TO THE WEST RIGHT-OF-WAY LINE OF SAID SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 60.02 FEET TO THE POINT OF BEGINNING.

BASIS FOR BEARINGS:

THE EAST LINE OF THE SE1/4 OF SECTION 25, T2S, R64W OF THE 6TH P.M., IS ASSUMED TO BEAR S00°11'50"W.

PARCEL D (AS TAKEN FROM QUITCLAIM DEED RECORDED FEBRUARY 28, 2002 AT RECEPTION NO. C0933032)

THAT PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25; THENCE N88°37'05"W ALONG THE SOUTH LINE OF THE SE1/4 OF SAID SECTION 25, A DISTANCE OF 30.01 FEET TO THE WEST RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD; THENCE N00°11'50"E ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 690.36 FEET TO THE POINT OF BEGINNING;

THENCE N88°35'00"W, A DISTANCE OF 1297.92 FEET TO THE WEST LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25;

THENCE N00°16'08"E ALONG SAID WEST LINE, A DISTANCE OF 120.00 FEET;

THENCE N35°10'02"W, A DISTANCE OF 2285.69 FEET TO THE NORTHWEST CORNER OF THE SE1/4 OF SAID SECTION 25;

THENCE S88°28'44"E ALONG THE NORTH LINE OF THE NW1/4 OF SAID SE1/4, A DISTANCE OF 1155.48 FEET, BEING 170.06 FEET WEST OF, AS MEASURED ALONG SAID NORTH LINE, FROM THE NORTHEAST CORNER OF SAID NW1/4 OF THE SE1/4;

THENCE S00°16'07"W PARALLEL WITH THE EAST LINE OF SAID NW1/4 OF THE SE1/4, A DISTANCE OF 1322.44 FEET TO THE SOUTH LINE OF SAID NW1/4 OF THE SE1/4;

THENCE S88°32'55"E ALONG SAID SOUTH LINE, A DISTANCE OF 170.05 FEET TO THE NORTHWEST CORNER OF SAID SE1/4 OF THE SE1/4 OF SECTION 25;

THENCE CONTINUING S88°32'55"E ALONG THE NORTH LINE OF SAID SE1/4 OF THE SE1/4, A DISTANCE OF 1297.15 FEET TO THE WEST RIGHT-OF-WAY LINE OF SAID SCHUMAKER MILE ROAD;

THENCE S00°11'50"W ALONG SAID WEST RIGHT-OF-WAY LINE, A DISTANCE OF 630.33 FEET TO THE POINT OF BEGINNING.

BASIS FOR BEARINGS:

THE EAST LINE OF THE SE1/4 OF SECTION 25, T2S, R64W OF THE 6TH P.M., IS ASSUMED TO BEAR S00°11'50"W.

LESS AND EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF ADAMS, STATE OF COLORADO IN WARRANTY DEED RECORDED OCTOBER 2, 2009 AT RECEPTION NO. 73226 OF ADAMS COUNTY RECORDS.

LEGAL DESCRIPTION (AS SURVEYED)

A TRACT OF LAND LOCATED IN THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 25, FROM WHICH THE S1/16 CORNER OF SAID SECTION 25 & SECTION 30 BEARS N00°28'45"W, 1320.50 FEET (BASIS OF BEARING), THENCE N89°17'19"W, 40.01 FEET ALONG THE SOUTH LINE OF THE SE1/4 OF THE SE1/4 OF SAID SECTION 25 TO THE WESTERLY RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD, AND THE POINT OF BEGINNING;

THENCE CONTINUING N89°17'19"W, 1288.96 FEET ALONG SAID SOUTH LINE OF THE SE1/4 OF THE SE1/4 OF SECTION 25 TO THE E1/16 CORNER OF SAID SECTION 25 & SECTION 36;

THENCE N89°17'54"W, 1328.81 FEET AND THE SOUTH LINE OF THE SW/14 OF SAID SE1/4 OF SECTION 25 TO THE S1/4 CORNER OF SAID SECTION 25;

THENCE N89°08'22"W, 644.01 FEET ALONG THE SOUTH LINE OF THE SE1/4 OF THE SW1/4 OF SAID SECTION 25;

THENCE N10°10'36"E, 1023.29 FEET;

THENCE N54°49'09"W, 593.30 FEET;

THENCE N10°17'45"W, 1327.56 FEET TO THE NORTH LINE OF THE NE1/4 OF SAID SW1/4 OF SECTION 25;

THENCE S89°08'41"E, 1169.64 FEET ALONG SAID NORTH LINE TO THE C1/4 CORNER OF SAID SECTION 25;

THENCE S89°09'19"E, 1155.78 FEET ALONG THE NORTH LINE OF THE NW1/4 OF SAID SE1/4 OF SECTION 25 TO A POINT THAT IS 170.06 FEET WESTERLY OF THE C-E1/16 CORNER OF SAID SECTION 25, AS MEASURED ALONG SAID NORTH LINE;

THENCE S00°24'56"E, 1322.32 FEET ALONG A LINE THAT IS 170-03 FEET WESTERLY OF AND PARALLEL TO THE EAST LINE OF SAID NW1/4 OF THE SE1/4 OF SECTION 25 TO THE SOUTH LINE OF SAID NW1/4 OF THE SE1/4 OF SECTION 25;

THENCE S89°13'38"E, 170.06 FEET ALONG SAID SOUTH LINE TO THE SE1/16 CORNER OF SAID SECTION 25;

THENCE S89°13'03"E, 1287.30 FEET ALONG THE NORTH LINE OF SAID SE1/4 OF THE SE1/4 OF SECTION 25 TO SAID WESTERLY RIGHT-OF-WAY LINE OF SCHUMAKER MILE ROAD;

THENCE S00°28'30"E, 1320.55 FEET ALONG SAID WESTERLY RIGHT-OF-WAY LINE TO THE POINT OF BEGINNING.

AREA = 7,151,990 SQUARE FEET (164.187 ACRES), MORE OR LESS.

CERTIFICATION NOTE

CERTIFICATION DEFINED: THE USE OF THE WORDS "CERTIFY", "CERTIFICATE", AND/OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL LAND SURVEYOR CONSTITUTES AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS AND FINDINGS WHICH ARE THE SUBJECT OF THE CERTIFICATION; WAS PERFORMED BY OR UNDER THE REGISTERED PROFESSIONAL LAND SURVEYOR IN RESPONSIBLE CHARGE; IS BASED ON THE PROFESSIONAL LAND SURVEYOR'S KNOWLEDGE, INFORMATION, AND BELIEF; IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE; AND DOES NOT CONSTITUTE A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED. (RULE 1.6 B.2 OF THE BYLAWS AND RULES OF THE STATE BOARD OF LICENSURE FOR ARCHITECTS, PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS)

NOTICE

ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVERED SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

SURVEYOR'S CERTIFICATE

I, PETER D. STEGER, A DULY REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS MAP REFLECTS THE RESULTS OF A SURVEY MADE UNDER MY RESPONSIBLE CHARGE IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF. THIS CERTIFICATION IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

COLORADO REGISTERED PETER D. STEGER 25379 PROFESSIONAL LAND SURVEYOR

PETER D. STEGER
COLORADO REGISTERED PROFESSIONAL
LAND SURVEYOR NO. 25379

DATE: MARCH 26, 2026

CIVILARTS
ENGINEERING
PLANNING
SURVEYING
1500 Kansas Avenue, Suite 2-E
Longmont, CO 80501
P 303.682.1131
F 303.682.1149

PLOTTED: THU 03/26/26 02:23PM BY: EILEEN HEINS
MODIFIED: 07/09/12 BY: EHEINS
DRAWING: Z:\870-6_C3D 870-6\DWG\8706-P\8706-P.DWG

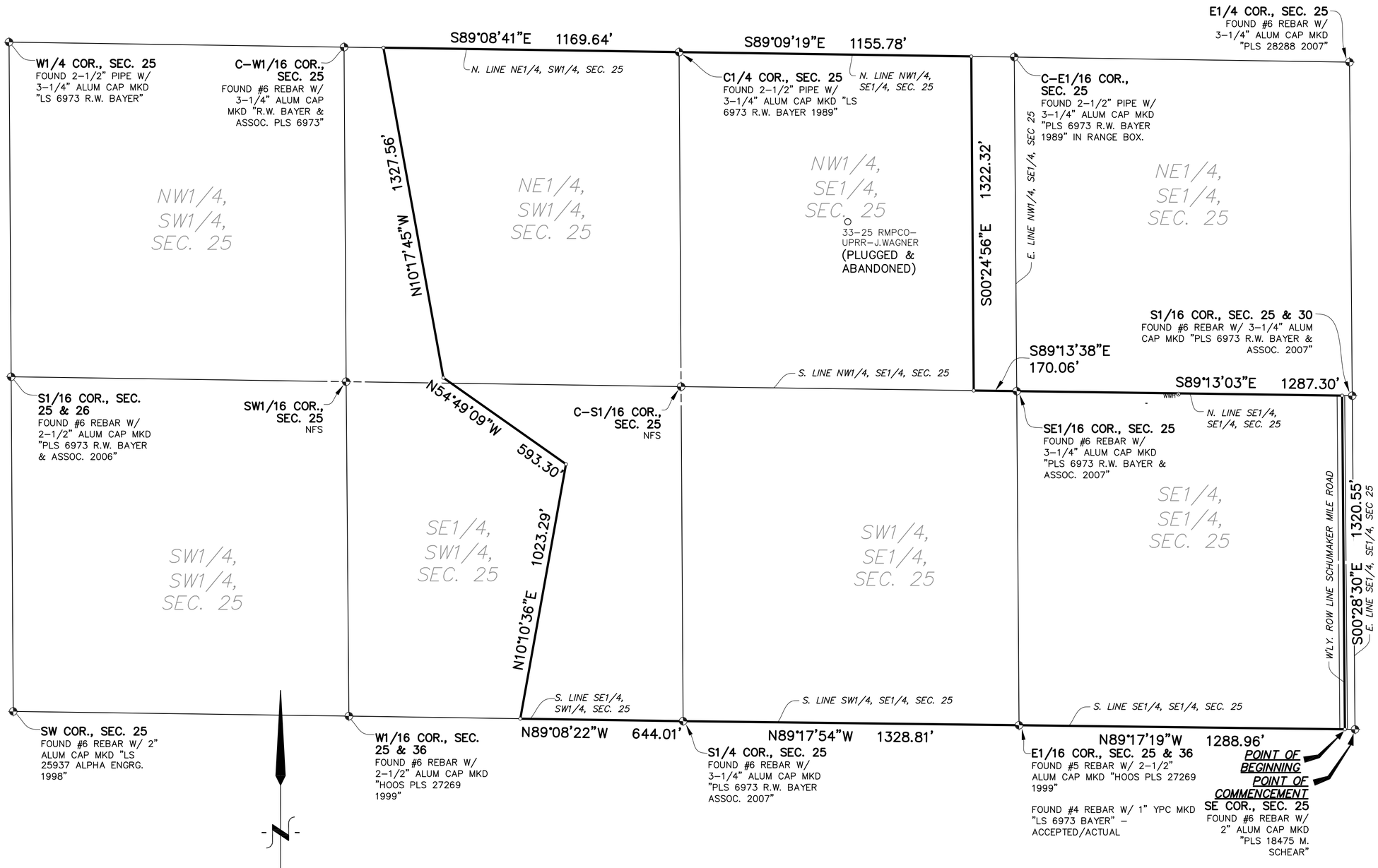
ENGINEERING DESIGN AND OPERATIONS PLAN

EAST REGIONAL LANDFILL

A PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO

AREA = 164.187 ACRES, MORE OR LESS.

LAND SURVEY PLAT DETAIL



LEGEND

ALUM = ALUMINUM
MKD = MARKED
YPC = YELLOW PLASTIC CAP

SCALE: 1"=300'

300 0 300 600

NOTES

1. BEARINGS SHOWN ON THIS MAP ARE BASED ON THE ASSUMPTION THAT THE EAST LINE OF THE SE1/4 OF THE SE1/4 OF SECTION 25, T2S, R64W OF THE 6TH P.M., BEARS S00°28'30"E AS MONUMENTED AND SHOWN HEREON.
2. MONUMENTS FOUND AS NOTED. NO MONUMENT FOUND OR SET WHERE NOTED "NFS".
3. RECORDED EASEMENTS AND RIGHTS-OF-WAY, IF ANY, ARE SHOWN ON THIS PLAT AS DISCLOSED IN FIDELITY NATIONAL TITLE INSURANCE COMPANY COMMITMENT NO. 170-F00202-26, EFFECTIVE DATE FEBRUARY 17, 2026. AT THE REQUEST OF THE CLIENT NO ADDITIONAL RESEARCH WAS COMPLETED.

COLORADO REGISTERED PETER D. STEGER 25379 PROFESSIONAL LAND SURVEYOR
MARCH 26, 2026

CIVILARTS
ENGINEERING
PLANNING
SURVEYING
1500 Kansas Avenue, Suite 2-E
Longmont, CO 80501
P 303.682.1131
F 303.682.1149

PLOTTED: THU 03/26/26 02:22PM BY: EILEEN HEINS
MODIFIED: 07/09/12 BY: EHEINS
DRAWING: Z:\870-6_C3D 870-6\DWG\8706-P\8706-P.DWG

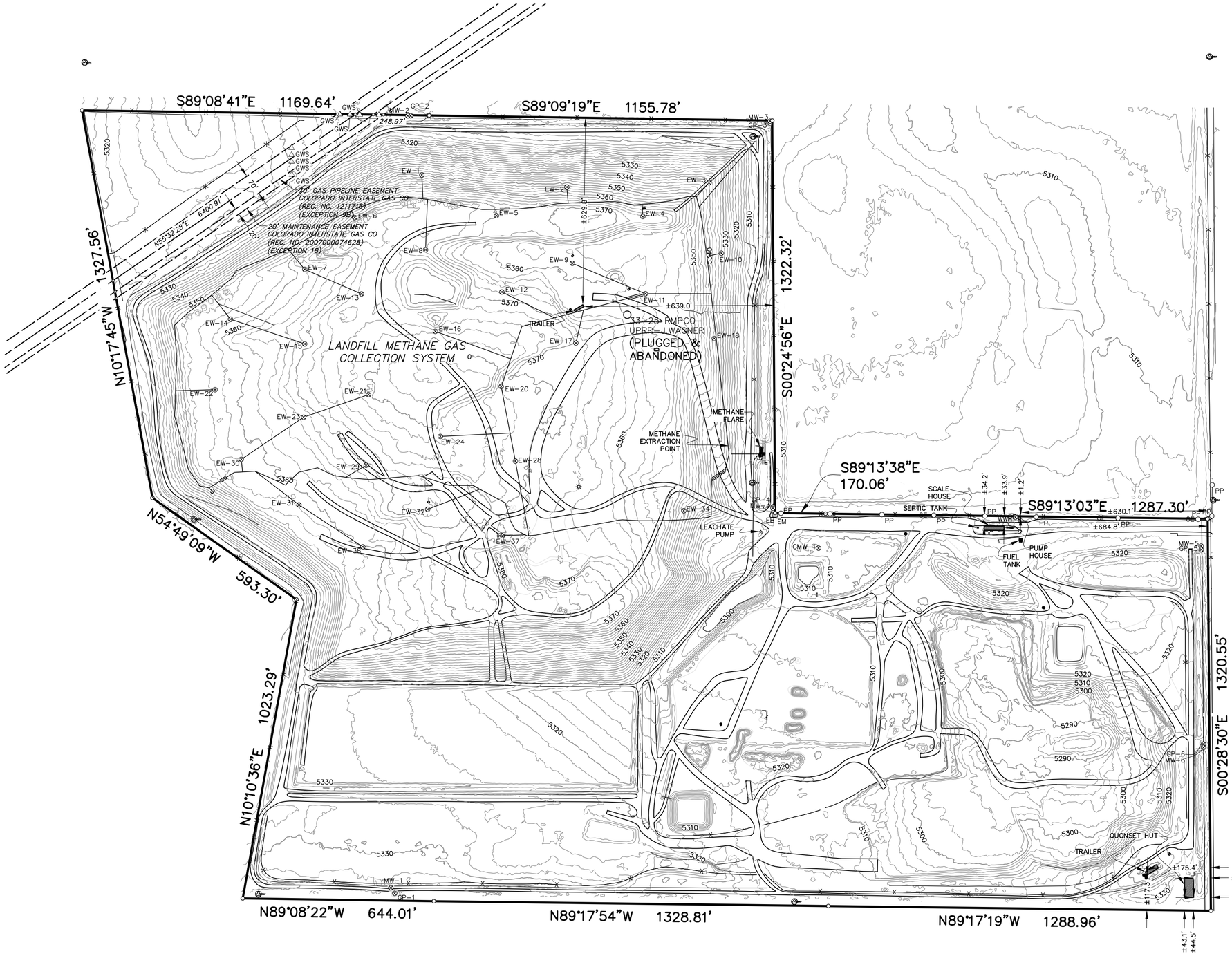
ENGINEERING DESIGN AND OPERATIONS PLAN

EAST REGIONAL LANDFILL

A PART OF THE S1/2 OF SECTION 25, T2S, R64W OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO

AREA = 164.187 ACRES, MORE OR LESS.

IMPROVEMENT AND TOPOGRAPHY DETAIL



SCALE: 1"=250'

250 0 250 500

LEGEND

EB	=	ELECTRIC BOX
EM	=	ELECTRIC METER
EW#	=	METHANE GATHERING SYSTEM EXTRACTION WELL
GP	=	EXISTING GAS PROBE
MW	=	EXISTING GROUNDWATER MONITORING WELL
PP	=	POWER POLE
WWH	=	WATER WELL HEAD
–X–	=	FENCE
–OE–	=	OVERHEAD ELECTRIC LINE

COLORADO REGISTERED PETER D. STEGER 25379 PROFESSIONAL LAND SURVEYOR
MARCH 26, 2026

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ATTACHMENT 4: PROOF OF OWNERSHIP

DOH FORM NO 230 (7 1 68)
FORMERLY ROW FORM NO 35

Recorded at _____ o'clock ___.M., _____, 19___. BOOK 2036 PG 20

Reception No. 6884 Recorder

KNOW ALL MEN BY THESE PRESENTS:

That I, or We,

FIVE PART DEVELOPMENT CO., a Partnership

the Grantor or Grantors,

of the _____ County of Adams, and State of Colorado,
for and in consideration of the sum of TEN DOLLARS, and other good and valuable considerations to the said Grantor or Grantors in hand paid, the receipt whereof is hereby confessed and acknowledged, have granted, bargained, sold and conveyed, and by these presents do hereby *GRANT, BARGAIN, SELL, CONVEY AND CONFIRM* unto

STATE DEPARTMENT OF HIGHWAYS
Division of Highways, State of Colorado

the Grantee, its successors and assigns forever, the following right and interest in real property, situated in the County of Adams and State of Colorado, owned by said Grantor or Grantors, to-wit:

EACH AND EVERY RIGHT OR RIGHTS OF ACCESS OF THE GRANTOR OR GRANTORS to and from any part of the right-of-way for Colorado State Highway No. 76, a Freeway established according to the laws of the State of Colorado, and from and to any part of the said real property of the Grantor or Grantors abutting upon said Highway, along or across the access line or lines described as follows:

QI 76-1(36) PARCEL NO. 45 NORTHERLY LINE

Beginning at a point 20.0 feet East of the west line of the NW 1/4 of Section 10, T. 3 S., R. 68 W., 6th P.M., in Adams County, Colorado, from which point the NW corner of Sec. 10, bears N. 2° 28' 45" W., a distance of 461.85 feet;

1. Thence N. 65° 32' 30" E. a distance of 566.1 feet, more or less.

AND

SOUTHERLY LINE

Beginning at a point 20.0 feet East of the west line of the NW 1/4 of Section 10, T. 3 S., R. 68 W., 6th P.M., in Adams County, Colorado, from which point the NW corner of Sec. 10 bears N. 1° 22' 30" W., a distance of 833.47 feet;

1. Thence N. 67° 01' 45" E. a distance of 556.5 feet;
2. Thence N. 61° 37' 15" E. a distance of 539.3 feet;
3. Thence N. 58° 19' E. a distance of 202.2 feet;
4. Thence N. 57° 59' E. a distance of 325.0 feet, more or less.

B006884

WILLIAM SOKOL
COUNTY RECORDER
ADAMS COUNTY, COLO.
Dec 19 8 00 AM '75

AFTER RECORDING PLEASE MAIL TO:

The Department of Highways of the State of Colorado
Highway Office Building
4201 East Arkansas Avenue
Denver, Colorado 80222

ATTENTION: Right of Way Section

DOH FORM NO 230 (7-1-68)
FORMERLY ROW FORM NO 35

BOOK 2036 PG 21

together with all the appurtenances thereunto belonging.

Excepting, however, from this grant, the right of the Grantor or Grantors to have the following point or points of access at the locations set forth hereinafter, to be limited, however, in use by the Grantor or Grantors, to the width and purpose hereinafter designated

WIDTH	USE OR PURPOSE	CENTER OF ACCESS OPPOSITE—	
		SIDE	STATION
	NO POINTS OF ACCESS		

according to centerline stationing of the Grantee's Project No. QI 76-1(36)

Further excepting from this grant, the right of the Grantor or Grantors to have access across the aforesaid line or lines at those points where passageways under the roadway, and public openings in said line or lines, may be provided for that purpose by the Grantee.

This deed, and the rights and interests herein conveyed, shall be and constitute a perpetual burden upon the real property of Grantor or Grantors, adjoining the hereinbefore described access line or lines, across which access will be denied, as herein set forth, and shall be binding upon the Grantor or Grantors, and all the heirs, successors and assigns of the Grantor or Grantors, with respect to said adjoining real property.

And the Grantor or Grantors, for themselves and for their heirs, successors, executors, administrators and assigns, do covenant, grant, bargain and agree to and with the Grantee, its successors and assigns, the above bargained access rights and interests, in the quiet and peaceable possession of the Grantee, and its successors and assigns, against all and every person or persons lawfully claiming, or to claim, the whole or any part thereof, by, through or under the Grantor or Grantors, to WARRANT AND FOREVER DEFEND.

Signed, sealed and delivered this 11th day of December, A.D., 19 75.

x Klaus Pavel
x J W Thorn
x Lyle Tyler Jeffery

FIVE PART DEVELOPMENT CO., a Partnership

x By [signature]

x [signature]
Director & Its Vice President & Treasurer

STATE OF Colorado)
) ss.
County of Adams)

The foregoing instrument was acknowledged before me this 11th day of December, A.D., 19 75
by for FIVE PART DEVELOPMENT CO., a Partnership

Witness my hand and official seal.
My Commission expires Oct. 8, 1979

[signature]
Notary Public

STATE OF _____)
) ss.
_____ County of _____)

The foregoing instrument was acknowledged before me this _____ day of _____, A.D., 19____
by

Witness my hand and official seal
My Commission expires _____

_____
Notary Public

Reception No. 6981

Project QI 76-1(36)

Location I 76 Extension

Parcel No. 45

DEED OF ACCESS RIGHTS

FROM

FIVE PART DEVELOPMENT CO.,

a Partnership

TO

STATE DEPARTMENT OF HIGHWAYS
Division of Highways, State of Colorado

STATE OF COLORADO)
) ss.
County of _____)

I, the County Clerk and Recorder of the County aforesaid, do hereby certify that the within document was filed for record in my office on the ____ day of _____, A.D., 19____ at the hour of _____ o'clock ____ M., and was thereafter by me duly recorded in Book _____, Page _____, of the records of my office.

_____
County Clerk and Recorder

_____
Deputy

Fee _____

AFTER RECORDING, PLEASE MAIL TO
STATE DEPARTMENT OF HIGHWAYS
Division of Highways, State of Colorado
4201 E. Arkansas Ave.
Denver, Colorado, 80222
Attention- STAFF RIGHT OF WAY ENGINEER

ATTACHMENT 5: PROOF OF WATER AND SEWER

Permit Number 20059887

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Non Refundable Permit to Install
An Individual Sewage Disposal System
Tri-County Health Department
7000 East Belleview Avenue #301
Greenwood Village, CO 80111

Owner: Alpine Waste & Recycling
Property Location: 8201 Schumaker RD
BENNETT, CO 80102
Legal Description
County:
Lot/Block:
Old Reference: N/A

System Requirements: 1000 Gallon Tank

Design Requirements:	Trench System:	Bed System:
Minimum Disposal Area (in s.f.)	Engineered System	
Number of Chambers (see Chart on Page 2)		
Max Depth of Disposal Area (Bed or Trench) 0 Inches		
Min Depth of Disposal Area (Bed or Trench) 0 Inches		

Special Conditions

Vault system - install per TCHD I-02 regulations section 10.2

ELECTRICAL WORK REQUIRED

It shall be the responsibility of the System Contractor to ensure that all electrical components are permitted, inspected and approved by the electrical inspector from the agency having jurisdiction (AHJ). Tri-County Health Department may inspect the electrical line from the building or residence to the splice box at the time of their final inspection.

If Arapahoe or Douglas County will issue a General Building Permit for other work, the electrical work for the ISDS may be done under the General Permit. For Adams County, if the Colorado State Electrical Board issues an electrical permit for the structure, the electrical work for the ISDS may be done under that permit.

If no General Permit or electrical permit for the structure will be issued, it shall be the responsibility of a registered electrical contractor or qualified homeowner to obtain an electrical permit from the AHJ.

A Permit to **Install** shall expire One Year from the date of issuance unless extended to a fixed date upon request by the Applicant and approved by the Tri-County Health Department.

This Permit Expires: 10/15/2010

Issued By: Matt Brandt EHS

Reviewed by:

Tri-County Health Department on: 09/16/10 (Date)

Owner: Alpine Waste & Recycling
Property Location: 8201 Schumaker RD
BENNETT, CO 80102

County:

Old Reference: N/A

OWNER MUST MAKE SURE THAT HIS/HER ENTIRE INDIVIDUAL SEWAGE DISPOSAL SYSTEM REMAINS OPEN FOR INSPECTION UNTIL IT HAS RECEIVED APPROVAL BY TRI-COUNTY HEALTH DEPARTMENT. TRI-COUNTY HEALTH DEPARTMENT CANNOT ASSUME RESPONSIBILITY IN CASE OF FAILURE OR INADEQUACY OF A INDIVIDUAL SEWAGE DISPOSAL SYSTEM BEYOND CONSULTING IN GOOD FAITH WITH THE PROPERTY OWNER.

Fee Paid: 1023.0000 **Check Number:** **04/13/2010**
Received By: Lori Salinas 04/13/2010

☐ Owner ☐ Building Department ☐ Installer

Permit Number 20059887

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Non Refundable Permit to Install
An Individual Sewage Disposal System
Tri-County Health Department
7000 East Belleview Avenue #301
Greenwood Village, CO 80111

Owner: Alpine Waste & Recycling
Property Location: 8201 Schumaker RD
BENNETT, CO 80102

Legal Description
County:

Lot/Block:
Old Reference: N/A

Design Requirements - Chambers:	Trench System:	Bed System:
Number of Chambers Quick 4	0	0
Number of Chambers Quick 4 EQ 36	0	0
Number of Chambers Quick 4 HighCap	0	0
Number of Chambers Standard Biodiffuser	0	0
Number of Chambers Bio 3	0	0
Number of Chambers ARC 24	0	0
Number of Chambers ARC 36	0	0
Number of Chambers ARC 36 HC	0	0

Tri-County Health Department

PERMIT # 2005987

APPLICATION FEE IS NON-REFUNDABLE

APPLICATION TO

INSTALL (255)	REPAIR (256)	EXPAND (256)
$1023	$1023	$1023

AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Vault

ADDRESS OF PROPERTY SERVED BY PROPOSED SYSTEM:

8201 Schumaker Rd — Street Address
Bennett — City
80102 — Zip Code
Adams — County

Parcel ____ 1/4 Sec____ 1/4 Sec____ Section____ Township____ Range _____ Lot____ Block _____
Legal Description (if no street address)

_____ Subdivision Name
_____ Filing (if applicable)

If GPS Information Available/Obtained: Longitude ___ ___ ___ Latitude ___ ___ ___ Elevation_____

Property Owner:
Name Alpine Waste And Recycling
Address 7475 E. 84th Ave
City, State Commerce City CO
Zip 80022 Phone 303-744-9881
E-mail:

Applicant:
Name Troy Guernsey
Address 4541 Penrith Rd
City, State Bennett CO
Zip 80102 Phone 303-644-3299
E-mail: Guernsey Grading @ Netscin.Net

Systems Contractor: Troy Guernsey — TCHD Use Only: License # _____
Soils/Percolation Test Engineer: N/A — Job # _____
TCHD Use Only: FSE # _____
Design Engineer (if applicable) — Job # _____
TCHD Use Only: FSE # _____
Is this to be an Engineered System? θYes ✗No

Is lot marked? ✗Yes θNo — Are percolation holes staked? θYes θNo N/A
Lot Size: 100 + Acres

PROPOSED FACILITY:
θ Single Family (SF) θ Multi-Family (MF) ✓ Commercial (CM) ✓ Other (OT) SCA/c house

WATER SUPPLY:
On Site: ✓Yes θNo Community Water θYes θNo If Yes, Supplier_____

Continued on back

PERMIT #_____

SINGLE FAMILY RESIDENTIAL GENERAL INFORMATION:

Number of Bedrooms 0 Basement: Full (F) Walkout (W) Partial (P) None (N)

Basement Plumbed: Yes (No)

Are Additional Bedrooms Planned? Yes (No) Are the premises within 400 ft. of a sewer line? Yes No

Is property within boundaries of a sewer district? Yes (No)

If Yes, name of sewer district_____

COMMERCIAL GENERAL INFORMATION:

Type of Business: Public Waste Facility, scale house

TCHD Use Only: SIC Code _____

Number of Employees 5 VAULT for scale house Bathroom

Design Flow > 3,000 Gallons/Day Yes ~~No~~

If Yes, has Site Approval been given from CDPHE? Yes No

(Note: Permit cannot be issued until site approval is given from CDPHE)

Floor Drains Yes ~~No~~

EPA Shallow Injection Well Inventory Request Form Completed Yes ~~No~~

Date Paid: 4-13-10 Received By: JS

Payment Type: Cash

Check (# 11647)

Charge

Other _____

Amount Paid $ 1023.00

Applicant's Name Troy Guernsey
Please Print

Applicant's Signature Troy R Guernsey Date 4-13-10

Aurora
15400 E. 14th Place
Suite 309
Aurora, CO 80011
303-341-9370

Castle Rock
4400 Castleton Court
Castle Rock, CO 80109
303-663-7650

Commerce City
4201 E. 72nd Avenue
Commerce City, CO 80022
303-288-6816

Greenwood Village
7100 E Belleview, Suite 102
Greenwood Village, CO 80111
303-783-7133

TCHD S-048 (Rev 7/09) Tri-County Health Department services are provided without regard to race, color, sex, age, religion, national origin, or disability.

Form No.
GWS-25

OFFICE OF THE STATE ENGINEER
COLORADO DIVISION OF WATER RESOURCES

818 Centennial Bldg., 1313 Sherman St., Denver, Colorado 80203
(303) 866-3581

WELL PERMIT NUMBER 66738 -F -
DIV. 8 WD 1 DES. BASIN 5 MD 9

APPLICANT

FIVE PART DEVELOPMENT LLC
3801 E 56TH AVE
COMMERCE CITY, CO 80022-

(303) 744-9881

PERMIT TO CONSTRUCT A WELL

APPROVED WELL LOCATION
ADAMS COUNTY
NW 1/4 NW 1/4 Section 25
Township 2 S Range 64 W Sixth P.M.

DISTANCES FROM SECTION LINES
1300 Ft. from North Section Line
500 Ft. from West Section Line

UTM COORDINATES (Meters,Zone:13,NAD83)
Easting: Northing:

CONDITIONS OF APPROVAL

1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
3) Approved pursuant to CRS 37-90-107(7) and the Findings and Order of the Colorado Ground Water Commission dated January 4, 2008, for Determination of Water Right No. 1374-BD.
4) The annual withdrawal of ground water from this well shall not exceed 37 acre-feet, subject to the total annual withdrawal limitations and conditions as specified by the above referenced Order of the Commission.
5) The use of ground water from this well is limited to domestic use, irrigation, commercial and industrial. The place of use shall be limited to the 164.5 acre land area claimed in the above described Order of the Commission.
6) This well must be constructed to withdraw water only from the Laramie-Fox Hills aquifer. The top of the aquifer is located approximately 1230 feet below ground surface and the base of the aquifer is located approximately 1480 feet below ground surface. Plain casing must be installed and grouted to prevent the diversion of water from other aquifers and the movement of water between aquifers. Since the depth to the top of the aquifer is approximate, to ensure the exclusion of poor quality water from zones immediately above the aquifer, plain casing and grout shall extend through the lowermost coal and/or carbonaceous shale that overlies the Laramie sand portion of the aquifer. ❑
7) The owner shall mark the well in a conspicuous place with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
8) This well shall be constructed within 200 feet of the location specified on this permit. This well shall not be located within 600 feet of another large-capacity well completed in the Laramie-Fox Hills aquifer.
9) The entire length of the hole shall be geophysically logged as required by Rule 9 of the Statewide Nontributary Ground Water Rules prior to installing casing.
10) No more than 98% of the ground water withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
11) A totalizing flow meter or Commission approved measuring device must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (collected at least annually) and submitted to the Lost Creek Ground Water Management District and the Ground Water Commission upon request.

    NOTE: The ability of this well to withdraw its authorized amount of water from this non-renewable aquifer may be less than the 100 years upon which the amount of water in the aquifer is allocated, due to anticipated water level declines.

APPROVED
SMJ

Dick Wolfe
State Engineer

Neil L. VanderHoof
By

Receipt No. 3621627E DATE ISSUED 01-11-2008 EXPIRATION DATE 01-11-2009

CONDITIONS OF APPROVAL

NOTE: This well is located within a Ground Water Management District where local District Rules may apply to the withdrawal of designated ground water currently authorized under this permit.

ATTACHMENT 6: PROOF OF UTILITIES

NNNN

CORE ELECTRIC COOPERATIVE

Pay by Phone: (877) 704-2014
Outages: (833) 267-3349

Account Number 96640124
Member Name
ALPINE DISPOSAL INC
Service Address
8201 SCHUMAKER RD
District 6 **Cycle** 1
Billing Date 02/02/2026

Manage your account at CORE.smarthub.coop

TOTAL AMOUNT DUE

$367.58

Due Date: 02/23/2026

This bill does not reflect transactions after 02/02/2026

Charge detail found on the back of this page.

Your Energy Use

Total Energy Use Last Month kWh	Total Energy Use This Month kWh	Peak Demand Usage kW
3833	3408	6.444
Daily Average 110	Daily Average 118	01/26/2026 01:30:00

Your Billing Snapshot

Number of Days Billed: 29	Billing Period: 12/30/2025 to 01/28/2026
Current Charges: $367.58	Average Daily Cost: $12.68

IMPORTANT MEMBER INFORMATION

The seat for Director District 6 on CORE Electric Cooperative's Board of Directors is currently vacant. Per CORE's bylaws, the vacancy will be filled by a majority vote of the remaining board members. Eligible District 6 members interested in representing their district are invited to submit letters of interest and résumés by Tuesday, March 17, via www.CORE.coop/board-of-directors-vacancy or in-person at CORE's headquarters — 5496 N. U.S. Highway 85, Sedalia, CO 80135 — or Bennett district office — 1092 Cedar St., Bennett, CO 80102.

CORE.coop
CORE.SmartHub.coop

MemberContact@CORE.coop

Mon - Fri 7:00-5:30
(800) 332-9540

Outages (24/7)
(833) CORE-FIX

PLEASE DETACH AND RETURN BOTTOM PORTION WITH YOUR PAYMENT

CORE ELECTRIC COOPERATIVE

CORE Electric Cooperative
5496 N. U.S. Highway 85
Sedalia, CO 80135

Bill Date: 02/02/2026
Account #: 96640124
Total Amount Due 02/23/2026 $367.58

☐ To contribute to **Energy Outreach Colorado,** *fill out information on reverse side.*

CORE ELECTRIC COOPERATIVE 1
P.O. BOX 6437
CAROL STREAM IL 60197-6437

4 288

ALPINE DISPOSAL INC
8201 SCHUMAKER RD
BENNETT CO 80102-9658

0096640124 00036758 00036758 0096640124 4

CORE ELECTRIC COOPERATIVE

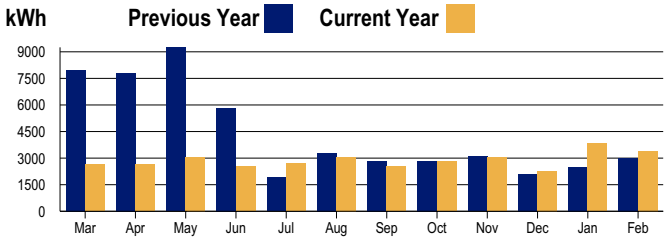
TOTAL AMOUNT DUE **$367.58**
DUE DATE 02/23/2026

Meter #	Read Dates From	Read Dates To	Days	Readings Previous	Readings Present	Meter Multiplier	kWh Usage
3KD89560833	12/30/2025	01/28/2026	29	105676	109084	1	3,408

Account Information

Account Number: **96640124**
Member Name: ALPINE DISPOSAL INC
Service Address: 8201 SCHUMAKER RD
Rate: SMALL GENERAL SERVICE 1P
Next Read Date: 02/25/2026

Your energy use over the last 24 months



Previous Account Activity			
Previous Balance			$398.96
Payments Received			-$398.96
Balance Forward			**$0.00**

Current Activity			
Basic Service Charge			$32.00
Energy Charge	3,408 kWh	@ 0.07594	$258.80
Demand Charges	6.444 kW	@ 12.000	$77.33
Paperless Bill Credit			-$0.55
Current Charges			**$367.58**

Calling all graduating high school seniors!

CORE will award 35 graduates in our service area grants of $2,000 each to support their continuing education. Apply by Friday, April 24.

For more information, scan the QR code or visit
www.CORE.coop > My Community > CORE Commitments.

Now offering cash bill-pay service at participating retail stores. The barcode below can be scanned at the register, allowing you to make your monthly payment. There is a $1.50 convenience fee to use this service.
To find a location near you, visit pay.vanilladirect.com/pages/retailers

7993664336599907030009664012 45

By accepting or using this barcode to make a payment, you agree to the full terms and conditions, available at vanilladirect.com/pay/terms. After successful payment using this barcode, you may retrieve your full detailed e-receipt at vanilladirect.com/pay/ereceipt.

The majority of participating locations will accept cash payments up to a maximum amount of $500.00.

DOLLAR GENERAL FAMILY DOLLAR CVS Walgreens Speedway 7-ELEVEN

CORE will refund the $1.50 convenience fee on your next bill for up to 3 payments per billing cycle.

ENERGY OUTREACH COLORADO

Help fellow Coloradans stay warm by donating to Energy Outreach Colorado. Fill out and return the form below or visit www.EnergyOutreach.org to donate.

☐ **I would like to help struggling families in Colorado via Energy Outreach Colorado.**

One-Time Contribution: $ _____

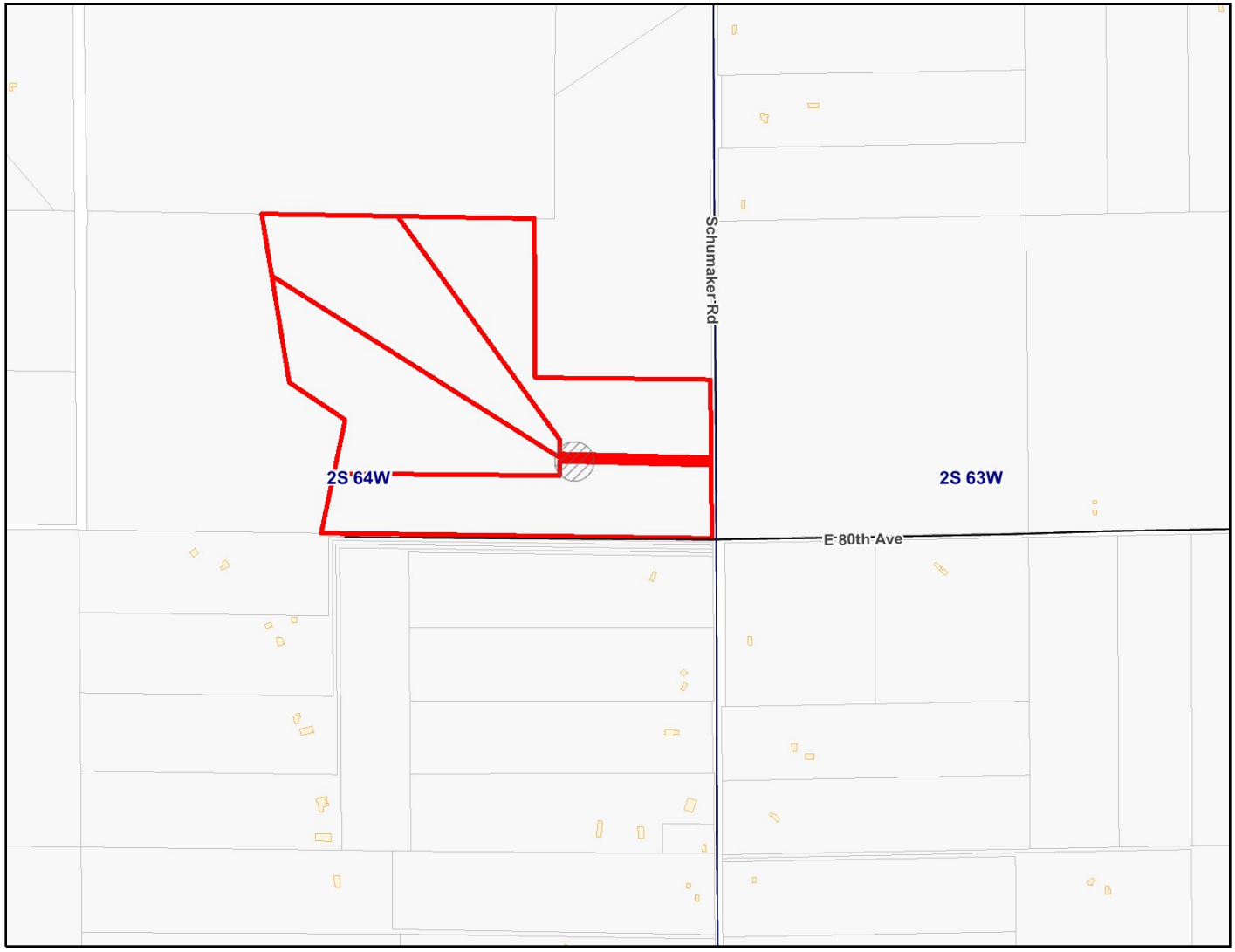
OR Monthly Contribution: $5 $10 $20 Other $ _____

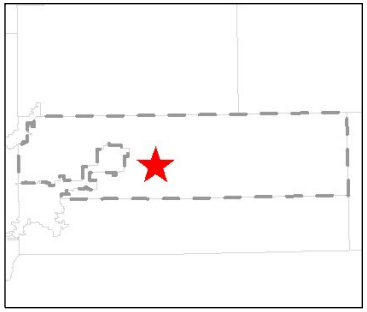
Signature _____ Date _____

ATTACHMENT 7: LEGAL DESCRIPTION

NOTE: ATTACHMENT 3 CONTAINS THE FULL PLAT AND LEGAL DESCRIPTION

ERL Property





Legend

- County Boundary
- Adjacent Counties
- Township
- Streets
- Hwy outline
- Road outline
- Interstates
- US, State Hwys
- Tollways
- Streets/Roads
- Residential Buildings
- Parcels

0 1600 3200 4800 ft.

Map center: 3283040, 1732759

Scale: 1:16,751

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

ATTACHMENT 8: PROOF OF TAXES PAID

Remittance Advice

FEBRUARY 10, 2026

Check Number: 87651097

TAX - USPS CERTIFIED MAIL

87651097
ADAMS COUNTY TREASURER
PO BOX 869
BRIGHTON, CO 80601–0869

Paid by:
AWIN MANAGEMENT, INC. (PT)
PH: 480-718-6077
18500 N ALLIED WAY
PHOENIX AZ 85054

Payment Details	Due Date	Anybill Ref#	Amount
Account No: MULTI PARCEL PMT(29) Invoice No: MULTI PARCEL PMT(29) Advice: CALL 480-718-6077 W/QUESTIONS	02/28/2026	79249244	$2,084,395.68
		Total:	$2,084,395.68

WATERMARK IN PAPER. HOLD UP TO A LIGHT TO VIEW

AWIN MANAGEMENT, INC. (PT)
PH: 480-718-6077
18500 N ALLIED WAY
PHOENIX AZ 85054

EAGLE BANK
SILVER SPRING, MD 20904

NO. 87651097

VOID 180 DAYS AFTER ISSUE 200268944 65-358/550

CHECK DATE	CHECK NUMBER	CHECK AMOUNT
02/10/2026	87651097	2,084,395.68

PAY

*** Two Million Eighty-Four Thousand Three Hundred Ninety-Five And 68/100-Dollars *** **$ ** 2,084,395.68 ****

TO THE ORDER OF
ADAMS COUNTY TREASURER
PO BOX 869
BRIGHTON, CO 80601-0869

FILE COPY

Account No: MULTI PARCEL PMT(29)
Invoice No: MULTI PARCEL PMT(29)

VERIFY FOR AUTHENTICITY

⑈87651097⑈ ⑆055003586⑆ 200268944⑈

Payments intended for current year Real Estate and Personal Property tax accounts for Republic Services, Inc. and related entities.
For any questions on the attached allocation please contact us.
Anya Brown
Jennifer Rusch
propertytax@republicservices.com
480-718-6077

Collector Name	State	Parcel/Account #	Owner Name	Year/Type	Amount
Adams County Treasurer	CO	R0148326	Allied Waste Transportation, Inc.	2025 CO RE	$ 221,811.76
Adams County Treasurer	CO	R0179200	Allied Waste Systems of Colorado	2025 CO RE	$ 110,736.02
Adams County Treasurer	CO	R0179201	Allied Waste Systems of Colorado	2025 CO RE	$ 13.62
Adams County Treasurer	CO	R0179197	Allied Waste Systems of Colorado	2025 CO RE	$ 603,379.20
Adams County Treasurer	CO	R0080143	Allied Waste Systems of Colorado	2025 CO RE	$ 0.94
Adams County Treasurer	CO	R0186806	Hired Hand Denver, LLC	2025 CO RE	$ 67,021.90
Adams County Treasurer	CO	R0186807	Hired Hand Denver, LLC	2025 CO RE	$ 202,457.40
Adams County Treasurer	CO	R0104134	Mountain States Packaging LLC	2025 CO RE	$ 157,869.50
Adams County Treasurer	CO	R0140302	Five Part Development Co	2025 CO RE	$ 97.84
Adams County Treasurer	CO	R0140301	Five Part Development Co	2025 CO RE	$ 101.44
Adams County Treasurer	CO	R0140300	Five Part Development Co	2025 CO RE	$ 94.46
Adams County Treasurer	CO	R0140299	Five Part Development Co	2025 CO RE	$ 535.78
Adams County Treasurer	CO	P0015065	Republic Services	2025 CO PP	$ 793.02
Adams County Treasurer	CO	P0015060	Republic Services	2025 CO PP	$ 771.84
Adams County Treasurer	CO	P0020909	Republic Services	2025 CO PP	$ 918.06
Adams County Treasurer	CO	P0015059	Republic Services	2025 CO PP	$ 1,021.18
Adams County Treasurer	CO	P0015068	Republic Services	2025 CO PP	$ 4,376.42
Adams County Treasurer	CO	P0015062	Republic Services	2025 CO PP	$ 723.88
Adams County Treasurer	CO	P0015066	Republic Services	2025 CO PP	$ 913.64
Adams County Treasurer	CO	P0015057	Republic Services	2025 CO PP	$ 1,378.22
Adams County Treasurer	CO	P0003216	Allied Waste Transportation	2025 CO PP	$ 59,835.34
Adams County Treasurer	CO	P0027601	Mountain States Packaging, LLC	2025 CO PP	$ 141,822.60
Adams County Treasurer	CO	P0030899	Five Part Development, LLC	2025 CO PP	$ 44,524.82
Adams County Treasurer	CO	P0019394	Alpine Disposal, Inc.	2025 CO PP	$ 32,715.20
Adams County Treasurer	CO	P0003541	Allied Waste Systems of Colorado	2025 CO PP	$ 209,219.74
Adams County Treasurer	CO	R0230331	Allied Waste Systems of Colorado	2025 CO RE	$ 62,425.56
Adams County Treasurer	CO	R0230330	Allied Waste Systems of Colorado	2025 CO RE	$ 148,091.32
Adams County Treasurer	CO	R0230328	Allied Waste Systems of Colorado	2025 CO RE	$ 9,290.16
Adams County Treasurer	CO	R0230329	Allied Waste Systems of Colorado	2025 CO RE	$ 1,454.82
Adams County Treasurer Total	**CO**				**$ 2,084,395.68**

THE FACE OF THIS CHECK IS PRINTED BLUE. THE BACK CONTAINS A SIMULATED WATERMARK.

AWIN MANAGEMENT, INC. (PT)
PH: 480-718-6077
18500 N ALLIED WAY
PHOENIX AZ 85054

R0148326, R0179201 etc

EAGLE BANK
SILVER SPRING, MD 20904

NO. 87651097

VOID 180 DAYS AFTER ISSUE 200268944 65-358/550

CHECK DATE	CHECK NUMBER	CHECK AMOUNT
02/10/2026	87651097	2,084,395.68

PAY

*** Two Million Eighty-Four Thousand Three Hundred Ninety-Five And 68/100-Dollars *** **$ ** 2,084,395.68 **

TO THE ORDER OF

ADAMS COUNTY TREASURER
PO BOX 869
BRIGHTON, CO 80601-0869

Account No: MULTI PARCEL PMT(29)
Invoice No: MULTI PARCEL PMT(29)

MP

"87651097" :055003586: 200268944"

B 011 T 002 R0179201 FEB 13 2026

DO NOT WRITE, STAMP OR SIGN BELOW THIS LINE
RESERVED FOR FINANCIAL INSTITUTION USE

WARNING: THE BACK OF THIS CHECK CONTAINS A SIMULATED WATERMARK. HOLD AT 45° ANGLE TO VIEW.

ATTACHMENT 9: NEIGHBORHOOD MEETING SUMMARY

NEIGHBORHOOD MEETING SUMMARY
EAST REGIONAL LANDFILL VERTICAL EXPANSION
ADAMS COUNTY

Meeting Date: Wednesday, December 10, 2025
Time: 6:00 pm
Location: Bennett Community Center

On December 10, ERL representatives (ERL) held a neighborhood meeting to provide information and answer questions about the proposed vertical expansion of the East Regional Landfill.

Written notice of the meeting was sent on **November ##, 2025** more than 10 days before the meeting was to be held. **The notices were sent to residents living in the area of the ERL from a list provided by Adams County (??**?). The notice included the meeting date, December 10, 2025, time (6:00 pm), and location (Bennett Community Center, as approved by Adams County). The purpose of the meeting, discussing the vertical expansion of the landfill, was outlined in the invitation with a map of the property.

The meeting was held at 6:00 pm on December 10, 2026. ERL offered attendees the opportunity to provide their name and mailing addresses so they can receive notice of public hearings in the future. Six residents attended the meeting as follows:

1. Cinthia Fellows: 303-532-9413; cinthiafellows53@gmail.com
   7905 Schumaker Road
   Bennett, CO 80102
2. Brian Fellows: 303-503-8309; brianfellows503@gmail.com
   7905 Schumaker Road
   Bennett, CO 80102
3. Mike Phillips: 303-909-1528; MTTRAILS@65RTD.com (? Unreadable on sheet)
   7995 Schumaker Road
   Bennett, CO 80102
4. Mike Cranwill: 303-854-7012; N8_Hunter@hotmail.com
   7925 Schumaker Road
   Bennett, CO 80102
5. Stacy Cranwill: 303-854-7012; N8_Hunter@hotmail.com
   7925 Schumaker Road
   Bennett, CO 80102
6. J Zimmerman: I_rideAQHA@hotmail.com
   9051 Schumaker Road
   Bennett, CO 80102

The expansion plan was presented by ERL using poster boards with maps and plans of the facility showing the site and the proposed change to the elevation of the landfill using plan views and associated cross sections. Additionally, a handout was given to the attendees summarizing the ERL plans (attached).

ERL presented the proposal and discussed the handout. It was noted that the changes to the Engineering Design and Operations Plan (EDOP) included the vertical expansion, redesigning the final cover system, and updating the stormwater management system. It was also noted that other modifications to the EDOP, made through the years, were included to bring the EDOP up to date but that these were all previously approved.

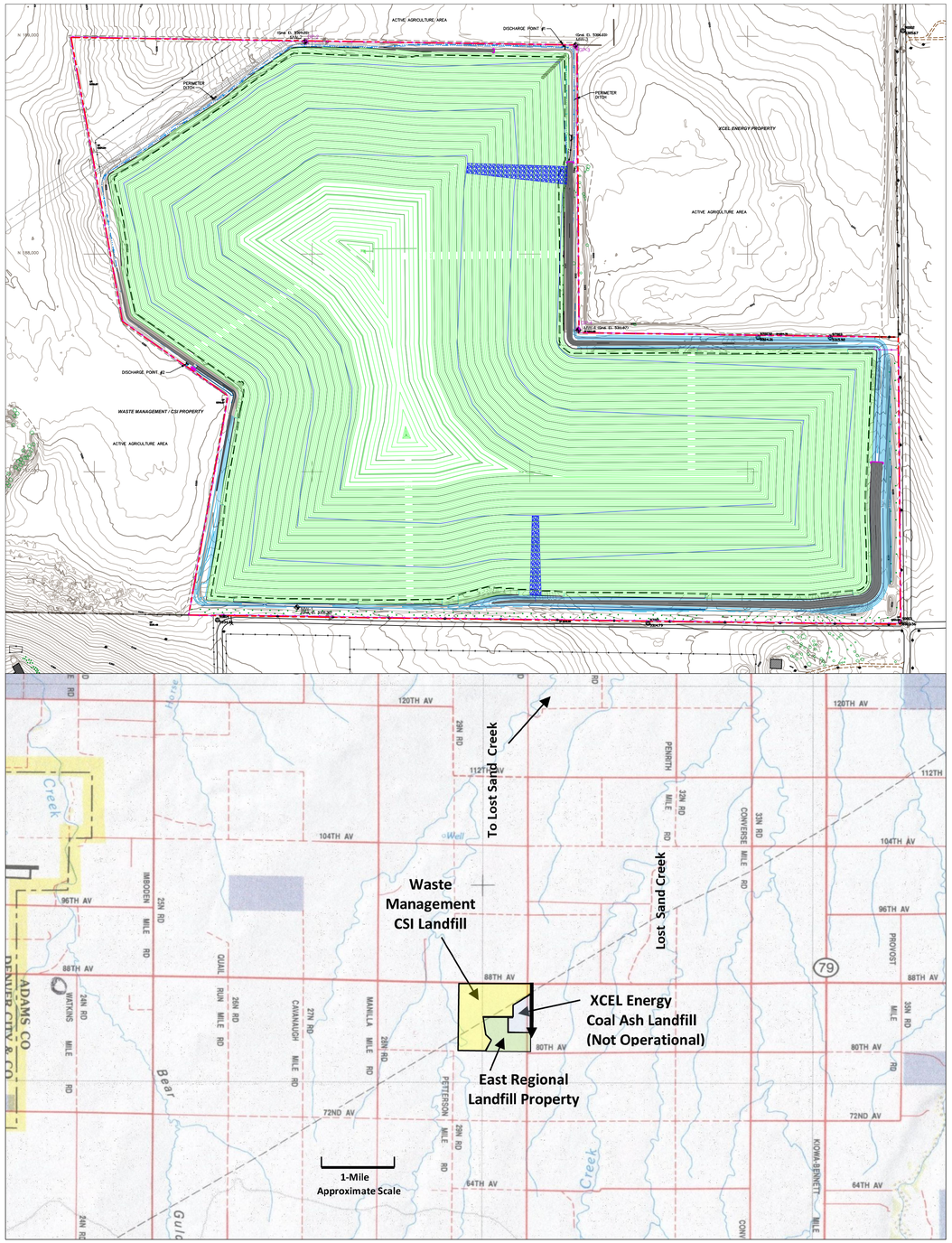
Attendees were most interested in the number of vehicles accessing the site and the remaining site life. ERL noted to attendees that it is not anticipated that significantly more vehicles would be coming to the facility then are traveling to the facility currently but did convey that it is possible the vehicle number could rise if another landfill closed or there was another type of problem. Additionally, ERL noted that this expansion is strictly a vertical expansion and no new land area or filling area is being added to the facility and that future operations will not change from the current operations.

ERL representatives also discussed the additional site life remaining at the landfill, approximately 27 years. The calculated site life was estimated and placed in the meeting handout for the attendees to review. There were no additional comments regarding the site life.

Environmental monitoring was discussed and representatives noted that the programs will be unchanged from the current program. Along with the environmental monitoring, the landfill environmental protection systems including landfill liners, leachate collection systems, and the final cover system were discussed.

ERL was available to answer any questions the attendees had. ERL also provided comment sheets for attendees to ask additional questions or make comments regarding landfill expansion. There were no comment sheets submitted.

ATTACHMENT 10: LEVEL 1 STORM PLAN



EAST REGIONAL LANDFILL

LANDFILL VERTICAL EXPANSION
LEVEL 1 STORM DRAINAGE PLAN
EAST REGIONAL LANDFILL
8201 SCHUMAKER RD
BENNETT, COLORADO

JANUARY 2026

LIST OF SHEET:

NO. 1 TITLE SHEET
NO. 2 PROJECT SITE PLAN
NO. 3 LEVEL 1 STORM DRAINAGE PLAN
NO. 4 SURFACE WATER CONTROL DETAILS

TOWNSHIP 2 SOUTH, RANGE 64 WEST

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

EAST REGIONAL LANDFILL

LIST OF PUBLIC UTILITIES:

CORE ELECTRIC COOPERATIVE
1092 CEDAR ST., BENNETT, CO, 80102
800-332-9540
UTILITY LOCATE: CALL 811 OR VISIT WWW.COLORADO811.ORG

NOTE: PUBLIC IMPROVEMENTS SHALL CONFORM TO ADAMS COUNTY STANDARDS AND SPECIFICATIONS AND LATEST EDITION OF COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS

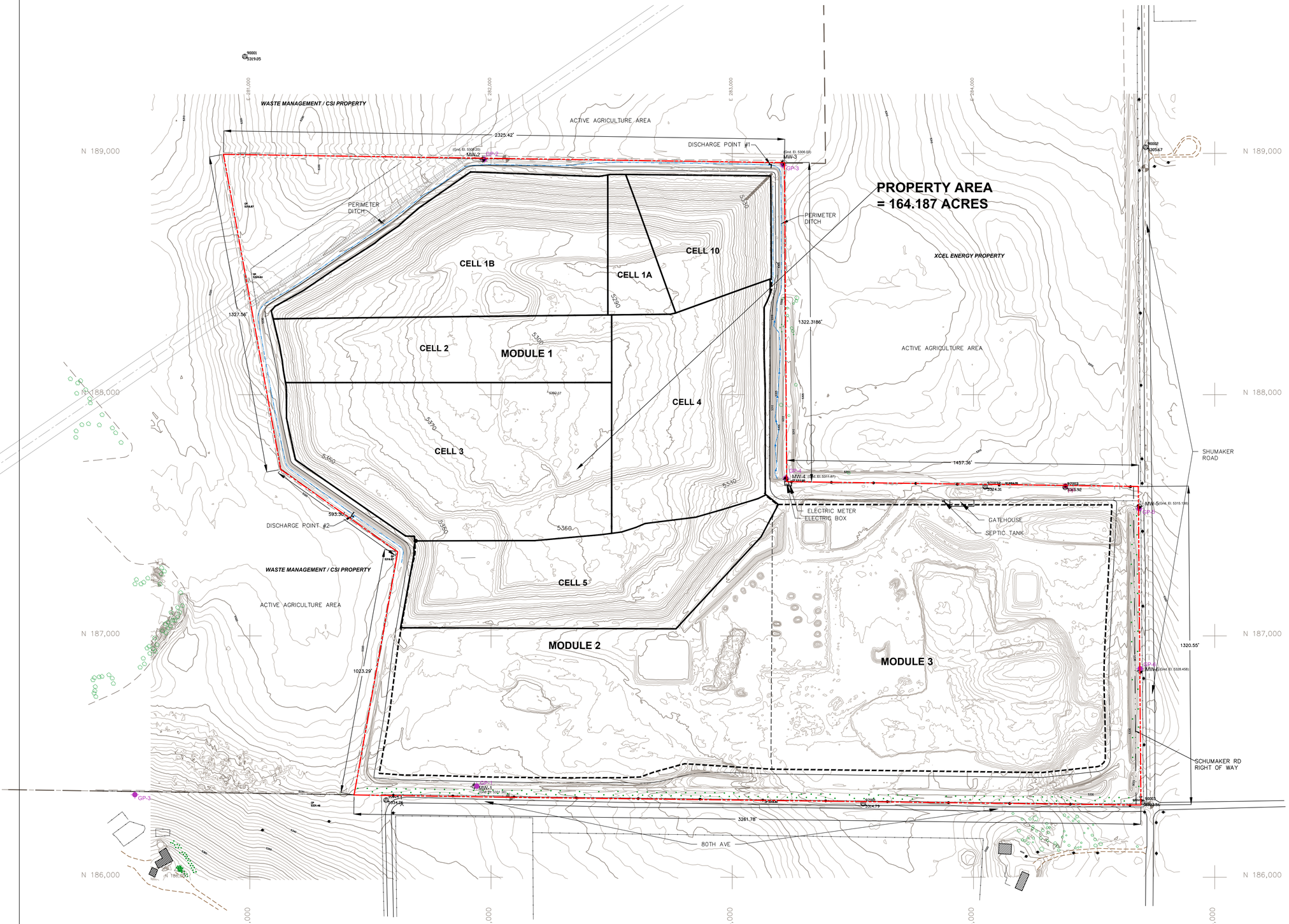
PREPARED FOR:
FIVE PART DEVELOPMENT, LLC
7700 E ARAPAHOE RD
SUITE 220
CENTINNIAL, COLORADO 80112
303-685-2700

PREPARED BY:
AMERICAN ENVIRONMENTAL CONSULTING, LLC
8191 SOUTHPARK LANE
SUITE 107
LITTLETON, COLORADO 80120
303-948-7733

SHEET 1
STORM DRAINAGE PLAN – TITLE SHEET
EAST REGIONAL LANDFILL
8201 SCHUMAKER RD, BENNETT, CO
ADAMS COUNTY, COLORADO

CLIENT: FIVE PART DEVELOPMENT	
PROJECT: EAST REGIONAL LANDFILL	
PROJECT NO:	DATE COMPLETED: 6/2024
DESIGNED BY: AEC	APPROVED BY:
DRAWN BY: TML	DWG NAME:
REVISION:	REVISED BY: RDS DATE: 01/2026
1 ADCO COMMENTS	

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.



LEGEND

- EXISTING CONTOURS (2 FT. INTERVAL)
- EXISITNG AS–BUILT CELL LIMITS
- PROPOSED LIMIT OF WASTE
- PROPERTY LIMIT (BY R.W. BAYER & ASSOCIATES, 2007)
- PROPERTY CORNER SURVEY POINT (BY R.W. BAYER & ASSOCIATES, 2007, REBAR, CAP FOUND OR SET)
- ADJOINING PROPERTY BOUNDARY
- GAS PIPELINE RIGHT OF WAY
- AS BUILT STORM WATER DRAINAGE FLOW LINES
- GAS PIPELINE ACCESS ROAD
- SECTION MARKER
- EXISTING GROUND WATER MONITORING LOCATION (APPROXIMATE HIGH GROUNDWATER ELEVATION)
- EXISTING GAS MONITORING WELL LOCATION
- LANDSCAPED SCREENING BERM
- SCREENING TREE LOCATION
- SCREENING BUSH LOCATION

TOWNSHIP 2 SOUTH, RANGE 64 WEST

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

EAST REGIONAL LANDFILL

NOTE: PANEL CONTROL POINT LOCATIONS ARE SHOWN IN MODIFIED STATE PLANE THAT IS USED ON SITE FOR MONITORING, DESIGN AND CONSTRUCTION PURPOSES.

0 75 150 300
APPROXIMATE SCALE (FEET)

CONTOUR INTERVAL: 1'
DATE OF TOPOGRAPHY FLIGHT: 4/22/24
SURVEY BY COPPER AERIAL SURVEY CO.
Phoenix, Arizona

SHEET 2
STORM DRAINAGE PLAN – PROJECT SITE PLAN
EAST REGIONAL LANDFILL
8201 SCHUMAKER RD, BENNETT, CO
ADAMS COUNTY, COLORADO

CLIENT: FIVE PART DEVELOPMENT	
PROJECT: VERTICAL EXPANSION	
PROJECT NO:	DATE COMPLETED: 6/2024
DESIGNED BY: AEC	APPROVED BY:
DRAWN BY: TML/RDS	DWG NAME:
REVISION:	REVISED BY: RDS DATE: 2/2024
1 ADCO COMMENTS	

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.

WASTE MANAGEMENT / CSI PROPERTY

E 281,000 | E 282,000 | E 283,000 | E 284,000

DEEPENED CHANNEL BOTTOM
WITH STEEPER 1:1 SLOPES INSIDE
5302' CONTOUR
STORAGE CAPACITY = 0.37 ACRE-FEET

DETENTION WEIR #1
OUTLET ELEVATION = 5302'

DISCHARGE POINT #1

2325.42'

GP-2

MW-2
(Gnd. El. 5309.20)

MW-3
(Gnd. El. 5306.03)

GP-3

1.5% TACK ON BERM

PERIMETER
DRAINAGE
CHANNEL

3.5:1

6 INCH R/PRAP LINED DOWNCHUTE

DETENTION WEIR #2
OUTLET ELEVATION = 5306'

40'

82'

DEEPENED CHANNEL BOTTOM
WITH STEEPER 1:1 SLOPES
INSIDE 5306 CONTOUR
STORAGE CAPACITY = 6.1 ACRE-FEET

1327.56'

1322.3186'

5% SLOPE

5499.25

PROPERTY AREA
= 164.187 ACRES

XCEL ENERGY PROPERTY

1457.36'

SHUMAKER
ROAD

CMW-4
(Gnd. El. 5311.87)

CMW-1
(Gnd. El. 5310.21)
(To Be Abandoned)

MW-5
GP-5

1320.55'

DETENTION WEIR #4
OUTLET ELEVATION = 5320'

503.30'

DISCHARGE POINT #2

DEEPENED CHANNEL BOTTOM
WITH STEEPER 1:1 SLOPES
INSIDE 5320' CONTOUR
STORAGE CAPACITY = 0.56 ACRE-FEET

WASTE MANAGEMENT / CSI PROPERTY

1023.29'

LANDSCAPE BERM

DETENTION WEIR #3
OUTLET ELEVATION = 5316'

MW-6
GP-6

DEEPENED CHANNEL BOTTOM
WITH STEEPER 2:1 SLOPES
INSIDE 5316 CONTOUR
STORAGE CAPACITY = 7.21 ACRE-FEET

6 INCH RIPRAP LINED DOWNCHUTE

30'

MW-1
(Gnd. El. 5314.82)
GP-1

SCHUMAKER RD
RIGHT OF WAY

PERIMETER
DRAINAGE
CHANNEL

40' - LANDSCAPE WITH TREES
NORTH OF PROPERTY LINE
(1 TREE EVERY 20')

52'

QUONSET HUT
MAINTENANCE FLUID STORAGE
AND MAINTENANCE ACTIVITIES

LANDSCAPE WITH GRASS,
TREES AND BUSHES

80TH AVE

3261.78'

LEGEND

- 5315 — EXISTING CONTOURS (2 FT. INTERVAL)
- 5330 — PROPOSED FINAL COVER CONTOURS (2 FT. INTERVAL)
- 5300 — PERMITTED STORAGE DITCH CONTOURS (2 FT. INTERVAL)
- 5300 — PROPOSED STORAGE DITCH CONTOURS (0.5 FT. INTERVAL)
- PROPOSED 1.5% TACK ON BERM
- LIMITS OF FINAL COVER
- PROPERTY LIMIT (BY R.W. BAYER & ASSOCIATES, 2007)
- PERIMETER DRAINAGE CHANNEL
- ADJOINING PROPERTY BOUNDARY
- GAS PIPELINE RIGHT OF WAY
- GAS PIPELINE ACCESS ROAD
- G — GAS PIPELINE
- SECTION MARKER (NOT VARIFIED)
- UTILITY POWER LINE
- GP-2 — EXISTING GAS MONITORING WELL LOCATION
- MW-3 — EXISTING GROUND WATER MONITORING LOCATION
- ACTIVE AGRICULTURAL AREA
- EXISTING BUILDING
- EXISTING SUMP RISER PIPE
- LANDSCAPED SCREENING BERM
- SCREENING TREE LOCATION

Notes:
See legal discription for precise location of property boundary.

Final site development assumes all on-site existing structures, septic systems, potable water storage, and utility lines will be removed.

TOWNSHIP 2 SOUTH, RANGE 64 WEST

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

EAST
REGIONAL
LANDFILL

N

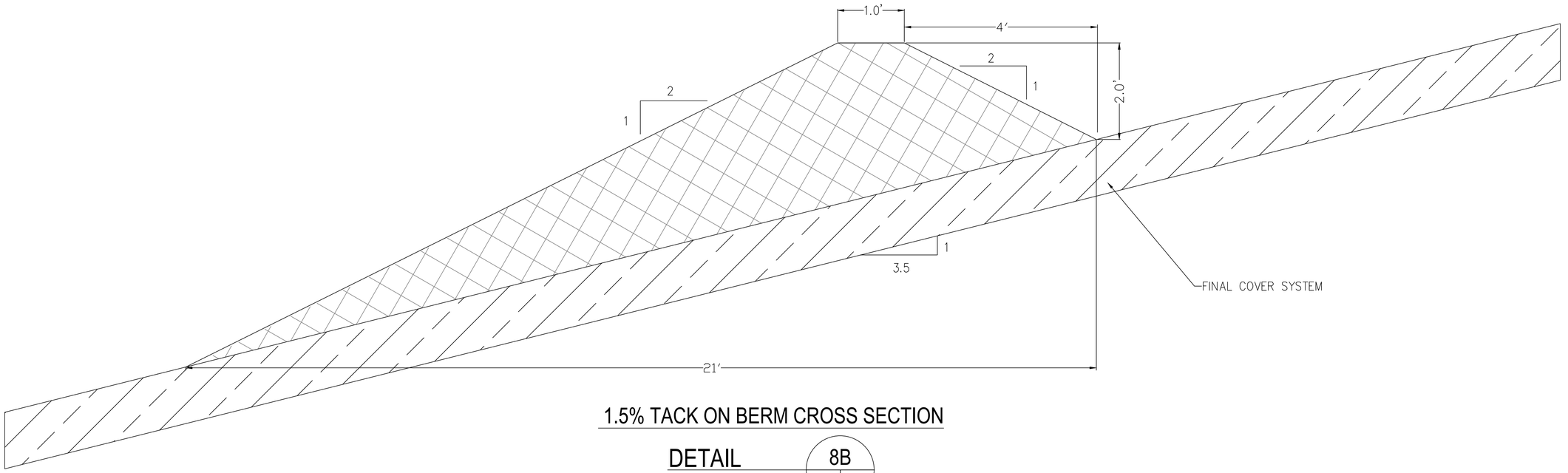
0 75 150 300
APPROXIMATE SCALE (FEET)

CONTOUR INTERVAL: 2'
DATE OF TOPOGRAPHY FLIGHT: 1-6-12

SHEET 3
STORM DRAINAGE PLAN
EAST REGIONAL LANDFILL
8201 SCHUMAKER RD, BENNETT, CO
ADAMS COUNTY, COLORADO

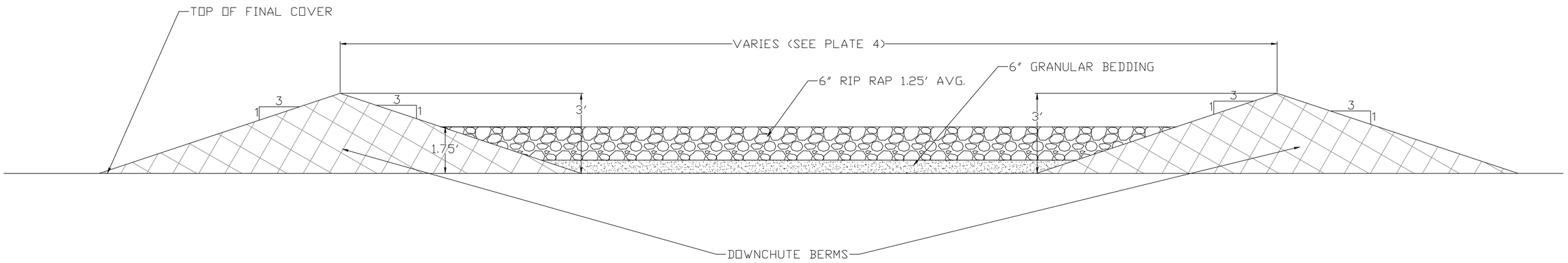
CLIENT: FIVE PART DEVELOPMENT	
PROJECT: VERTICAL EXPANSION	
PROJECT NO:	DATE COMPLETED: 6/2024
DESIGNED BY: AEC	APPROVED BY:
DRAWN BY: TML/RDS	DWG NAME:
REVISION:	REVISED BY: RDS — DATE: 2/2024
1 ADCO COMMENTS	

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.



1.5% TACK ON BERM CROSS SECTION

DETAIL 8B
SCALE: N.T.S. 1



DOWNCHUT CROSS SECTION

DETAIL 8B
SCALE: N.T.S. 2

SHEET 4
STORMWATER CONTROL DETAILS
EAST REGIONAL LANDFILL
ADAMS COUNTY, COLORADO

CLIENT: FIVE PART DEVELOPMENT, LLC		
PROJECT: 2024 ERL EXPANSION		
PROJECT NO:	DATE COMPLETED: 8/2024	
DESIGNED BY: AEC	APPROVED BY: WAC	
DRAWN BY: RDS	DWG NAME:	
REVISION:	REVISED BY:	DATE:
0 ISSUED FOR REVIEW		

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC.

ATTACHMENT 11: EROSION AND SEDIMENT PLAN

SANBORN HEAD

Stormwater Management Plan

EAST REGIONAL LANDFILL

Bennett, Colorado

Prepared for Five Part Development, LLC

File No. 6067.03

February 2025

Revised September 2025

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Appendix E: Monthly Routine Inspection Checklist and Quarterly Visual Inspection Log
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1.0 INTRODUCTION

Stormwater discharges from Five Part Development, LLC's East Regional Landfill (Facility) are regulated under the Colorado Department Public Health & Environment (CDPHE) Industrial Stormwater General Permit for Non-Extractive Industries (General Permit), effective July, 1 2024 and expiring on June 30, 2029.

The intent of this updated Stormwater Management Plan (SWMP) is to evaluate potential stormwater pollution sources at the Facility and to select and implement appropriate measures to prevent or control the discharge of pollutants in stormwater runoff.

The pollution prevention approach focuses on two major objectives:

1. To identify sources of pollution potentially affecting the quality of stormwater discharges associated with industrial activity from the Facility.
2. To describe and outline the implementation of practices to minimize and control pollutants in stormwater discharges associated with industrial activity from the Facility and to provide a mechanism for compliance with the terms and conditions of the permit.

The SWMP must describe the activities, materials, and physical features of the Facility that may contribute significant amounts of pollutants to stormwater runoff.

1.1 Industry-Specific Best Management Practices Considerations

In addition to the general requirements discussed above, the General Permit includes certain SWMP considerations that are specific to the applicable industry sector. These considerations, derived primarily from industry-specific information on sources of pollution or from Best Management Practices ("BMPs") that are currently applicable to a given sector. Based on Five Part Development's Standard Industrial Classification ("SIC") Code, the Facility falls within Sector L – Landfills, Land Application Sites, and Open Dumps. Because the Facility conducts composting operations, it also falls under SIC Code 2875, which corresponds to Sector C – Chemical and Allied Products Manufacturing, and Refining, Subsector C1 Agricultural Chemicals. Industry-specific BMPs applicable to Sectors L and C are summarized below:

- **Preventive Maintenance Program** - As part of the Facility's preventive maintenance program, it shall maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.
- **Erosion and Sedimentation Control** – The Facility shall provide temporary stabilization (e.g., temporary seeding, mulching, and placing geotextiles on the inactive portions of stockpiles) for the following: materials stockpiled for daily, intermediate, and final cover; inactive areas of the landfill or the active landfill filling area and compost area hereby defined as the "active area(s)"; landfill areas that have received final cover but where vegetation has yet to establish itself; and land application sites where waste application has been completed but final vegetation has not yet been established.
- **Unauthorized Discharge Test Certification** - The discharge test and certification must also be conducted for the presence of leachate and vehicle wash water.

- Inspections of Active Areas – The Facility shall inspect the active operating areas of the Facility at least once every month. Inspections shall focus on areas of landfills that have not yet been finally stabilized; active land application areas, areas used for storage of material and wastes that are exposed to precipitation, stabilization, and structural control measures; leachate collection and treatment systems; and locations where equipment and waste trucks enter and exit the Facility. Ensure that sediment and erosion control measures are operating properly.

1.2 Plan Availability

The Facility must retain a complete copy of the SWMP at the Facility in a readily accessible format. Included in the SWMP is the General Permit and Certification to Discharge which can be found Appendix A.

1.3 Plan Revisions

The Facility reviews and updates this Plan in accordance with the requirements set forth in the General Permit. Conditions which trigger the need for plan review and updates are detailed in Section 10.0 of this Plan. In particular, revisions are made because of exceedances of water quality standards and/or changes to: operator information, facility name, facility address, SWMP Information, the estimated area of industrial activity, monitoring requirements, outfall information, historic preservation criterion, or endangered species criterion.

2.0 FACILITY MANAGEMENT CERTIFICATION

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations.

Melissa Montgomery

_____

Melissa Montgomery
Environmental Manager
Date:
10/02/2025

3.0 SWMP ADMINISTRATOR

The following individual is named as the SWMP Administrator responsible for development and implementation of the SWMP:

Melissa Montgomery – Environmental Manager
8480 Tower Road
Commerce City, Colorado 80022
303-802-0924

The stormwater Administrators' responsibilities include the following:

- Implementing the stormwater management plan SWMP and personnel training;
- Maintaining stormwater drainage controls;
- Reviewing and revising the SWMP as necessary;
- Overseeing stormwater sampling and analysis; and
- Preparing and submitting the documentation and reports required by the General Permit and this SWMP.

4.0 FACILITY DESCRIPTION

4.1 Impervious Surfaces Estimate

Impervious areas including building structures are shown in the Facility map in Appendix B. The Facility roads are constructed with soils and are not impervious.

4.2 Facility Maps

A Facility Locus map for the Facility is included in Appendix B. A Facility site map presenting the information listed below is also included in Appendix B.

- Location of Facility;
- Property boundaries and size of the property;
- Buildings, structures and impervious surfaces;
- Directions of stormwater flow;
- Location of stormwater control measures;
- Stormwater conveyances;
- Operation or process areas;
- Stormwater outfalls;
- Receiving water and surface water bodies;
- Significant spill or leak locations; and
- Location of potential pollutant sources.

4.3 Facility Drainage and Stormwater Systems

Stormwater at the Facility flows through Facility culverts and drainage swales located along the northern and western boundaries of the Facility. A drainage swale highpoint is located along the northwestern portion of the Facility. Stormwater flows to the east and south of the highpoint to the two existing discharge outfalls as shown in Figure 2. The stormwater is then discharged to the undeveloped land outside of the Facility. During significant stormwater

events, the stormwater may flow through the swales and into the nearby undeveloped land. Discharges from Outfall #1 may eventually discharge into West Sand Creek located to the northeast of the Facility. Discharges from Outfall #2 may eventually flow to the west and discharge to an unnamed stream located to the west of the Facility. Stormwater that does not reach the drainage swales is recharged into the subsurface of the Facility or flows to the temporary stormwater ponds onsite.

Check dams have been installed in the Facility's perimeter swales to reduce stormwater runoff velocity and allow for sedimentation.

4.4 Stormwater Run On

The active landfilling areas are located at a higher elevation which results in the stormwater runoff flowing either into the drainage swales surrounding the Facility or into the temporary stormwater ponds. Leachate sumps are also located on the Facility to collect stormwater that gets in contact with the active area and the leachate is then stored in the existing leachate pond.

Potential off-site stormwater run-on onto the Facility is not anticipated as a result of the Facility topography and gentle sloping of the areas outside of the Facility being graded away from the Facility.

5.0 POTENTIAL POLLUTANT SOURCES

The potential pollutant sources at the Facility include industrial materials and activities that are exposed to stormwater. The locations of these potential pollutant sources have been identified on the Facility map in Appendix B.

5.1 Potential Pollutant Sources Exposed to Stormwater

The following is a description of the potential sources (activities and materials) that may reasonably be expected to add pollutants to stormwater discharges at the Facility if preventative measures are not undertaken. Figure 2 includes locations of the potential sources of pollutants.

- Sediment – Uncontrolled stormwater runoff from disturbed areas (haul roads, borrow soil excavations, daily and intermediate soil covers, soil stockpiles, etc.) of the Facility as well as upgradient areas may transport sediment offsite at the northeast discharge point. Sediment transport is primarily controlled by keeping the disturbed portions of the Facility to a minimum and establishing vegetation on previously disturbed areas and soil stockpiles. Additional sediment controls include channels constructed at low gradients, and temporary stormwater ponds as shown on Figure 2. Best Management Practices (BMPs) including hay bales, straw waddles, silt fences, etc. will be used in diversion channels to reduce the potential for sediments to move off-site. If the bales are not successful, silt fences will be used around stockpiles, disturbed areas, and within drainage channels as necessary.

- Equipment Maintenance Building and Area – Landfill construction and maintenance equipment will be serviced in the area immediately south of the scale house, near the working face, or in the Quonset hut in the southeast corner of the Facility. Equipment maintenance typically does not result in significant spillage as all liquids are carefully contained. Any minor spills in the equipment parking area will be immediately cleaned up and properly disposed of. In addition, this area is bounded on the north by the elevated entrance road and on the south by a surface water diversion ditch leading to a detention/sedimentation pond that will minimize the potential for migration of maintenance fluids should a larger spill occur. As stated earlier, some maintenance activities will also be conducted in the Quonset hut, which is covered and has a concrete floor. There is limited potential for oil, grease, or fuel from these activities to be transported off-site. The Landfill maintains a spill kit in the Quonset hut for use in case a spill occurs that is large enough to warrant use of the kit.
- Compost Area – The Landfill conducts composting operations in the area shown on Figure 2. This area is included in this SWMP as a potential source of stormwater pollution. Runoff from this area has the potential to transport sediment and compost materials off-site at Outfall #1 if the stormwater controls are not properly designed, implemented, and maintained. The compost area is designed and constructed to prevent stormwater runoff from a 24-hour, 25-year storm event through a combination of perimeter berms, a properly graded elevated compost pad and perimeter channels. Surface water runoff toward the compost area is directed around the compost area to the north where it is routed through a culvert beneath the disposal access road and joins other site runoff exiting the Facility at Outfall #1. The compost pad itself is graded to a lined basin dedicated solely to contain runoff from the compost pad. The perimeter of the pad is bermed, and the pad is sloped to direct all runoff originating on the compost pad to this basin, which is designed to contain all of the volume resulting from the 24-hour, 25-year storm event plus additional freeboard capacity. The liquids accumulating in this pond are removed and reused in the compost operation, stored in a tank on the compost pad for future use, or applied for dust control on-site if appropriate based on laboratory analysis results.
- Equipment Fueling Operations – The Facility has two fuel tanks on-site. A portable, skid-mounted 2,000- gallon diesel tank is maintained within the lined refuse disposal area and all equipment fueling operations will be conducted inside of the lined disposal area. Any leakage during fueling will be contained within the refuse disposal area, reducing the potential for spilled fuel to be transported off-site by stormwater. A 250-gallon gasoline tank is located near the landfill equipment storage area near the southeast corner of the scale house for use in fueling Facility vehicles. The tank is equipped with secondary containment consisting of a galvanized stock tank. Any leakage from this tank will have to travel overland for a short distance before entering the Facility stormwater system. A third-party fueling contractor is utilized to fuel the equipment in the compost area after hours.

- Stormwater In Contact with the Landfill – Stormwater within the landfill footprint that has the potential to contact waste and become leachate as a result of direct precipitation onto the waste is contained within the lined portions of the landfill disposal cells. Leachate is also generated within the landfill from the waste. All the disposal cells at the Facility are constructed with a composite liner system consisting of Geocomposite clay liner (GCL) and a High-Density Polyethylene (HDPE) membrane. The floor of the landfill is sloped to drain any liquids in the landfill to a sump, a low collection point in the bottom of the landfill, which also has a composite liner. All liquids in contact with waste, whether from stormwater run-on into the landfill, direct precipitation, or leachate generated through the decomposition process are collected in the sump and removed through a pipe. The removed liquids are applied onto the waste in the active area for dust control, if acceptable based on laboratory analysis, or properly stored or transported off-site for treatment. Liquids within the waste disposal area that are in contact with, or have contacted, waste have an extremely limited potential to enter the stormwater control system and discharge off-site.
- Parking Area and Heavy Machinery – The Facility contains a designated parking area located near the scale house as shown in Figure 2. Gasoline and diesel spill from cars and heavy machinery in this area will travel overland before entering the Facility stormwater system.

Summary
Under normal operating conditions, potential sources of pollutants to stormwater discharge include diesel fuel, hydraulic oil, rust/metals, and leachate. The potential stormwater pollutants are described below.

Potential Pollutants	Source
Sediment Control	Uncontrolled stormwater runoff
Diesel	Spill during transfer, operation of heavy machinery
Hydraulic Oils	Spill during transfer, material storage
Leachate	Spill during transfer
Gasoline	Spill during transfer, vehicle operation
Compost	Landfilling operations

5.2 Listing of Significant Past Spills/Leaks

The Facility must document all significant spills and leaks of toxic or hazardous pollutants that occurred at exposed areas, or that drained to a stormwater conveyance on the property within the three years prior to the preparation of this SWMP. Based on discussions with Facility personnel, there have been no spills at this Facility within the three years prior to the preparation of this plan. Should a significant spill occur, it will be documented in the SWMP and the Facility's Spill Prevention, Control, and Countermeasure (SPCC) Plan.

5.3 Existing Stormwater Sampling Data

There have been no records of significant quantities of pollutants being discharged to surface water by Five Part Development. All sampling results are kept on file at the Facility and can be viewed by request.

5.4 Non-Stormwater Discharges

The General Permit requires that all discharges authorized by the General Permit be composed entirely of stormwater. The General Permit also requires discharges of "material other than stormwater" be brought into compliance with another type of CDPHE permit issued for that discharge.

The General Permit does allow certain "authorized non-stormwater discharges." A list of allowable non-stormwater discharges is provided below. As allowed pursuant to Part I.A.1.b of the General Permit, discharge of waters from these sources is allowable provided they do not contribute to a violation of water quality standards.

Allowable Non-Stormwater Discharges:

- Discharges of uncontaminated condensate from air conditioners, coolers/chillers and other compressors and from the outside storage of refrigerated gasses and liquids;
- Irrigation/landscape irrigation provided all pesticides, herbicides, and fertilizers have been applied in accordance with the approved labeling;
- Uncontaminated spring water where flows are not contaminated with process materials;
- Discharges from subterranean foundation or footing drains or sump pumps where flows are not contaminated with process materials; and
- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the Facility, but not intentional discharges from the cooling tower.

The General Permit requires that the Facility SWMP include documentation that the stormwater discharges authorized by the General Permit have been evaluated for the presence of non-stormwater discharges (not including the authorized non-stormwater discharges as listed above).

On behalf of Five Part Development, Sanborn, Head & Associates, Inc. (Sanborn Head) conducted the required evaluation of the Facility stormwater drainage system. On January, 30, 2024, Joel Sousa and Marcel Kozlowski of Sanborn Head conducted a site inspection to evaluate for the presence of unauthorized non-stormwater discharges. The inspection included visual inspections of the drainage system components such as ponds, culverts, check-dams, swales and outfall locations. The results of this inspection are presented in Table 3, below. The inspection did not reveal any non-stormwater or unauthorized discharges or any evidence of non-stormwater or unauthorized discharges from the Facility at the time of the site visit.

Table 1: Non-Stormwater Discharge Evaluation Results

Date of Evaluation	Discharge Point/ Drainage Area	Method of Evaluation[1]	Result
January 30, 2024	All discharge points and drainage areas	Visual Inspection	No unauthorized discharges or connections observed

5.5 Salt Storage Pile Management

Five Part Development does not maintain a salt storage pile on-site.

6.0 CONTROL MEASURES

The following sections identify control measures, structural and non-structural, that are implemented at the Facility to prevent industrial pollutants from impacting stormwater runoff.

6.1 Non-Structural Controls

The Facility practices the following non-structural controls:

- Stormwater swales and culverts shall be cleaned and inspected once a year;
- Sediment shall be removed from the stormwater swales and culverts as necessary to ensure proper operation;
- After a flood event, the stormwater swales and culverts shall be inspected to make sure they have drained as designed;
- The parking surfaces and roads shall be kept in good repair;
- Direct supervision of unloading operations by trained Five Part Development employees;
- All rooftops and roof drains are kept in good working order;
- Good housekeeping activities which call for frequent inspection of all areas with immediate clean-up of errant materials such as trash and debris;
- Supervision by Five Part Development personnel of all visitors, contractors, and deliveries;
- The implementation of the Facility SPCC Plan; and
- Raw materials/equipment stored in the compost area shall be covered by tarps if appropriate.

6.2 Structural Controls

Five Part Development implements the following structural controls at the Facility.

6.2.1 Sedimentation and Erosion Controls

Soil erosion and sediment transport by stormwater can cause significant problems for surface waters. The General Permit requires that all areas with a potential for soil erosion be identified, and measures of control be described. Sediment and erosion controls are provided below.

- Drainage swales
- Haybales

[1] The visual inspections included observations of the discharge outfall for flow during dry weather and inspections of the outfall for visible pollutants or non-stormwater flows.

- Sediment stops
- Temporary Stormwater ponds

6.2.2 Structural Stormwater Controls

The Facility utilizes drainage swales, haybales, sediment stops, and temporary stormwater ponds to limit the volume of sediment from being discharged off-site. The haybales and sediment collects sediment that flows into the drainage swales and limits the amount of sediment that enters the outfalls. Temporary stormwater ponds are located throughout the Facility, as shown in Figure 1, to collect stormwater runoff and sediments that do not reach the drainage swales. The sediment will need to be removed from the ponds to allow for adequate capacity. The ponds should be inspected annually and following significant storm events to ensure adequate capacity.

6.2.3 Structural Control Maintenance

A preventative maintenance program for stormwater management structures will be implemented by the Facility in conjunction with routine inspections. As part of the program, all such equipment and structures will be inspected regularly (monthly) and repaired as needed to prevent pollution from being carried away in stormwater runoff. In addition, parking lots will be inspected regularly and cleaned if warranted.

6.2.4 Other Controls

Other controls are those controls which are identified as minimizing the exposure of stormwater runoff to raw material, final product or waste materials, sedimentation, and airborne dust; they may also include structural controls such as velocity dissipative devices at outfalls.

Five Part Development employs the following additional controls:

- Fueling Operations – Equipment fueling will generally be conducted in the waste disposal portions of the Facility using the portable, skid-mounted 2000-gallon fuel tank. The tank is installed on a trailer that has a secondary containment sufficient to hold approximately 140 percent of the tank capacity and is stored within the lined portion of the waste disposal area. A third-party fueling contractor is utilized to fuel the equipment located in the compost area. A 250-gallon gasoline tank is located just south of the scale house and is installed inside a galvanized stock tank as secondary containment which is undersized. The tank is located in a frequently traveled area of the Facility and any leakage from the secondary containment would be immediately apparent. The Facility has a Spill Prevention Control and Countermeasure Plan (SPCC) that discusses spill prevention procedures and protocol to be followed in the event of a spill from either of these tanks.
- Equipment Maintenance Building and Area – Based on the limited number of vehicles and the distance potential contaminants would have to travel before being discharged off-site, the potential risk of this source to impact the Facility drainages and discharge is minimal. Stormwater controls for this area include general good

housekeeping and routine inspections of the area for any spills and/or leaks from the vehicles. If necessary, any releases or impacted soils will be removed from the area and properly disposed.

- Preventative Maintenance Program – As part of the Facility's preventive maintenance program, it shall maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.

Please refer to the Facility map in Figure 2 for the locations of outfalls and all control structures.

6.3 Spill Prevention and Response Procedures

Five Part Development utilizes the Facility's SPCC Plan for spill prevention and response procedures.

As required by the General Permit, all spills will be recorded and documented within the SWMP and all spills occurring within the three years prior to the writing of the SWMP must be documented as well. All Facility personnel who would engage in emergency spill response should be fully trained and properly equipped. Detailed reports including date and time of the incident, location, volume and contents of spill, weather conditions, response procedures, parties notified, recommended revisions to the BMP program, operating procedures, and/or equipment needed to prevent recurrence will be completed by the Facility.

The SWMP must be modified within 14 days to address deficiencies that allowed the spill to occur. To prevent recurrence of the spills, the Facility must complete the Spill Report in Appendix C (Description of Reportable Quantity (RQ) Releases). A blank copy of the Spill Report is available in Appendix C. Completed reports shall be stored within this plan and filed in Appendix C.

6.4 Employee Training

Trained employees are critical to achieving the objectives of the SWMP. Therefore, employees, contractors and others as identified by the SWMP Administrator, who may be working where significant materials are handled, will be given instruction that will provide information regarding:

- Environmental laws and regulations;
- Pollution prevention concepts;
- The goals of the SWMP;
- The content of the SWMP;
- The pollution prevention systems and controls to be utilized in all areas at the Facility to minimize the pollutants in Facility's stormwater discharges, and how they are maintained;
- The Best Management Practices (BMPs) that will be used to minimize potential contamination of stormwater;

- When and how to conduct inspections, record applicable findings, and take corrective actions (only for those employees responsible for conducting inspections); and
- Facility spill/release Emergency Response Procedures.

Refresher training sessions must be held at least once per year. Records of the date and personnel receiving training must be maintained at the Facility (refer to Appendix D – Training Records).

7.0 INSPECTIONS

7.1 Monthly Facility Inspections

Routine facility inspections must be conducted during normal operating hours at least monthly. Blank inspection forms are provided in Appendix E and inspections must include the following areas:

- All areas of the Facility where industrial materials or activities are exposed to stormwater;
- Areas identified in the SWMP and those that are potential pollutant sources;
- Areas where spills and leaks have occurred in the past three years;
- Areas where vehicles enter or exit the Facility;
- Vegetated or landscaped areas where soil erosion can occur;
- Discharge points; and
- Control measures used to comply with the effluent limits contained in this permit.

These inspections must be conducted by a qualified person and at least one inspection per year must be conducted during a period when stormwater is discharging. The following must be examined during inspections:

- Industrial materials, residue or trash that may have or could come into contact with stormwater;
- Leaks or spills from industrial equipment, drums, tanks and other containers;
- Off-site tracking of industrial or waste materials, or sediment where vehicles enter or exit the Facility;
- Soil erosion and areas of scour in the immediate area of drainage features, control measures, and discharge points;
- Tracking or blowing of raw, final or waste materials from areas of no exposure to exposed areas; and
- Control measures needing replacement, maintenance or repair.

Documentation that the inspections have been completed and any corrective actions implemented should be maintained with the Facility's environmental files.
All deficiencies identified during inspections must be corrected immediately. If additional corrective actions are required, they must be completed before the next storm event if possible and within 14 days of the inspection.

7.2 Quarterly Visual Assessment

The Facility must conduct a visual assessment of its stormwater discharges once each quarter. Blank quarterly visual assessment forms are in Appendix E. A visual assessment of stormwater discharges from a facility provides a simple, low cost means of assessing the quality of the discharge with immediate feedback. The results of the monitoring should be used as a tool for evaluating the effectiveness of the Facility's SWMP and associated BMPs.

The quarterly observations must be performed by an employee that has received SWMP training. The assessments should be performed by the same person each time, if possible. No analytical tests are required to be performed on the samples. In performing a visual assessment, the following characteristics should be identified in the sample: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution.

Based on the results of the visual assessment, facility inspections must be conducted to attempt to identify the sources of the pollutants observed in the discharge during the assessment. For example, if an oily sheen is observed during the visual assessment, then the areas of the Facility where oil is stored or handled must be inspected to identify the sources of the sheen.

If the results of the visual assessments and/or the subsequent facility inspections indicate that the Facility SWMP is not adequately controlling stormwater pollution from the Facility, then the Facility SWMP must be updated as soon as is practical.

7.2.1 Visual Assessment Requirements

Stormwater discharges from the Facility must be visually monitored at the two (2) outfalls as indicated on the Facility map in Appendix B. The samples should be collected as the stormwater flows out of the outfall, yet before mixing with the stormwater already discharged. In locations where off-site sources are known to co-mingle with Facility discharges, visual assessment samples may be collected immediately upstream of the co-mingling, if feasible.

Detailed visual assessment sampling procedures are provided in Appendix E.

The following sampling conditions apply:

- No assessment is required if there is not sufficient rainfall or snowmelt to produce runoff or if hazardous conditions prevent sampling.
- The visual assessments must be performed on stormwater discharges collected at the Facility outfall(s) within the first thirty (30) minutes of discharge, if possible.
- If it is not possible to collect a sample of the discharge within the first thirty (30) minutes, then the sample must be collected as soon as practical. If it is not possible to collect within the first thirty (30) minutes of discharge, documentation explaining why it was not possible to collect in the first thirty minutes must be maintained as part of the SWMP.
- The sampled storm event must be an event that results in an actual discharge and is preceded by at least 72 hours of dry weather since the previous storm event.

8.0 MONITORING

8.1 Monitoring Locations and Substantially Identical Outfalls

Sampling Location Descriptions:

- Outfall 1 – Located at the northeastern portion of the Facility
- Outfall 2 – Located at the western portion of the Facility.

When a facility has two or more outfalls that are "substantially identical" relative to industrial activity, significant materials, and management practices within the area drained by the outfall, the facility personnel may perform monitoring of the effluent of one of such outfalls and report that the qualitative data also applies to the substantially identical outfalls. This representative concept can be used if the permittee includes in their SWMP a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents.

The drainage areas for Outfall 1 and Outfall 2 contain dissimilar industrial activity and therefore do not meet the substantially identical criteria.

8.2 Benchmark Stormwater Monitoring and Reporting

In addition to quarterly visual monitoring, which is required for the duration of the General Permit, the Facility must perform analytical monitoring of its discharges for certain parameters/pollutants. Because of the Facility's co-located SIC codes, the Facility falls under both Sector L1/L2, Landfills, Land Application Sites, and Open Dumps, and Sector C1, Chemical and Allied Products Manufacturing, and Refining, and is thereby required to perform analytical benchmark monitoring. Monitoring requirements are listed in Tables L-1 and C-1 of the General Permit. Five Part Development is required to monitor for:

- Per- and Polyfluorinated Substances (PFAS) – Quarterly (refer to Certification to Discharge in Appendix A for list of PFAS)
- Total Suspended Solids (TSS) – Quarterly
- Iron (total recoverable) - Quarterly
- Nitrate plus Nitrite Nitrogen – Quarterly
- Lead (potentially dissolved) – Quarterly
- Zinc (total recoverable) – Quarterly
- Total Phosphorus – Quarterly

8.2.1 Monitoring Frequency

Benchmark monitoring must be conducted at a minimum during year one of coverage under of the General Permit per the following:

- Five Part Development must conduct benchmark monitoring during each of the first four quarters of permit coverage. Refer to Section 8.1 for monitoring locations and descriptions. The Facility must monitor Outfalls 1 and 2 to ensure that the discharge remains below the benchmark value.

- Following the initial four quarters of benchmark monitoring, if the average of the four monitoring values does not exceed the benchmark, no additional sampling is required for the remainder of the permit period.
- If the average value of the initial four quarters of benchmark monitoring exceeds the benchmark value, or if less than four samples are mathematically certain to exceed the benchmark value (i.e., the sum of the results to date exceeds four times the benchmark), then the Facility must comply with the Additional Implementation Measures (AIMS) outlined in Section J of the General Permit and continue quarterly benchmark monitoring for that parameter until the results indicate the quarterly average is below the applicable benchmark.

Effluent Limitation Monitoring must be conducted annually in accordance with the MSGP and can coincide with a benchmark monitoring event, as applicable.

8.2.2 Sampling Procedure

Stormwater discharge from an outfall does not normally begin at the same instant that the rainfall begins. The lag time between the start of rainfall and the start of discharge flow depends on many factors. Such factors include the rainfall intensity, the size of the drainage area and the types of surface area drained. For example, it will take longer for discharge to begin during a light rainfall over a flat, grassy area than during a hard rain on a steep, paved parking lot. Stormwater sampling cannot begin until after the discharge has started. Sampling team members should be at the sampling point as soon as possible after the rainfall begins. It is desirable if they are ready to begin before the rainfall starts. The first samples should be taken in relation to the start of discharge, rather than the start of rainfall.

At the sampling location, stormwater runoff can be collected directly into the sample bottle, or if preferred, into a larger container. Excess solid material that may be floating on the surface or may be deposited on the bottom of the channel should be avoided. Usually, the materials are not representative. Solid materials floating in the column of the stormwater outfall may be collected if they are under one-half inch in size. The grab sample must be transferred from the large collection container to the sample bottle(s) simply by pouring the sample directly into the sample bottle(s) from the larger container. The sample must be kept well mixed during the transfer process.

8.2.3 Sample Analysis

The Facility must send the samples to a qualified laboratory for analysis using an approved method consistent with the General Permit analytical methods and using test procedures with quantitation limits at or below benchmark values for all benchmark parameters for which the Facility is required to sample.

8.2.4 Additional Implementation Measures (AIM) for Benchmark Exceedances

Part J of the General Permit requires that the AIM process be initiated if any of the following benchmark conditions occur:

- The four-quarter average for a parameter exceeds the benchmark threshold; or

- Fewer than four quarterly samples are collected but a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter (i.e., indicating an exceedance of the 4-quarter benchmark is certain).

In the event of an AIM conditions occurring, the Facility must follow the appropriate AIM level responses and deadlines as outlined in the General Permit. Five Part Development will follow the three levels of AIM outlined below in the event of a benchmark exceedance.

- **Level 1** = While in baseline status, if one of the above exceedance conditions occurs, the Facility will review the SWMP and associated control measures and implement additional measures, if necessary, within 14 days of the exceedance. Benchmark monitoring will continue until there is no exceedance.
- **Level 2** = While in Level 1, if one of the above exceedance conditions occurs, the Facility must implement additional pollution prevention and/or good housekeeping measures within14 days of the exceedance, if feasible. Benchmark monitoring will continue until there is no exceedance.
- **Level 3** = While in Level 2, if one of the above exceedance conditions occurs, the Facility must install permanent structural source and treatment controls. The Facility must have developed a schedule for implementation within 14 days of the exceedance and install the permanent controls within 60 days, if feasible. Benchmark monitoring will continue until there is no exceedance.

Documentation associated with AIMs actions should be retained in the Facility's environmental files.

8.3 Numeric Limitations Monitoring

The Facility is not applicable to Numeric Limitations Monitoring since is not identified in the Certification to Discharge issued by CDPHE.

8.4 Monitoring and Reporting for Discharges to Impaired Waters

Monitoring may be required for all direct and indirect discharges to impaired waters in addition to the monitoring discussed in the previous sections. A review of the discharge locations for each outfall at the Facility indicates that its stormwater is likely to discharge to the West Sand Creek waterbody from Outfall #1 via direct or indirect surface runoff to the northeast of the Facility and to an unnamed stream to the west of the Facility from Outfall #2 via direct or indirect surface runoff. The West Sand Creek waterbody is **not** currently classified as an impaired water according to the "Colorado's 2024 Integrated Report" pursuant to sections 303 (d), 314 and 305(b) of the Clean Water Act.

9.0 REPORTING AND RECORDKEEPING

9.1 Reporting Monitoring Data to CDPHE

Monitoring data must be submitted to CDPHE using their on-line Net-DMR tool no later than 30 days after you have received the complete laboratory results for all monitoring outfalls for the reporting period. The Facility's monitoring requirements will be prepopulated on the electronic

Discharge Monitoring Report ("DMR") form based on the certification to discharge. For any of your monitored outfalls that did not have a discharge within the reporting period, you must report in Net-DMR using a "no data" or "NODI" code for that outfall no later than 30 days after the end of the reporting period.

9.2 Annual Report

The General Permit requires that an annual report of information generated in the past calendar year be submitted by March 31st of the following year. The annual report is required for each calendar year that the Facility is covered by the General Permit. The following information must be included in the annual report:

- A summary of your past year's required routine facility inspection documentation;
- A summary of your past year's quarterly visual assessment documentation; and
- A summary of your past year's corrective action and any required AIM documentation. If you have not yet completed required corrective action or AIM responses at the time you submit your annual report, you must describe the status of any outstanding corrective actions or AIM responses. Also describe any incidents of noncompliance in the past year or currently ongoing, or if none, provide a statement that you comply with the permit.

The annual report must also include a certification statement signed by a company official or duly authorized representative.

Completed reports should be retained in the Facility's environmental files and are required to be submitted to the CDPHE at the following address:

Attn: Annual Report
Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

9.3 Recordkeeping

The Facility must retain copies of its SWMP (including any modifications made during the term of this permit), monitoring data, documentation of corrective actions taken, and all reports and certifications required by the General Permit for a period of at least three years from the date that your coverage under this permit expires or is terminated.

9.4 Waste Records

The General Permit requires that the Facility must store records for the types of wastes disposed of in each cell of the landfill. Waste records shall be maintained in the Facility's environmental files and within Appendix H of this SWMP.

10.0 PLAN MODIFICATION

The SWMP must be modified whenever necessary to address any of the triggering conditions listed in Part J of General Permit occur and to ensure that they do not reoccur; or to reflect

changes implemented when a review following the triggering conditions of the permit indicate that changes to the control measures are necessary.

Applicable Review and Revisions Conditions to Ensure Effluent Limits are met:

- An unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this or another NPDES permit) occurs at the Facility;
- A discharge violates an effluent limit;
- You become aware, or CDPHE determines, that your control measures are not stringent enough for the discharge to meet applicable water quality standards or non-numeric effluent limits;
- A required control measure was never installed, was installed incorrectly or not in accordance with the permit, or is not being properly operated or maintained; or
- Whenever a visual assessment shows evidence of stormwater pollution.

Applicable Review and Revisions due to AIM:

- A benchmark exceedance occurs during baseline, Level 1, or Level 2 status.
- Whenever AIM process identifies additional pollution prevention and/or good housekeeping measures are required to be implemented.
- Whenever permanent structural controls are required as part of the AIM process.

Corrective Action Review Conditions for SWMP Modification:

- Construction or a change in design, operation, or maintenance at your facility that significantly changes the nature of pollutants discharged in stormwater from your facility, or significantly increases the quantity of pollutants discharged.
- The average of four quarterly sampling results exceeds an applicable benchmark. If less than four benchmark samples have been taken, but the results are such that an exceedance of the four-quarter average is mathematically certain (i.e., if the sum of quarterly sample results to date is more than four times the benchmark level) this is considered a benchmark exceedance, triggering this review.

Appendix A

COR900000 General Permit and Certification to Discharge

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

CDPS GENERAL PERMIT COR900000
FOR
STORMWATER DISCHARGES ASSOCIATED WITH
NON-EXTRACTIVE INDUSTRIAL ACTIVITY
AUTHORIZATION TO DISCHARGE UNDER THE
COLORADO DISCHARGE PERMIT SYSTEM

In compliance with the provisions of the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended) and the Federal Water Pollution Control Act, as amended (33 USC 1251 et seq.; the "Act"), owners or operators of stormwater discharges associated with non-extractive industrial activity, as defined in this permit, are authorized to discharge from authorized locations throughout the State of Colorado to specified surface waters of the state, in accordance with the eligibility and permit application requirements, effluent limitations, monitoring requirements, inspection requirements, and other conditions set forth in this general permit. All discharges herein shall be consistent with the terms and conditions of this permit.

Renewal permittees must comply with the terms and conditions of the COR900000 permit issued March 7, 2012 and the permittee's corresponding certification until the effective date of this permit. The authorization to discharge under this permit is in effect from the date of the certification until the expiration date identified below.

This permit and the authorization to discharge shall expire at midnight on June 30, 2029.

Modified Reissued and Signed on May 31, 2024

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Sayers-Fay, Andrew Digitally signed by Sayers-Fay, Andrew
Date: 2024.05.31 15:06:09 -06'00'

Andrew Sayers-Fay, Permits Section Manager
Water Quality Control Division

PERMITS ACTION SUMMARY:

MODIFICATION 1: Issued: May 31, 2024, Effective date: July 1, 2024
MODIFICATION 1: Issued: January 31, 2024, WITHDRAWN February 29, 2024
ORIGINALLY ISSUED AND SIGNED: April 28, 2023, effective July 1, 2024

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CDPS GENERAL PERMIT COR900000 FOR STORMWATER DISCHARGES ASSOCIATED WITH NON-EXTRACTIVE INDUSTRIAL ACTIVITY

COR900000

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PART I

A. COVERAGE UNDER THIS PERMIT

Note: All cross references refer to parts and sections within this permit unless otherwise stated.

1. Facilities Covered

Facilities eligible to discharge under this permit are those that discharge stormwater associated with non-extractive industrial activity listed below in Parts I.A.1.a. and b.

a. Allowable Stormwater Discharges

Unless otherwise made ineligible under Part I.A.2, the following discharges are eligible for coverage under this permit:

i. Stormwater discharges associated with industrial activity as defined in Appendix C (Definitions and Abbreviations) and identified in Appendix A (Facilities and Activities Covered), including those subject to any of the national stormwater-specific effluent limitation guidelines (ELGs) under 40 CFR Subchapter N. Stormwater ELGs are incorporated into sector specific requirements in Part III.

ii. Stormwater discharges designated by the Water Quality Control Division (the division) as requiring coverage under this permit because the discharge:

(A) contributes to a violation of a water quality standard; or

(B) is a significant contributor of pollutants to waters of the state.

iii. Discharges that are not otherwise required to obtain permit authorization but are commingled with stormwater discharges that are authorized under this permit.

iv. Stormwater run-on that commingles with stormwater discharges associated with industrial activity.

v. Stormwater discharges subject to any New Source Performance Standards (NSPS).

b. Allowable Non-Stormwater Discharges

The following non-stormwater discharges are authorized by this permit provided that appropriate control measures are implemented to minimize erosion and sediment transport resulting from such discharges, and the non-stormwater component(s) of the discharge and the control measure(s) used are identified in the Stormwater Management Plan (SWMP) (see Part I.F SWMP—Specific SWMP Requirements):

i. Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids.

ii. Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with the approved labeling or manufacturers' instruction.

iii. Uncontaminated spring water where flows are not contaminated with process materials.

iv. Discharges from subterranean pumped or gravity flow dewatering systems (e.g. foundation or footing drains, sump pumps, etc.) where the source water is uncontaminated groundwater. Additionally, the discharge must not be contaminated with or come in contact with process materials or industrial activity, and the discharge rate must be 5 gallons per minute (gpm) or less. To be considered uncontaminated groundwater, the permittee must conduct appropriate due diligence to identify any potential sources of groundwater contamination at the dewatering location (e.g., landfills, mine or mine tailing area, Leaking Underground Storage Tank (LUST) sites, Voluntary Cleanup (VCUP) sites, environmental covenants, Superfund sites, or other area of contamination) and are not identified as significant contributors of pollutants by the division. If at any time the permittee becomes aware that an existing discharge is contaminated or has resulted in an adverse impact to the quality of any state waters, they must contact the division and submit a separate permit application for the discharge as appropriate.

v. Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains).

vi. Discharges from wet deck storage areas subject to the national ELG listed in Table A-2 in Part III provided no chemical additives are added to the discharge.

c. Emergency Firefighting

Discharges resulting from emergency firefighting activities during the active emergency response are authorized by this permit.

2. Limitations on Coverage

This permit does not authorize the discharges or activities listed below. Permittees may seek individual or alternate general permit coverage for such discharges as appropriate and available.

a. Discharges of Non-stormwater

Discharges of non-stormwater, except those authorized non-stormwater discharges listed in Part I.A.1.b, are not eligible for coverage under this permit.

b. Stormwater Discharges Associated with Construction Activity

Stormwater discharges associated with construction activity disturbing one acre or more are not eligible for coverage under this permit.

c. Discharges Currently Covered by Another Permit.

Discharges that are currently covered under an individual permit or an alternative general permit are not eligible for coverage under this permit.

d. Discharges Meeting Low Risk Discharge Guidance Criteria and Conditions.

Discharges that meet the criteria and conditions of a division Low Risk Discharge Guidance document are not eligible for coverage under this permit. A Low Risk Discharge Guidance document is a document developed in accordance with the Division Low Risk Discharge Policy, Water Quality Policy-27.

e. Stormwater Discharges Subject to Effluent Limitations Guidelines (ELGs)

Discharges subject to stormwater effluent limitation guidelines (ELGs) under 40 CFR, Subchapter N other than those identified in the relevant sector-specific section(s) of Part III are not eligible for coverage under this permit, and must be covered under an alternate general permit or under an individual permit.

Stormwater discharges covered by this permit that are subject to ELGs that become effective after this permit is issued, may continue coverage under this permit.

f. Discharges from Areas Where High PAH sealant is Applied

Stormwater discharges from paved surfaces, where industrial activities are located, that will be initially sealed or re-sealed with high PAH sealants on or following the effective date of this permit or permit certification.

g. Chemical Addition

Chemical additions (including release agents) that change the quality of the industrial stormwater are not authorized unless expressly approved by the division, and the division provides notification of such approval to the permittee.

h. Discharges to Waters Designated as Outstanding waters for Antidegradation Purposes

Discharges to receiving waters designated as "outstanding waters" are not eligible for coverage under this permit.

i. Discharges Where the Permittee Requests Consideration of Dilution in the Calculation of Effluent Limitations

These discharges are excluded because the general permit applies end-of-pipe (no dilution) limitations for all parameters. This limitation may include, but is not limited to, discharges to Threatened and Endangered (T&E) waters, for which dilution in the calculation of effluent limitations is not allowed.

3. **Obtaining and Maintaining Authorization under this Permit**

   a. **Application Requirements**

   To obtain authorization for stormwater discharges associated with industrial activities under this permit:

   i. **The applicant(s) must meet the eligibility requirements under Parts I.A.1 and I.A.2.**

   ii. **The applicant(s) must develop a SWMP in accordance with the requirements of Part I.E and Part I.F of this permit prior to submitting an application to the division.**

   iii. **In order to apply for certification under this general permit, the applicant must submit an application form as provided by the division by electronic delivery at least 90 days before the anticipated date of discharge. The completed and signed documents must be emailed to cdphe.wqrecordscenter@state.co.us with "COR900000 Application" as the subject line.**

   The division may require submittal via the division's online permitting system, when applicable. The division may grant a waiver for electronic submittal. If a waiver is granted, the application in its entirety, including signatures, must be submitted to:

   Colorado Department of Public Health and Environment
   Water Quality Control Division
   Permits Section, WQCD-PS-B2
   4300 Cherry Creek Drive South
   Denver, CO 80246

   iv. **The application must include certification that a SWMP will be completed prior to discharge of stormwater associated with industrial activity.**

   v. **The applicant(s) must receive notification that the division granted permit coverage prior to discharge of stormwater associated with industrial activity.**

   vi. **If the application is for a discharge via a Municipal Separate Storm Sewer System (MS4), the permittee must provide a copy of the application to the MS4 at the time it is submitted to the division.**

   b. **Permit Certification Procedures**

   Following review of the application or other information, the division may:

   i. **Request such additional information as is reasonably necessary to evaluate the discharge.**

   ii. **Delay the authorization to discharge pending further review.**

   iii. **Notify the applicant that additional terms and conditions are necessary.**

   iv. **Provide a compliance schedule in the certification for sector-specific terms and conditions that are new or more stringent than previous conditions.**

   v. **Deny the authorization to discharge under this general permit.**

   In these instances, the division will notify the applicant in writing of its request or determination.

   c. **Alternative Permits**

   i. **Division required alternate permit coverage: The division may require an applicant or permittee to apply for an individual permit or an alternative general permit if it determines the discharge does not fall under the scope of this general permit or if the division determines that compliance with permit terms will not control the discharge as necessary to prevent an exceedance of a water quality standard. In this case, the division will notify the applicant or permittee that a different permit application is required.**

   ii. **Permittee request for alternate permit coverage: A permittee authorized to discharge stormwater under this permit may request to be excluded from coverage under this general permit by applying for an individual permit. In this case, the permittee must submit an individual application, with reasons supporting the request, to the division at least 180 days prior to any discharge. When an individual permit is issued, the permittee's authorization to discharge under this permit is terminated on the effective date of the individual permit.**

d. Permit Expiration and Continuation

A permittee desiring continued coverage under the general permit must reapply at least 180 days in advance of this permit expiration. The division will determine if the permittee may continue to discharge stormwater under the terms of the general permit. An individual permit may be required for any facility not reauthorized to discharge under the reissued general permit.

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued and remain in force and effect. For permittees that have applied for continued permit coverage, discharges authorized under this permit prior to the expiration date will automatically remain covered by this permit until the earliest of:

i. **An authorization to discharge under a reissued permit, or a replacement of this permit, following the timely and appropriate submittal of a complete application requesting authorization to discharge under the new permit and compliance with the requirements of the new permit; or**

ii. **The issuance and effect of a termination issued by the division; or**

iii. **The issuance or denial of an individual permit for the facility's discharges; or**

iv. **A formal permit decision by the division not to reissue this general permit, at which time the division will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease when coverage under another permit is granted/authorized; or**

v. **The division has informed the permittee that discharges previously authorized under this permit are no longer covered under this permit.**

4. Permit Termination Procedures

a. Submitting a Notice of Termination request

To terminate permit coverage, the permittee must submit a complete and accurate Notice of Termination form, signed by the permittee, to the division at the address or electronic system listed in Part I.A.3. The permittee's authorization to discharge under this permit terminates when notified by the division.

A Notice of Termination request that does not meet one or more of the conditions identified in Part I.A.4.b below is not valid. The permittee is responsible for complying with the terms of this permit until notified by the division that the authorization is terminated.

b. Conditions for a Notice of Termination

The division may approve a Notice of Termination request when the permittee meets one of the following conditions:

i. **All permitted stormwater discharges associated with industrial activity that are authorized by this permit cease because the industrial activity has ceased, and no significant materials or industrial pollutants remain exposed to stormwater.**

ii. **The permittee has obtained authorization under an individual or alternative general permit for all stormwater discharges associated with industrial activity.**

iii. **No Exposure Certification. If the facility authorized to discharge stormwater under this permit becomes eligible for a no exposure exclusion from permitting under 5 CCR 1002-61.3(2)(h), the permittee may submit a complete and accurate No Exposure Certification to the division at the address listed in Part I.A.3. The division will terminate permit coverage using information provided in the No Exposure Certification form; the permittee does not need to submit a Notice of Termination.**

5. Transfer of Permit Coverage

The permittee must notify the division 30 days prior to instituting a new operator from a different organization. A permit transfer satisfies such notification.

Coverage under this general permit may be automatically transferred to a new discharger if all of the following conditions are met:

a. The permittee (existing discharger) and new discharger submit a complete and accurate Notice of Transfer form, signed by the permittee and the new legal entity, to the division at the address listed in Part I.A.3, at least 30 days prior to the proposed transfer date. The Notice of Transfer form must contain a specific date for transfer of permit responsibility, coverage, and liability.

b. The type of industrial activities and practices remain substantially unchanged.

c. The division does not notify the permittee of the need to submit a new application for coverage under the general permit or for an individual permit.

d. The division does not notify the existing discharger and new discharger of its intent to revoke coverage under the general permit.

B. PERMIT COMPLIANCE

1. Correcting a Violation

A permittee must comply with all the terms and conditions of this permit. Violation of the terms and conditions specified in this permit may be subject to civil and criminal liability pursuant to sections 25-8-601 through 612, C.R.S. Correcting a permit violation does not remove the original violation. Failure to take any required corrective actions, as detailed in Part I.J (Corrective Actions), constitutes an independent, additional violation of this permit and may be subject to civil and criminal liability. However, where corrective action is triggered by an event that does not itself constitute permit noncompliance, such as an exceedance of an applicable benchmark, there is no permit violation unless the permittee fails to take the required corrective action within the relevant deadlines established in Part I.J (Corrective Actions).

2. Compliance with Water Quality Standards

Discharges authorized by this permit must be controlled as necessary to meet applicable water quality standards. If at any time the permittee becomes aware, or the division determines, that the stormwater discharge will not be controlled as necessary such that the receiving water will not meet an applicable water quality standard, the permittee must take corrective action(s) as required in Part I.J.1 and I.J.2 and document the corrective actions as required in Part I.J.4.

C. CONTROL MEASURES

1. Installation and Implementation Specification

a. The permittee must implement control measures to minimize pollutant discharges to meet the effluent limits in Part I.D. All control measures used by the permittee to meet the effluent limitations contained in this permit must be selected, designed, installed, and maintained in accordance with good engineering, hydrologic and pollution control practices as defined in Appendix C (Definitions and Abbreviations), and the manufacturer's specifications, when applicable.

2. Routine Maintenance of Control Measures and Corrective Actions

a. Routine Maintenance: The permittee must maintain all control measures (structural and non-structural used to achieve the effluent limits) in accordance with good engineering, hydrologic and pollution control practices. Observations leading to the routine maintenance of control measures can be made during a site inspection, or during general observations of site conditions. The repairs or modifications to a control measure requiring routine maintenance, as defined in Appendix C, must be conducted to maintain an effective operating condition. This section is not subject to the requirements in Part I.C.2.b below.

b. Corrective Actions: When an inadequate control measure is identified, the permittee is in noncompliance with the permit until the inadequate control measure is replaced, modified or otherwise corrected and returned to effective operating condition in compliance with effluent limitations. Once out of compliance the permittee must immediately correct the inadequate control measure. If it is infeasible to replace, modify or install the control measure immediately after discovering a deficiency, the permittee must immediately implement interim control measures to prevent or minimize the discharge of pollutants from the permitted area and manage any stormwater run-on onto the site while correcting the primary control measure.

c. The permittee must document corrective actions in accordance with Part I.J (Corrective Actions) of this permit, and must revise the facility SWMP to reflect replacement or installation of new control measures in accordance with Part I.E and I.F.10 SWMP (General SWMP Requirements, Specific SWMP Requirements).

D. EFFLUENT LIMITATIONS

All discharges authorized under this permit must attain the effluent limitations under this Part I.D, as applicable to the discharge.

1. Practice-Based Effluent Limitations

Practice-based limitations required by this permit include the following:

a. Minimize Exposure

The permittee must minimize (as defined in Appendix C) the exposure of pollutant sources associated with manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff. Minimizing exposure may include locating these industrial materials and activities inside or protecting them with storm resistant coverings.

b. Good Housekeeping

The permittee must keep clean all areas exposed to stormwater runoff, as necessary to minimize potential sources of pollutants, using measures such as sweeping at regular intervals, keeping materials orderly and labeled, and storing materials in appropriate containers.

c. Maintenance of Control Measures

The permittee must maintain all control measures (structural and non-structural) used to achieve the effluent limits required by this permit in effective operating condition. The permittee must conduct maintenance of control measures in accordance with Part I.C (Control Measures) of this permit.

d. Spill Prevention and Response Procedures

The permittee must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such potential spills. The permittee must at a minimum implement:

i. Procedures for regularly inspecting, testing, maintaining, and repairing all industrial equipment and systems to avoid situations that may result in leaks, spills, and other releases of pollutants in stormwater discharged offsite or to state waters.

ii. Procedures for plainly labeling containers that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;

iii. Preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, or procedures for material storage and handling;

iv. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available; and

v. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies. Contact information must be in locations that are readily accessible and available.

e. Erosion and Sediment Controls

The permittee must stabilize areas with exposed soil and contain runoff using structural and/or non-structural control measures to minimize erosion and sedimentation, and minimize the resulting discharge of pollutants.

f. Management of Runoff and Pollutant Removal

The permittee must divert, infiltrate, reuse, or contain stormwater; or remove pollutants from stormwater runoff, in a manner that minimizes pollutants in stormwater discharges from the site.

g. Salt Storage Piles or Piles Containing Salt

The permittee must enclose or cover storage piles of salt, or piles containing salt, used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, and implement appropriate measures to minimize exposure resulting from adding to or removing materials from the pile. Piles do not need to be enclosed or covered if stormwater runoff from the piles is not discharged or if discharges from the piles are authorized under another permit.

h. Sector Specific Practice-based Effluent Limits

The permittee must achieve any additional practice-based limits stipulated in the relevant sector specific sections of Part III, as indicated in their certification.

i. Employee Training

The permittee must develop and implement a training program for employees. Training must be conducted at least annually, and must address the following, as applicable to the trainee's activities: the site-specific control measures used to achieve the effluent limits in this Part, components and goals of the SWMP, monitoring and inspection procedures, and other applicable requirements of the permit. At a minimum, the following individuals must be trained in the topics as indicated in i. through iv below.

i. **Employee(s) overseeing implementation of, revising, and amending the SWMP.**

ii. **Employee(s) performing installation, inspection, maintenance, and repair of control measures.**

iii. **Employee(s) who work in areas of industrial activity subject to this permit.**

iv. **Employee(s) who conduct stormwater discharge monitoring required by Part I.H and Part I.I of this permit.**

j. Non-Stormwater Discharges

The permittee must eliminate non-stormwater discharges not authorized by a permit or not conducted in accordance with a division Low Risk Policy document. See Part I.A.1.b for a list of non-stormwater discharges authorized by this permit.

k. Waste, Garbage and Floatable Debris

The permittee must minimize the discharge of waste, garbage, and floatable debris from the site by keeping exposed areas free of such materials or by intercepting them before they are discharged using structural control measures (e.g., screens, racks).

l. Dust Generation and Vehicle Tracking of Industrial Materials

The permittee must minimize generation of dust and off-site tracking of raw, final, or waste materials.

m. Per- and polyfluoroalkyl substances (PFAS) Storage and Release

i. **Except for during emergency firefighting activities, the permittee must prevent or minimize the contribution of PFAS-containing materials to stormwater discharges, including from all areas that contribute stormwater runoff to the outfalls.**

ii. **If the permittee uses PFAS-containing foams for emergency firefighting, they must evaluate whether foams that do not contain PFAS may be used in some or all types of fires at the facility. Results of the evaluation must be documented in accordance with Part I.F.6.b. If foam containing PFAS is anticipated to be used for emergency firefighting, the permittee must develop procedures to prevent or minimize releases to stormwater running onto or from permitted areas including removal of PFAS-containing foams following the emergency response period.**

iii. **The permittee must exercise due diligence in identifying sources of PFAS associated with industrial activities at the permitted facility that may be exposed to stormwater. Table 1 provides a list of common materials containing PFAS that may be relevant to permittees. Identified materials must be documented in the SWMP (Part I.F.5.b). The permittee must implement control measures to prevent or minimize the discharge of identified materials associated with industrial activities and containing PFAS. Control measures must include measures for containing materials within storage handling areas, and spill prevention and response procedures that prevent or minimize reintroduction of PFAS-containing**

materials to wastewater, stormwater or surface water. Disposal of PFAS-containing materials must be done through legal means. This requirement does not apply to materials released during firefighting emergency response periods.

Table 1. Common substances that contain PFAS in industrial activities[1]	
Chemguard foam	MacDermid Macuplex STR
Scotchgard	Plating Process Systems PMS-R
Tridol	Femetrol-140
Dry chemicals used for type B fires	Brite Guard AF-1 fume control
ANKOR WETTING AGENT F	Goretex
Clepo Chrome Mist Control	Teflon or teflon-type coating (including PTFE coatings)
Fumetrol 140 Mist Suppressant	Electrostatic control agents
Benchmark Benchbrite STX	Friction control agents
Benchmark CFS	Dirt repellant
MacDermid Proquel B	Anti-adhesives

1. The substances listed may potentially contain PFAS.

2. Numeric Limitations (when applicable, will be specified in the certification)

   a. Discharges must comply with numeric effluent limitation guidelines contained in Part III according to the industry's sector which is based off the SIC code.

   b. Discharges must comply with site specific numeric water quality based effluent limitations. With the exception of PFAS, when the division determines that the terms and conditions of the permit will not control the discharge as necessary to meet applicable water quality standards, the division may establish numeric water quality based effluent limits in the certification after the permittee is in AIM Level 3 according to the reasonable potential process in i and ii below:

      i. If the rolling 4-sample quarterly average of results collected after the AIM Level 3 response due date in Part I.G.3.d.ii(A) and (B) exceeds the benchmark concentration, the division may require the permittee to modify their certification to require additional control measures on a site specific basis to meet applicable water quality standards. If site specific control measures are required, the division may include a compliance schedule per Part I.D.8.

      ii. If the permittee does not comply with the site specific control measure requirements in i, the division may require the permittee to modify their certification and the division may establish numeric water quality based effluent limits protective of and equal to the applicable water quality standard as no consideration for dilution is granted under this general permit. If numeric water quality based effluent limitations are included, the division may include a compliance schedule per Part I.D.8. Inclusion of numeric water quality-based effluent limits will be based on the following information where readily available and relevant:

         (A) existing stormwater discharge data from the facility;

         (B) the permit application;

         (C) required reports;

         (D) relevant studies or publications including, but not limited to EPA Industrial Stormwater Fact Sheet Series;

         (E) whether the discharge is to an impaired water or if the discharge needs to be controlled as necessary in order to meet the water quality standards in a downstream impaired water;

         (F) other sources of information that indicate that compliance with the other terms and conditions of this permit will not control the discharge as necessary to meet applicable water quality standards; and

(G) whether the discharge is subject to one or more of the Watershed Protection Control Regulations 71-74.

iii. The division will not include numeric limits for PFAS in permit certifications for this permit term.

c. The division may require an individual permit in order to control an exceedance of a water quality standard per Part I.A.3.c.

3. Narrative Limitations (will be specified in certification when applicable)

a. Where a discharge is a new discharge to an impaired water without an EPA approved or established Total Maximum Daily Load (TMDL), the division will include a narrative water quality-based effluent limitation consistent with the following statement:

> Discharges authorized under this permit must be controlled as necessary to meet the applicable water quality standard for (the subject pollutant) at the point of discharge (end of pipe).

b. The division will include in the permit certification any additional narrative terms or conditions that the division determines are necessary to ensure that the discharge meets water quality standards, including water quality standards in a downstream water segment. This may include site-specific benchmarks or monitoring only requirements where the division does not have sufficient information to establish site-specific benchmarks.

4. Additional Requirements for Discharges to Waters Designated as Critical Habitat for Threatened and Endangered Species (will be specified in certification when applicable)

Where a pollutant and applicable water quality standard has been identified, the division will apply the monitoring requirements of Part I.I.5 in the permit certification. The division may also include additional terms and conditions in the permit certification to determine whether compliance with the remaining terms and conditions of the permit will control the discharge as necessary to eliminate or minimize the potential for no more than minor detrimental effects to listed species in regards to receiving water mixing (October 2005 Memorandum of Agreement entered into by the division, EPA, and USFWS).

5. Additional Requirements for New or Increased Discharges to Reviewable Waters (will be specified in certification when applicable)

If the division determines that compliance with the other terms and conditions of this permit will not control the discharge as necessary to be consistent with the applicable anti-degradation requirements, the division may include additional terms and conditions in accordance with Part I.D.2.b, 3b, or 7.

6. Requirements for Existing Discharges to an Impaired Water with an EPA Approved or Established TMDL or applicable Watershed Protection Control Regulations 71-74.

Where EPA has approved or established a TMDL or there is an existing Watershed Protection Control Regulation, the division will include any additional numeric or narrative limits, practice-based limits, benchmarks, monitoring, or other terms or conditions in the permit certification that the division determines are necessary to control pollutants consistent with the assumptions and requirements of the TMDL or any applicable Watershed Protection Control Regulation, including any wasteload allocation for the facility.

7. Requirements for Discharges Subject to ELGs

Where the permittee is subject to an ELG in Part III, the permittee will be assigned the ELG limits and may be assigned additional more stringent site-specific benchmark(s) corresponding to ELG parameter(s).

8. Compliance Schedule Language

The division may include a compliance schedule for any new or revised limitations established in Part I.D.2.b, I.D.4 through 7 included in a permit certification as appropriate. Existing dischargers may be granted compliance schedules consistent with Policy CW-3 for any new effluent limitations applicable to the discharge. Some items requiring a compliance schedule may require an individual permit.

E. STORMWATER MANAGEMENT PLAN (SWMP)—General SWMP Requirements

The General SWMP requirements contained in this section address administrative requirements of the SWMP, as opposed to the specific SWMP content requirements provided in Part I.F of the permit.

An existing permittee authorized under the previous versions of this permit must modify the existing SWMP to comply with the requirements of this permit within 120 days of the certification effective date or by a compliance schedule due date.

1. SWMP requirement

   The permittee must develop, implement, and maintain a SWMP that reflects current conditions for each facility authorized by this permit. The SWMP must be prepared in accordance with good engineering, hydrologic and pollution control practices.

2. Preparation, Submission and Implementation

   The permittee must complete a SWMP prior to when the facility begins operation that could result in a stormwater discharge associated with industrial activity. The facility must submit the SWMP to the division only if requested. The permittee must implement the SWMP when the facility begins industrial activities, which includes installation of control measures.

3. Signatory Requirements

   The permittee must sign and certify all SWMPs in accordance with Part I.K (Reports and Recordkeeping); this requirement applies to the original SWMP prepared for the facility, and each time the permittee modifies a SWMP as required by Part I.E.7.a and b below.

4. Permit Retention

   The permittee must maintain a copy of this permit and the permit certification issued to the permittee with the SWMP.

5. SWMP Retention

   The SWMP must be accessible to facility staff and the division when at the facility location. This may include electronic access or a printed copy of the SWMP.

6. Consistency with Other Plans

   The permittee may incorporate, by reference, applicable portions of plans prepared for other purposes at their facility. Plans or portions of plans incorporated by reference into a SWMP become enforceable requirements of this permit and must be available along with the SWMP as required in Part I.E.5 above.

7. Required SWMP Modifications

   a. Division initiated:

      i. The permittee must modify the SWMP when notified by the division that it does not meet one or more of the requirements of this permit. Unless otherwise determined by the division, the permittee must make the necessary changes to the SWMP and implement those changes within 30 days of the date of the notification.

      ii. The division may require the permittee to submit the modified SWMP to the division.

      iii. If the division determines that the permittee's stormwater discharges do not, or may not, achieve the effluent limits required by this permit, the division may require the permittee, within a specified time period, to develop and implement a supplemental control measure action plan, which describes additional SWMP modifications to adequately address the identified water quality concerns.

   b. Permittee initiated:

      i. The permittee must modify the SWMP whenever necessary to address any of the triggering conditions for corrective action in Part I.J (Corrective Actions) to ensure that they do not reoccur. SWMP modifications must meet the corrective action deadlines in Part I.J (Corrective Actions).

      ii. The permittee must modify the SWMP whenever there is a change in design, construction, operation, or maintenance at the facility that significantly changes the nature of pollutants discharged in stormwater from the facility, significantly increases the quantity of pollutants discharged, or that requires the permittee to implement new or modified control measures.

iii. The SWMP modifications may include a schedule for control measure design and implementation, provided that interim control measures needed to comply with the permit are documented in the SWMP and implemented during the design period.

8. Sector-specific requirements

The SWMP must include any additional sector-specific requirements outlined in Part III.

F. STORMWATER MANAGEMENT PLAN (SWMP)—Specific SWMP Requirements

The SWMP must contain the 11 elements described in this section.

1. SWMP Administrator

The SWMP must list the individual(s) by title and name who are designated as responsible for implementing the SWMP in its entirety and has the decision making ability and day to day operational control over stormwater. This role may be filled by more than one individual.

2. Facility Description

The facility description must include:

a. A narrative description of items manufactured and major activities associated with industrial activity.

b. The total size of the facility property in acres.

3. Run On

Locations and sources of run-on to the facility from adjacent property that the permittee believes contributes to elevated pollutant concentrations in the permittee's runoff.

4. Facility Map

The SWMP must include a legible site map(s), showing the entire facility, and vicinity as appropriate, and at a minimum, identify:

a. Location of significant impervious surfaces within the facility property boundaries, including paved areas and buildings.

b. The locations of all facility stormwater conveyances including ditches, pipes, and swales, and dry wells.

c. The locations of stormwater inlets and outfalls, with a unique identification code for each outfall (e.g., Outfall No. 001, No. 002, etc.), and indicating whether one or more outfalls are "substantially identical" under Part I.H (General Monitoring Requirements).

d. Directions of stormwater flow indicated by arrows.

e. Locations of all pollutant sources (actual or potential) associated with specific industrial activities.

f. Location of all structural control measures used to meet the effluent limits required by this permit.

g. Locations of all stormwater monitoring points applicable to the facility (if different than outfalls).

h. Location and description of any non-stormwater discharges authorized in Part I.A.1.b, emergency firefighting discharges authorized in Part I.A.1.c, or authorized by separate permit coverage.

5. Facility Inventory and Assessment of Pollutant Sources

The facility inventory and assessment must include the following:

a. Inventory of Facility Activities and Equipment

The inventory must identify all areas (except interior areas that are not exposed to precipitation) associated with industrial activities that have been, or may potentially be, sources of pollutants, that contribute, or have the potential to contribute, any pollutants to stormwater, including but not limited to:

i. Loading and unloading of materials, including solids and liquids.

ii. Outdoor storage of materials or products, including solids and liquids.

iii. Outdoor manufacturing and processing.

iv. On-site dust or particulate generating processes, including dust collection devices and vents.

v. On-site waste treatment, storage, or disposal, including waste ponds and solid waste management units.

vi. Vehicle and equipment fueling, maintenance, and cleaning (includes washing).

vii. Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility.

viii. Roofs or other surfaces exposed to air emissions from a permittee's manufacturing building or a process area that is not otherwise regulated (i.e., no air permit or Air Pollution Emissions Notice [APEN see https://cdphe.colorado.gov/apens-and-air-permits/do-you-need-an-apen-or-air-permit]), and where it is evident that deposits of particles or residuals from roof stacks/vents could be mobilized by stormwater runoff.

ix. Roofs and associated structures if the permittee determines they may be sources of pollutants. For example, precipitation causing aluminum to leach from a structure.

b. Inventory of Materials

The inventory must list materials that contribute, or have the potential to contribute, pollutants to stormwater, including but not limited to the following:

i. The types of materials handled at the facility that may be exposed to precipitation or runoff under typical conditions or that if leaked or spilled could result in stormwater pollution. The inventory must describe the method and location of any on-site storage or disposal of the materials.

ii. A list of PFAS-containing materials, identified in accordance with Part I.D.1.m.iii, that may become exposed to stormwater or are located outside. See Table 1. If materials containing PFAS are stored, document the location, quantity, method of storage and current disposal practices, if any.

6. Description of Control Measures

a. The permittee must document the design, installation and implementation specifications, including maintenance specifications, for each control measure used by the permittee to meet the effluent limitations contained in this permit, including control measures implemented for stormwater run-on that commingles with the stormwater generated on-site. Documentation must be retained with the SWMP. For non-structural control measures, a description of procedures may substitute for specifications as long as they are in accordance with good engineering, hydrologic and pollution control practices.

b. If the permittee uses PFAS-containing foam for emergency firefighting, they must document the results of the evaluation in Part I.D.1.m.ii by specifying potential substitutes for PFAS-containing foams or if the use of PFAS-containing foam is necessary and the reason it is necessary.

7. Documentation of Control Measure Requirements

The permittee must document the schedules and procedures for the following subset of practice-based effluent limitations.

a. Good Housekeeping (see Part I.D.1.b) – A schedule for regular pickup and disposal of waste materials.

b. Maintenance (see Part I.C.2) – Preventative maintenance schedules for industrial equipment and systems; control measures; and any back-up practices in place should a runoff event occur while a control measure is off-line.

c. Spill Prevention and Response Procedures (see Part I.D.2.d) – Procedures for preventing, responding to, and reporting spills and leaks. The permittee may reference other plans (e.g., a Spill Prevention Control and Countermeasure (SPCC) plan) otherwise required by a permit for the facility, provided that a copy of the other plan is kept onsite with the SWMP, and made available for review consistent with Part I.E (SWMP—General SWMP Requirements).

d. Employee Training

i. A schedule for all types of training required by Part I.D.2.i this permit.

ii. Document training was conducted in accordance with Part I.D.2.i.

8. Inspection Procedures and Documentation

The permittee must document inspection procedures, and maintain such procedures and other documentation with the SWMP, as follows:

a. The permittee must document procedures for performing the facility inspections required by Part I.G (Inspections) of the permit. Procedures must identify:

i. Person(s) or positions of person(s) responsible for inspection;

ii. Schedules for conducting inspections,

iii. Specific items to be covered by the inspection, including inspection schedules for specific outfalls.

b. The permittee must maintain inspection documentation with the SWMP as required by Part I.G (Inspections) of this permit.

c. Permittees that invoke the exception to quarterly inspections for inactive and unstaffed facilities must include in the SWMP the dates the exemption is effective and a signed and certified documentation to support this claim as required in Part I.G (Inspections).

9. Monitoring Procedures and Documentation

The permittee must document monitoring procedures, and maintain such procedures and other documentation with the SWMP, as follows:

a. The permittee must document procedures for performing the monitoring required by Part I.I (Specific Monitoring Requirements) of the permit. For each type of monitoring, procedures must identify the following:

i. Locations where samples are collected, and outfall identification by its unique identifying number.

ii. Staff responsible for conducting stormwater sampling.

iii. Procedures for sample collection and handling, including any deviations from sampling within the first 2 hours of a measurable storm event (see Part I.H.6).

iv. Procedures for when samples will be collected outside of normal operating hours including determining how discharge events will be identified (e.g., checking weather reports, noting rainfall depth or snowmelt conditions that result in discharges). Note that you are required to collect quarterly samples for each quarter for which there is a discharge event, even if all discharge events occurred outside of normal operating hours.

v. Parameters for analysis, holding times and preservatives, analytical methods, and laboratory quantitation levels.

vi. Procedures for sending samples to a laboratory.

vii. The numeric control values (benchmarks, numeric limits, TMDL-related requirements, or other requirements) applicable to discharges from each outfall.

b. Permittees must maintain Quarterly Visual Assessment documentation (see Part I.I.1) with the SWMP.

c. Permittees that invoke the monitoring exceptions for inactive and unstaffed facilities must include in the SWMP the signed and certified documentation to support this claim as required by Part I.H.12.

d. Permittees that use the substantially identical outfall monitoring exception (Part I.H.3) must document why the permittee expects the outfalls to discharge substantially identical effluents.

10. Corrective Action Documentation

a. Where corrective actions are performed under Part I.C.2.b or I.J the permittee must document in the SWMP a description of the corrective action performed and the date it was completed. Corrective action records must be maintained in the onsite SWMP and in accordance with the recordkeeping requirements in Part I.K. If it is infeasible to immediately perform corrective actions, the permittee must document the interim control measures and the following information.

i. A description of why it is infeasible to initiate the installation or repair immediately; and

ii. A schedule for installing or repairing the control measure and returning it to an effective operating condition as soon as possible.

11. Natural Background Pollutant Levels

a. Where the permittee demonstrates that benchmark exceedances are solely due to natural background, they are not required to perform corrective actions following benchmark exceedances in accordance with Part I.I.7. The natural background demonstration must be documented in the SWMP with the following information:

i. The rationale used for determining the exceedances were caused by natural background pollutant levels and an explanation of why the presence of the pollutant causing the benchmark exceedance is not related to the activities at the facility.

ii. Data, source of data, publications, and calculations to support a determination under Part I.I.7.a.i.

iii. Documentation on whether the receiving water is impaired for the pollutant of concern with the benchmark exceedance.

iv. A map showing the reference site location in relation to facility along with available land cover information.

v. Reference site and test site elevation.

vi. Available geology and soil information for reference and test sites.

vii. Photographs showing site vegetation.

viii. Site reconnaissance survey data regarding presence of roads, outfalls, or other human-made structures.

ix. Records from relevant state or federal agencies indicating no known mining, forestry, or other human activities upstream of the proposed reference site.

G. INSPECTIONS

1. Inspection Frequency and Personnel

a. The permittee must conduct and document inspections of the facility at least quarterly (i.e., once each calendar quarter). Inspections must be conducted at least 20 days apart unless performed as a Level 1 response.

b. The permittee must conduct a minimum of one inspection per calendar year during a rain or snow runoff event. A rain event means during, or within 24 hours after the end of, a measureable storm event. A snowmelt event means at a time when a measurable discharge occurs from the facility.

c. The permittee must ensure that inspections are conducted by Qualified Personnel.

2. Inspection Scope

Each inspection must include:

a. Observations made at stormwater outfalls and sampling locations, if different than outfalls, for the following:

i. The condition of and around stormwater outfalls, including flow dissipation measures to prevent scouring.

ii. The presence of non-stormwater discharges not authorized in Part I.A.1.b, such as domestic wastewater, noncontact cooling water, or process wastewater (including leachate).

b. Observations of any new potential pollutants not mentioned in the SWMP.

c. A verification that the site map in the SWMP reflects current conditions.

d. Observations for the presence of non-stormwater discharges not authorized in Part.I.A.1.b, such as domestic wastewater, noncontact cooling water, or process wastewater (including leachate).

e. Observations of leaks from drums, tanks and containers.

f. An assessment of all control measures used to comply with the effluent limits contained in this permit, noting all of the following:

i. Locations of control measures that need maintenance or repair.

ii. Reason maintenance or repair is needed and a schedule for maintenance or repair.

iii. Locations where additional or different control measures are needed and the rationale for the additional or different control measures.

3. Exception to Inspection Frequency for Inactive and Unstaffed Sites That Meet the Condition of No Exposure

The requirement that permittees conduct and document quarterly inspections of the facility, and conduct at least one (1) inspection per calendar year during a runoff event, does not apply at a facility that is inactive and unstaffed, as long as a condition of no exposure exists at its facility, i.e., there are no industrial materials or activities exposed to stormwater. Such facilities are required to conduct two site inspections annually, one between March 1 – May 31 and one between August 1 – October 31, in accordance with the requirements of this Subpart.

To invoke this exception, a permittee must maintain a statement in the facility SWMP pursuant to Part I.F.8.c indicating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to precipitation, in accordance with the substantive requirements in 5 CCR 1002-61.3(2)(h). The statement must be signed and certified in accordance with Part I.K.7 (Reports and Recordkeeping).

If conditions change and industrial materials or activities become exposed to stormwater or the facility becomes active and/or staffed, this exception no longer applies and the permittee must immediately resume quarterly inspections.

4. Non-Compliance Discovered During Inspection

Any corrective action required as a result of a facility inspection must be performed consistent with Part I.J (Corrective Actions) of this permit, and retained with the SWMP.

5. Inspection Documentation

The permittee must document the findings for each inspection in an inspection report or checklist, and keep the record onsite with the facility SWMP. The permittee must ensure each inspection report documents the observations, verifications, and assessments in Part I.G.2 with the following information.

a. The inspection date and time.

b. Name(s) and title(s) of personnel conducting the inspection.

c. Locations inspected.

d. Weather information and a description of any discharges occurring at the time of the inspection.

e. Location(s) and identification of control measures requiring routine maintenance.

f. Location(s) and identification of discharges of sediment or other pollutants from the site.

g. Location(s) and identification of inadequate control measures.

h. Location(s) and identification of additional control measures needed that were not in place at the time of inspection.

i. Description of corrective action(s) for items f through h above in accordance with Part I.J.4.b (Corrective Action Documentation).

j. Deviations from the minimum inspection schedule as required in Part I.G.1. This would include documentation of division approval for an alternate inspection schedule outlined in Part I.G.3.

k. After adequate corrective action(s) have been taken, or where a report does not identify any incidents requiring corrective action, the Qualified Personnel must make the following statement and provide the date of the statement:

"I verify that, to the best of my knowledge and belief, that if any corrective action items were identified during the inspection, those corrective actions are complete, and the site is currently in compliance with the permit."

H. GENERAL MONITORING REQUIREMENTS

All permittees must collect and analyze stormwater samples and document monitoring activities consistent with the procedures described in Part I.I and any additional sector-specific requirements in Part III. The results of such monitoring must be reported on the Discharge Monitoring Report form (see Part I.K – Reporting and Recordkeeping).

1. Monitored Outfalls

Applicable monitoring requirements apply to each outfall authorized by this permit, except as otherwise exempt from monitoring as a "substantially identical outfall."

2. Representative Sampling

Samples and measurements must be representative of the nature of the monitored discharge.

3. Substantially Identical Outfalls

a. When a facility has two or more outfalls that, based on a consideration of features (e.g. grass vs. pavement, slopes, catch basins vs. swales) and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may monitor the effluent of one such outfall and report that the results also apply to the substantially identical outfalls.

   i. For the visual assessment monitoring type (Part I.I.1—Specific Monitoring Requirements) and when the permittee is required to monitor PFAS (as specified in Part III), this provision only applies provided that visual assessments and PFAS monitoring are rotated between each substantially identical outfall throughout the period of the permittees coverage under this permit.

b. As required in Part I.F.9.d, the SWMP must describe the rationale for any substantially identical outfall determinations.

c. Monitoring for PFAS may be applied to substantially identical outfalls, provided the permittee rotates among outfalls and performs any additional sampling to ensure that each outfall with a discharge is sampled once during the permit term.

4. Measurable Storm Events

a. Rain event. Permittees must conduct all required monitoring on a storm event that results in an actual discharge from the facility ("measurable storm event") that allows for the collection of a representative sample using sampling methods described in 40 CFR 136. The sampled storm event must also follow the preceding measurable storm event by at least 72 hours (3 days).

b. Snowmelt event. The permittee must conduct snowmelt monitoring at a time when a discharge occurs from the facility that allows for the collection of a representative sample using sampling methods described in 40 CFR 136.

5. Storm Event Information

a. Where monitoring of a discharge that is a measureable storm is required, the permittee must document the information below.

   i. The date and time that discharge commenced at each outfall, time of sampling, duration (in hours) of the rainfall event, and magnitude (in inches) of the storm event sampled. For snowmelt monitoring, the permittee is only required to document the date of the sampling event.

   ii. Indication that the sampled storm event was at least 72 hours (three days) following the end of the previous storm event.

6. Sample Type and Requirements

a. Grab or composite samples must be used for all monitoring. The permittee may not switch between grab sampling and composite sampling during a full reporting year without prior approval from the division.

b. Grab samples must be collected within the first two (2) hours of the start of a measurable storm event (see Part I.H.4). If it is not possible to collect the sample within the first two (2) hours of a measurable storm event, the sample must be collected as soon as practicable after the first two (2) hours, and documentation must be kept with the SWMP explaining why it was not possible to take samples within the first two (2) hours.

c. Composite samples must begin within the first hour of the start of a measurable storm event. Composite samples may be flow weighted or time weighted. For the purposes of this permit, a flow-weighted composite sample means a composite sample consisting of a mixture of aliquots collected at a constant or variable time interval, where the volume of each aliquot included in the composite sample is proportional to the estimated or measured incremental discharge volume at the time of the aliquot collection compared to the total discharge volume estimated or measured over the monitoring event. For the purposes of this permit, a time-weighted composite sample means a composite sample consisting of a mixture of equal volume aliquots collected at a regular defined time interval over a specific period of time. Composite sampling is not allowed for pH, oil and grease, phenols, volatile organics or other parameters when the approved methods are incompatible with composite sampling (e.g., sample holding time too short, chemical monitored adheres to plastic equipment).

d. All discharge samples at a facility must be taken during the same storm event, unless infeasible.

7. Analytical Requirements

All sampling and analyses must be performed by the permittee according to specified methods in 40 Code of Federal Regulations (CFR) Part 136; methods approved by EPA pursuant to 40 CFR Part 136; or methods approved by the division, in the absence of a method specified in or approved pursuant to 40 CFR Part 136.

The permittee may use an equivalent and acceptable alternative to an EPA-approved method without EPA review where the requirements of 40 CFR Part 136.6 are met and documented. The permittee may use an Alternative Test Procedure. An Alternative Test Procedure is defined as a way in which an analyte is identified and quantified that is reviewed and approved by EPA in accordance with 40 CFR Part 136.4 for nationwide use, or a modification to a 40 CFR 136 approved method that is reviewed and approved by EPA in accordance with 40 CFR Part 136.5 for limited use.

a. The permittee must select a test procedure that is "sufficiently sensitive" as defined in Appendix C for all monitoring conducted in accordance with this permit.

b. Division established minimum PQLs for specific parameters are listed in the most current edition of the division's Practical Quantitation Limits Policy (CW-6). If the division's Practical Quantitation Limits Policy does not provide a 40 CFR 136 based PQL for a parameter, then the analytical method used must have a minimum level (ML) that is less than or equal to any effluent limits or benchmark concentrations that are applicable. In cases where monitoring is "report only" then the analytical method used must have a ML less than the applicable water quality criteria for the pollutant included in the permit certification. The division established minimum PQLs for select parameters are listed in Tables 2 and 3.

c. If the permit contains an interim effluent limitation (a limit is report only until such time as a numeric effluent limit becomes effective) for a parameter, the analytical method and PQL chosen for all monitoring conducted in accordance with this permit for the parameter must be one that can measure to the final numeric effluent limit. If all analytical methods and corresponding PQLs are greater than the final numeric effluent limit(s), then the analytical method with the lowest PQL must be used.

d. When the analytical method which complies with the above requirements has an ML greater than the permit benchmark or limit, and the permittee's analytical result is less than the ML, the permittee must report "BDL" (below detection limit) on the DMR. Such reports will not be considered as violations of the permit limit, as long as the method is sufficiently sensitive. For parameters that have a report only requirement, and the permittee's analytical result is less than the ML, "< X" (where X = the ML) "<X" must be reported on the DMR.

e. In the calculation of average concentrations (i.e. 7- day average, 30-day average, 2-year rolling average) any individual analytical result that is less than the ML must be considered to be zero for the calculation purposes. When reporting:

If all individual analytical results are less than the ML, the permittee must report either "BDL" or "<X" (where X = ML) following the guidance above.

If one or more individual results is greater than the ML, an average must be calculated and reported. Note, that it does not matter if the final calculated average is greater or less than the ML, it must be reported as a value.

Table 2. PQLs – Metals, Inorganics, Radiological Parameters, and Nonylphenol[1]

Parameter	Reporting Units	PQL	Parameter	Reporting Units	PQL
Aluminum	µg/L[2]	15	Ammonia Nitrogen	mg/L[3] N	0.2
Antimony	µg/L	2	Nitrate+Nitrite Nitrogen	mg/L N	0.1
Arsenic	µg/L	1	Nitrate Nitrogen	mg/L N	0.1
Barium	µg/L	1	Nitrite Nitrogen	mg/L N	0.05
Beryllium	µg/L	2	Total Kjedahl Nitrogen	mg/L N	0.5
Boron	µg/L	20	Total Nitrogen	mg/L N	0.5
Cadmium	µg/L	0.5	Total Inorganic Nitrogen	mg/L N	0.2
Calcium	µg/L	120	Phosphorus	mg/L P	0.05[4]
Chromium	µg/L	20	BOD/COD	mg/L	2
Chromium, Trivalent	µg/L	--	Chloride	mg/L	2
Chromium, Hexavalent	µg/L	20[4, 5]	Total Residual Chlorine, DPD	mg/L	0.5
Copper	µg/L	2	Total Residual Chlorine, Amperometric	mg/L	0.05
Iron	µg/L	20[4]	Cyanide	µg/L	10[4]
Lead	µg/L	0.5	Fluoride	mg/L	0.5
Magnesium	µg/L	35	Phenols	µg/L	30
Manganese	µg/L	2	Sulfate	mg/L	2
Mercury	µg/L	0.2[4]	Sulfide	mg/L H_2S	0.1
Mercury, Low Level	µg/L	0.002	Total Dissolved Solids (TDS)	mg/L	10
Molybdenum	µg/L	0.5	Total Suspended Solids (TSS)	mg/L	5
Nickel	µg/L	1	Radium-226	pCi/L	1
Selenium	µg/L	1[4]	Radium-228	pCi/L	1
Silver	µg/L	0.5	Uranium	µg/L	1
Sodium	µg/L	150	Nonylphenol D7065	µg/L	10
Thallium	µg/L	0.5			
Zinc	µg/L	10			

1. The PQLs included in this table were listed in the division's Practical Quantitation Limits Policy (CW-6) at the time of the permit effective date. In accordance with Regulation 61, the division established PQLs are those listed in the most current edition of CW-6.
2. µg/L = micrograms per liter
3. mg/L = milligrams per liter
4. PQL established based on parameter specific evaluation
5. For hexavalent chromium, samples must be unacidified so dissolved concentrations will be measured rather than potentially dissolved concentrations.

f. PFAS Analysis: At the time of permit issuance, there was no EPA approved methods under 40 CFR Part 136 for analyses of PFAS/PFOA in non-potable water that was approved for Clean Water Act monitoring in accordance with 40 CFR Part 136 (Appendix B). The analytical method for the parameters in the table below shall be compliant with the requirements set forth in the most recent Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, which is DoD QSM 5.4. DoD QSM 5.4 includes EPA Draft Method 1633.

At a minimum, the laboratory selected shall be able to analyze and quantify the PFAS listed in Table 3 at or below the associated PFAS quantification limits (PFAS QL). If the laboratory selected is capable of achieving a quantification limit for a specific PFAS that is lower than the PFAS QL listed in Table 3, analytical results should be reported to the department relative to the lower laboratory quantification limit, and not reported as "less than" the PFAS QL in the table below.

Any 40 CFR Part 136 (Appendix B) approved method for analyzing PFAS in wastewater that becomes available in the future would replace this current analytical method requirement. Within six months of an approved method(s) for analyses of PFAS in wastewater published in 40 CFR 136, the permittee shall use the approved wastewater method(s) for analysis of PFAS wastewater samples conducted pursuant to this permit.

Should the list of PFAS parameters change as a result of subsequent revisions to the DoD QSM method, or approval of a 40 CFR Part 136 (Appendix B) method, such that parameters listed in the permit table are eliminated, sampling and reporting for those parameters is not required. If this occurs, the permittee should enter an appropriate no discharge indicator (NODI) code into NetDMR for these parameters. ("Code 9- Conditional Monitoring- Not Required this Period" in most cases).

Should the list of PFAS parameters change as a result of subsequent revisions to the DoD QSM method, or approval of a 40 CFR Part 136 (Appendix B) method, such that additional parameters are included, sampling and reporting for those parameters at the same frequency and sample type as other PFAS parameters listed in the permit is required. If this occurs, data for additional parameters should be submitted to the division on blank DMRs.

Table 3. PFAS Quantification Limits (QLs)

Parameter	Reporting Units[1]	PFAS QL	Parameter	Reporting Units	PFAS QL
Perfluorooctanoic Acid [PFOA]	ng/L	1.6	2-[N-methylperfluorooctanesulfonamido]acetic acid [NMeFOSAA]	ng/L	1.6
Perfluorobutanoic Acid [PFBA]	ng/L	6.4	Perfluorobutanesulfonic acid [PFBS]	ng/L	1.6
Perfluorooctanesulfonamide [PFOSA (or FOSA)]	ng/L	1.6	Perfluorodecanesulfonic acid [PFDS]	ng/L	1.6
Perfluoropentanoic acid [PFPeA]	ng/L	3.2	Perfluoroheptanesulfonic acid [PFHpS]	ng/L	1.6
Perfluorohexanoic acid [PFHxA]	ng/L	1.6	Perfluorohexanesulfonic acid [PFHxS]	ng/L	1.6
Perfluoroheptanoic acid [PFHpA]	ng/L	1.6	Perfluorooctanesulfonic acid [PFOS]	ng/L	1.6
Perfluorononanoic acid [PFNA]	ng/L	1.6	4:2 Fluorotelomer sulfonic acid [4:2 FTS]	ng/L	6.4
Perfluorodecanoic acid [PFDA]	ng/L	1.6	6:2 Fluorotelomer sulfonic acid [6:2 FTS]	ng/L	6.4
Perfluoroundecanoic acid [PFUnA (or PFUdA)]	ng/L	1.6	8:2 Fluorotelomer sulfonic acid [8:2 FTS]	ng/L	6.4
Perfluorododecanoic acid [PFDoA]	ng/L	1.6	Perfluoropentane sulfonic acid [PFPeS]	ng/L	1.6

Parameter	Reporting Units[1]	PFAS QL	Parameter	Reporting Units	PFAS QL
Perfluorotridecanoic acid [PFTrDA (or RFTriA)]	ng/L	1.6	Perfluorononane sulfonic acid [PFNS]	ng/L	1.6
Perfluorotetradecanoic acid [PFTeDA (or PFTA or PFTeA)]	ng/L	1.6	Hexafluoropropylene oxide dimer acid [Gen-X (or HFPO-DA or HPFADA]	ng/L	6.4
2-[N-ethylperfluorooctanesulfonamido] acetic acid [NEtFOSAA]	ng/L	1.6	Perfluoro-3-methoxypropanoic acid [PFMPA]	ng/L	3.2
Perfluorododecanesulfonic acid [PFDoS]	ng/L	1.6	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid [9CLPF3ONS]	ng/L	6.4
N-methyl perfluorooctanesulfonamide [NMeFOSA]	ng/L	1.6	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid [11CLPF3OUdS]	ng/L	6.4
N-ethyl perfluorooctanesulfonamide [NEtFOSA]	ng/L	1.6	Perfluoro-4-methoxybutanoic acid [PFMBA]	ng/L	3.2
N-methyl perfluorooctanesulfonamidoethanol [NMeFOSE]	ng/L	16	Nonafluoro-3,6-dioxaheptanoic acid [NFDHA]	ng/L	3.2
N-ethyl perfluorooctanesulfonamidoethanol [NEtFOSE]	ng/L	16	3-Perfluoropropyl propanoic acid 3:3 [FTCA]	ng/L	8
4,8-Dioxa-3H-perfluorononanoic acid [ADONA]	ng/L	6.4	2H,2H,3H,3H-Perfluorooctanoic acid [5:3 FTCA]	ng/L	40
Perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]	ng/L	3.2	3-Perfluoroheptyl propanoic acid [7:3 FTCA]	ng/L	40

1. ng/L = nanograms per liter

8. Adverse Weather Conditions

When adverse weather conditions prevent sample collection within the quarter, the permittee must report any failure to monitor and indicate the basis for not sampling during the usual reporting period. During the next quarter that has two or more measureable storm events the permittee must sample at least two measureable storm events. For each given parameter, the permittee will calculate and report a quarterly average result (an average of all results collected within that quarter). Adverse conditions are those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, or electrical storms.

Adverse weather does not exempt the permittee from having to file a benchmark monitoring report in accordance with your sampling schedule. As specified in Part I.K.1, the permittee must indicate in NetDMR any failure to monitor during the regular reporting period.

9. Monitoring Periods

For all sectors except discharges from areas where deicing occurs in Sector S, within the first full quarter after the effective date in the permittee's certification, quarterly monitoring must be conducted at least once in each of the following 3-month intervals during which a measurable storm event occurs:

- January 1 – March 31;
- April 1 – June 30;
- July 1 – September 30; and
- October 1 – December 31.

For areas where deicing occurs in Sector S, the permittees must collect four samples during the period of October 1 through April 30.

10. Changes to Monitoring Requirements and Additional Monitoring

    a. Consistent with Part I.H.12 of this permit, permittees may request modification of the monitoring requirements established in Part I.I.2, 3, and 5 for inactive and unstaffed sites. The revised schedule must be documented with the facility SWMP.

    b. A permittee may request that the division modify permit certification monitoring conditions, (i.e., monitoring parameters and frequency, and sample type). A justification for such modifications must accompany the request.

11. Monitoring for Allowable Non-Stormwater Discharges

    A permittee is only required to monitor allowable non-stormwater discharges (as delineated in Part I.A.1.b) when they are commingled with stormwater discharges associated with industrial activity.

12. Monitoring Exceptions for Inactive and Unstaffed Sites That Meet the Condition of No Exposure

    The requirement that permittees conduct quarterly monitoring or annual monitoring of stormwater discharges from the facility does not apply at a facility that is inactive and unstaffed, as long as a condition of no exposure exists at its facility, i.e., there are no industrial materials or activities exposed to stormwater.

    a. To invoke this exception, a permittee must maintain a statement in the facility SWMP pursuant to Part I.F.8.c indicating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to precipitation, in accordance with the substantive requirements in 5 CCR 1002-61.3(2)(h). The statement must be signed and certified in accordance with Part I.K (Reports and Recordkeeping). DMR reporting must be consistent with Part I.K.1 of this permit.

    b. If conditions change and industrial materials or activities become exposed to stormwater or the facility becomes active or staffed, this exception no longer applies and the permittee must immediately resume quarterly monitoring.

I. SPECIFIC MONITORING REQUIREMENTS

1. Permit Monitoring Requirements

   Permittees must conduct the various monitoring types as applicable in Table 4 and as specified in Parts I.I.2-7. Monitoring that is applicable to the permittee will be specified in the permittee's certification. Monitoring must comply with Part I.H and sector specific requirements in Part III.

Table 4. Monitoring Requirements				
Type of Monitoring	**Applicable Subsectors**	**Parameters**	**Frequency[1]**	**Methods**
Visual Assessment, grab	All	Color, odor, turbidity or suspended solids, floating solids or foam, settled solids, oil sheen, other obvious indicators of stormwater pollution	1/quarter	Visual Assessment[2]
Benchmark, grab or composite (see also Part I.I.3)	A1-A4, B1, C1-C4, D1, E1-E2, F1-F4, K1, L1-L2, M1, N1, O1, Q1, S1, U1-U2, Y1, AA1, AA2, AD (only if specified in certification)	As specified in Part III, Tables (Sector Letter)-1 and in certification	1/quarter	40 CFR Part 136[3]
Numeric Limits (ELGs or WQBELs), grab or composite (see also Parts I.D.2 and I.I.4)	Potentially[4]: A1-A5, C1(SIC 2874 only), D1-D2, E1-E3, K1, L1, O1, S1 Case-by-case according to Part I.D.2.b (only if specified in certification)[10]	As specified in Part III, Tables (Sector Letter)-2 and in certification Case-by-case according to Part I.D.2.b and as specified in certification.	1/quarter or 1/year[5, 6, 7]	40 CFR Part 136[3]
Site specific benchmarks or monitoring only, grab or composite (see also Part I.D.3.b, I.D.4 - I.D.7, I.I.3 and I.I.5)	Facility-specific parameters, as specified in certification.		1/quarter	40 CFR Part 136[3]
Level 3 Status[8] (see also Parts I.J.4.c.iii(C) and K.2)	Applies to all sectors with benchmark monitoring; Indicate whether the facility has reached Level 3 within the reporting year		1/year	--

1. When the permittee collects quarterly samples more frequently than required in this permit, the quarterly monitoring result is the average of all results within a quarter. This averaged value must also be used to calculate the rolling 4-sample quarterly average for comparison to benchmark values. In the DMR comment field, permittees must indicate the frequency, if increased above the minimum.

2. The visual assessment must be made of a sample in a clean, clear glass, or clear plastic container, and examined in a well-lit area. The permittee must visually inspect the sample and record the presence or absence of the characteristics in Table 4. The permittee must perform Level 1 corrective actions in Part I.J for any characteristic that is present in amounts indicating industrial materials or pollutants are being discharged in stormwater. These samples are not required to be collected consistent with 40 CFR Part 136 procedures but must be collected in such a manner that the samples are representative of the stormwater discharge.

3. The permittee must conduct analyses using EPA approved methods in 40 CFR Part 136 and in accordance with all applicable requirements in Part I.H.

4. Monitoring to determine compliance with numeric limits apply only to specific wastestreams that are described within Part III Sector Specific Requirements.

Table 4. Monitoring Requirements

5. To comply with the ELG numeric limit for pavement deicing, the permittee may certify non-use of urea containing products in lieu of monitoring. The frequency of monitoring is four times during the deicing season.

6. In the permittee's certification, the division will specify a monitoring frequency of once per year for applicable ELG numeric limits (Part I.D.2.a), with the exception of deicing ELGs for Sector S. For water quality-based numeric limits that the division assigns in accordance with Part I.D.2.b, the division will specify a minimum frequency of once per quarter in the permittee's certification.

7. When more than one type of monitoring for the same parameter at the same outfall applies (e.g., total suspended solids once per year for an effluent limit and once per quarter for benchmark monitoring at a given outfall), the permittee may use a single sample to satisfy both monitoring requirements (i.e., one sample satisfying both the annual effluent limit sample and one of the 4 quarterly monitoring samples).

8. The Level 3 status appears in DMRs as "are you in compliance". This parameter is to be interpreted as "are you in Level 3". A level 3 status is not non-compliance and answering "FAIL" will not be deemed non-compliance.

9. Additional site specific numeric WQBELs may be added to the permit following Part I.D.2.b and where the division determines that a pollutant has reasonable potential to be present in the discharge at a concentration exceeding a water quality standard.

2. Visual Assessment

Visual Assessment involves collection of samples in clear glass or clear container and making observations on the presence or absence of characteristics indicative of stormwater pollutants in the discharge. See Table 4 and the associated footnote.

3. Monitoring for Benchmark Parameters

The permittee must monitor for benchmark parameters as specified in Part III Sector Specific Requirements, site specific benchmarks that are assigned in the permittee's certification (Parts I.D.3.b and I.D.7) and in accordance with Part I.H. Monitoring results must be submitted via DMRs (see Part I.K.1).

a. The benchmark concentrations are not effluent limitations; a benchmark exceedance, therefore, is not a permit violation. When the discharge exceeds an applicable benchmark concentration, the permittee must conduct corrective actions consistent with Part I.J (Corrective Actions) of this permit. Failure to respond to benchmark value exceedances is a violation of the permit.

b. If there is no discharge during one or more quarters, the permittee must still submit DMRs (see Part I.K.1) and continue sampling in the following quarters until they obtain four samples.

c. For areas where deicing occurs in Sector S only, the permittee must collect four samples during the period of October 1 through April 30.

d. Monitoring Actions – *Data not exceeding benchmarks or exceeding benchmarks due to natural background*

After collecting four (4) consecutive quarterly benchmark samples (four consecutive samples for stormwater discharges from deicing areas), the permittee may reduce benchmark monitoring frequency for that parameter to once-per-year if they meet i. or ii. below. Annual monitoring must be sequentially rotated through the quarters for which the permittee anticipates a discharge to occur such that a minimum of one sample is collected each calendar year during which a discharge occurs. If ever an annual sample is above the benchmark and not due to natural background, the permittee must immediately resume quarterly benchmark sampling (Part I.I.3.e).

i. The rolling 4-sample quarterly average of the benchmark monitoring values for any parameter, at a specific outfall, does not exceed the benchmark, or

ii. The rolling-4-sample quarterly average exceeds benchmarks solely due to natural background concentrations.

e. Monitoring Actions – Data exceeding benchmark concentrations

i. If the monitoring value for any parameter, at a specific outfall, exceeds the benchmark concentration for a single sample event or rolling 4-sample quarterly average, the permittee must conduct corrective action in accordance with Part I.J—Corrective Actions of this permit.

ii. Following control measure(s) modification, the permittee must continue quarterly monitoring for four (4) additional quarters. For this monitoring:

(A) If the average of four consecutive monitoring values (4-sample average benchmark value) for any parameter does not exceed the benchmark, the permittee may monitor once-per-year as described in Part I.I.3.d, above.

(B) If the rolling 4-sample quarterly average benchmark value for any parameter still exceeds the benchmark (or if an exceedance of the benchmark by the 4-sample average benchmark value is mathematically certain prior to conducting the full 4 additional quarters of monitoring), the permittee must again conduct corrective actions consistent with Part I.J of this permit unless the exceedance is due to natural background.

4. Numeric Limitations Monitoring

Where numeric ELG limits in Part III apply, or where the division has established numeric limits under Part I.D.2.b and c, the permittee must monitor in accordance with their certification as outlined in Table 2, 3 and 4 and Part I.H. In addition, the following requirements apply.

a. Follow-up Actions if Discharge Exceeds Numeric Effluent Limit

i. If the permittee's discharge monitoring result exceeds a numeric effluent limit required by this permit, it is a violation of this permit and they must conduct corrective action(s) pursuant to Part I.J (Corrective Actions), and conduct follow-up monitoring.

ii. The permittee must conduct follow-up monitoring during the next qualifying rain event for any parameter which exceeded an effluent limit.

iii. If the follow-up monitoring exceeds the applicable effluent limitation, the permittee must continue to monitor, at least quarterly, until the facility discharge is in compliance with the effluent limit or unless the division waives the requirement for additional monitoring.

iv. Consistent with Part I.K (Reports and Recordkeeping) the violations and the results of any additional sampling must be recorded on the next appropriate DMR or report.

5. Additional Monitoring Required by the Division

The division may notify a permittee of additional discharge monitoring requirements in accordance with Parts I.D.3 through 7. This may also include monitoring requirements resulting from implementation of applicable Watershed Protection Control Regulations 71-74 in effect on the permit issuance date and will be included in the permittee's certification. Any such notice will briefly state the reasons for the monitoring, locations, and monitoring parameters, frequency and period of monitoring, sample types, and reporting requirements. Such monitoring may include salinity and in-stream sampling and whole effluent toxicity testing.

6. Reduced Monitoring Frequency

Where the division requires a permittee to conduct quarterly "monitoring only" (without benchmarks comparisons) under Part I.D.3 through 7 the permittee may request a reduced frequency if the average of the most recent 4 monitoring values for any parameter, at a specific outfall, does not exceed the applicable water quality standard.

7. Natural Background Pollutant Levels

a. For quarterly monitoring under Part I.I.3 or 5, following the most recent 4 quarters of monitoring if the average concentration of a pollutant exceeds a benchmark value or water quality standard, and the permittee determines that exceedance of the benchmark or water quality standards is attributable solely to the presence of that pollutant in the natural background, the permittee is not required to perform AIM responses in Part I.J.3—Corrective Actions of this permit, provided that conditions in i. through vii. of this subsection are met.

i. For monitoring in Part I.I.3 and 5, the quarterly benchmark monitoring concentration or the rolling 4-sample quarterly average of the benchmark concentrations must be less than or equal to the concentration of that pollutant in the natural background. To determine the natural background concentration, the permittee may use one or more of the following types of information:

(A) Ambient monitoring data from at least four samples collected from within the same watershed using the same sample collection, preservation and analytical methods as for benchmark monitoring.

(B) Information from a peer-reviewed publication.

(C) Data from a local, state, or federal government publication specific to runoff or stormwater in the immediate region. Studies that are in other geographic areas, or are based on clearly different topographies or soils, are not appropriate.

ii. If the discharge is to a water impaired by the parameter which exceeds the benchmark, the natural background concentration must be determined using methods (A) or (C) only.

iii. The permittee documents the SWMP requirements in Part I.F.11.

iv. The permittee notifies the division that exceedances of benchmarks or water quality standards is attributable solely to natural background pollutant(s). The permittee must continue DMR reporting in accordance with Part I.K.

b. Natural background demonstration under this section does not apply when determining compliance with numeric limits.

c. The division may reject natural background exceptions if erosive conditions exist either in the determination of the background concentration or the facility concentrations.

8. Monitoring More Frequently Than Required

When the permittee collects quarterly samples more frequently than required in this permit, the quarterly monitoring result is the average of all results within a quarter. This averaged value must also be used to calculate rolling 4-sample quarterly average for comparison to benchmark values.

9. Assessment of Discharge Potential

For permittees that are required to submit DMRs, if there were no measurable storm events during the first four quarters in which sampling is required by this permit, then the permittee must prepare a Discharge Preparation Plan to determine conditions that are likely to produce a measureable storm event. The plan must include: 1) estimation of rainfall in inches that may result in a discharge event, 2) assessment of snowmelt conditions that may result in a discharge event, 3) procedures to track precipitation conditions in 1) and 2), and 4) methods and procedures for collecting samples, including procedures for collecting samples outside of regular business hours. The plan must be reported to the division in the annual report due for that reporting period.

J. CORRECTIVE ACTIONS AND ADDITIONAL IMPLEMENTATION MEASURES (AIM)

1. Conditions That Must Be Eliminated

If any of the following conditions occur at the permitted facility (as identified by the permittee; the division; or an EPA official, or local, or State entity), the permittee must review and revise the selection, design, installation, implementation and maintenance of facility control measures to ensure that the condition is eliminated and will not be repeated in the future:

a. An unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this [see Parts I.A.1.a and I.A.1.b] or another permit) occurs (see also Reporting Requirements in Part I.K.4);

b. A discharge violates a numeric effluent limit (see Part I.D.2 and Part I.I.4) (see also Reporting Requirements in Part I.K.4);

c. Facility control measures are not stringent enough for the discharge to meet applicable water quality standards;

d. Modifications to the facility control measures are necessary to meet the practice-based effluent limits in this permit; or

e. The permittee finds in a facility inspection, that facility control measures are not properly selected, designed, installed, or operated to meet effluent limits (see also Part I.C.2, Control Measures). Routine maintenance of existing control measures does not trigger a corrective action.

2. Conditions that Require Review and Modification

The permittee must review the selection, design, installation, implementation, and maintenance of facility control measures to determine the appropriate modifications necessary to attain the effluent limits in this permit whenever there is a change in design operation, or maintenance at the facility that significantly changes the nature of pollutants discharged in the stormwater from the facility, or significantly increases the quantity of pollutants discharged.

3. Conditions that Trigger Additional Implementation Measures (AIM)

If any of the following AIM triggering events occur, the permittee must follow the response procedures described in this part (I.J.3) called "additional implementation measures" or "AIM." There are three AIM levels: AIM Level 1, Level 2, and Level 3. The permittee must respond as required to different AIM levels which prescribe sequential and increasingly robust responses when a benchmark exceedance occurs. The permittee must follow the corresponding AIM level responses described in Parts I.J.3.b, c, and d, within deadlines described in Part I.J.4 unless they qualify for an exception under Part I.J.3.e. See Appendix E for a flow chart depicting the AIM process.

a. Baseline Status

Baseline status means that either 1) monitoring data has not yet been collected, 2) the permittee is not in Level 2 or 3 and the most recent quarterly results is below the benchmark concentration or 3) that monitoring conducted following Level 1 response indicates the control measure performance is adequate to minimize pollutants in the stormwater discharge. Once the permit certification is issued, the permittee must evaluate the previous 4 benchmark monitoring results to determine if any single quarterly result exceeds the benchmark. If a single quarterly result exceeds a benchmark, then AIM Level 1 (Part I.J.3.b) applies. The permittee will not advance to Level 2 based on monitoring results collected prior to this permit's effective date. Following issuance of the permit certification, if a condition that requires review and modification occurs and the permittee has proceeded sequentially to Level 1, 2, or 3, they may return directly to baseline status once the corresponding AIM-level response and conditions are met.

b. AIM Level 1

i. Trigger condition. One or more quarterly sampling results exceeds an applicable benchmark (Part I.I.3.e), or exceeds a visual assessment (Table 4, footnote 2) trigger.

ii. Response. The permittee must complete the following actions:

(A) Within 7 days of knowledge of the trigger condition, inspect all industrial areas draining to the outfall to investigate the cause of the exceedance.

(B) Within 14 days of knowledge of the trigger condition, ensure that control measures in the area reflect conditions in the Stormwater Management Plan.

iii. Continue Quarterly Benchmark Monitoring. After compliance with Level 1 responses and deadlines, the permittee must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the Level 1 triggering event at all affected stormwater discharge points, beginning no later than the next full quarter after the triggering event sample date.

iv. AIM Level 1 Status Update. While in Level 1 status, the permittee will either

(A) Return to Baseline Status. The permittee's Level 1 status will return to baseline status if the Level 1 responses have been met and the average of the next 4 quarterly benchmark monitoring results is below the benchmark.

(B) Advance to Level 2. The permittee's Level 1 status advances to Level 2 status if they have completed Level 1 responses and as soon as the continued quarterly benchmark monitoring results

indicate with mathematical certainty that the rolling 4-sample quarterly average exceeds the benchmark for the same parameter(s). Mathematical certainty is when the sum of results is more than 4 times higher than the benchmark concentration, when considering future results to be averaged.

(C) For visual assessments the permittee's Level 1 status will return to baseline if the triggering event is absent for the next 4 quarterly monitoring events. Recurrence of the triggering event will not advance the permittee to Level 2, rather the permittee will be required to continue investigating the source of the triggering event.

c. AIM Level 2

i. Trigger conditions.

(A) Status changes from Level 1 to Level 2 if, following completion of Level 1 response, the sum, at any time, of the next four benchmark values, is more than 4 times the benchmark level (i.e., an exceedance of the rolling 4-sample quarterly average benchmark values is mathematically certain), or

(B) Status changes from Level 1 to Level 2 if, following completion of Level 1 response, any of the annual samples, when averaged with the preceding 3 quarterly or annual sample results collected following completion of Level 1 response, causes an average monitoring value that exceeds the benchmark for any parameter.

ii. Response. Within 14 days of knowledge of the Level 2 trigger, the permittee must review the selection, design and installation of facility control measures to determine the appropriate modifications necessary to attain the benchmark threshold in this permit. The review must consider additional measures beyond the Level 1 responses that would reasonably be expected to bring the facility's exceedances below the parameter's benchmark threshold. Refer to EPA's MSGP sector-specific fact sheets for recommended controls found at [https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-fact-sheets-and-guidance].

iii. Continue Quarterly Benchmark Monitoring. After compliance with AIM Level 2 responses and deadlines, the permittee must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the Level 2 triggering event at all affected discharge points, beginning no later than the next full quarter after the triggering event occurred.

iv. AIM Level 2 Status Update. While in Level 2 status, the permittee will either:

(A) Return to Baseline Status. The permittee's Level 2 status will return to baseline status if the Level 2 responses have been met and the average of the next 4 quarterly monitoring results is below the benchmark.

(B) Advance to AIM Level 3. The permittee's Level 2 status advances to Level 3 status if they have completed the Level 2 responses and the sum of the next four benchmark values is more than 4 times the benchmark level (i.e., an exceedance of the rolling 4-sample quarterly average benchmark values is mathematically certain).

d. AIM Level 3

i. Trigger conditions. Status changes from Level 2 to Level 3 if, following completion of Level 2 responses, the sum of the next four benchmark values is more than 4 times the benchmark level (i.e., an exceedance of the rolling 4-sample quarterly average benchmark values is mathematically certain).

ii. Response: If the trigger condition in Part I.J.3.d.i occurs, the permittee must perform the actions in (A) and (B) below listed in order of priority. The permittee must install such stormwater control measures for the discharge point(s) in question and for substantially identical outfalls, unless they individually monitor those substantially identical outfalls and demonstrate that Level 3 requirements are not triggered at those discharge points. At all times the permittee must take all measures necessary to prevent discharges that would require 24-hour reporting in Part II.L.7.

(A) Within 60 days, install more rigorous source controls than the Level 2 responses. The Level 3 source controls must have pollutant removal efficiencies sufficient to bring the exceedances to below the

benchmark threshold (e.g., permanent controls such as permanent cover, berms, and secondary containment), and/or treatment controls (e.g., sand filters, hydrodynamic separators, oil-water separators, retention ponds, and infiltration structures).

(B) If the permittee determines they cannot meet the 60-day deadline in (A) above, they must provide an alternate schedule to the division within 14 days. Under the alternate schedule, source controls must be installed as soon as possible, but no later than 180 days after the sample date that resulted in the Level 3 trigger. The alternative schedule must specify a completion date for installation of source controls or treatment controls.

iii. Continue Quarterly Benchmark Monitoring. After compliance with Level 3 responses and deadlines, the permittee must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the Level 3 triggering event at all affected discharge points, beginning no later than the next full quarter after compliance.

iv. AIM Level 3 Status Update. While in AIM Level 3 status, the permittee may either:

(A) Return to Baseline Status. The permittee's AIM Level 3 status will return to baseline status if the Level 3 response(s) have been met and the and the average of the next 4 quarterly benchmark monitoring results is below the benchmark.

(B) Continue in AIM Level 3. The permittee's AIM Level 3 status will remain at Level 3 if the permittee completed the AIM Level 3 responses and the average of the next 4 quarterly benchmark monitoring results exceeds the benchmark. If the permittee continues to exceed the benchmark threshold for the same parameter even after compliance with Level 3, the division may require the permittee to apply for an individual permit.

e. AIM Exception to Triggers

Following the occurrence of an AIM triggering event per Part I.J.3, at any point or level of AIM the permittee may qualify for an exception found in Part I.I.7 from AIM response requirements and continued benchmark monitoring. Regardless of whether the permittee qualifies for and claims an exception, they must still review stormwater control measures, the SWMP, and other on-site activities to determine if actions or modifications are necessary or appropriate in light of benchmark exceedance(s). If the permittee qualifies for an exception, they are not required to comply with the AIM responses or the continuation of quarterly benchmark monitoring for any parameters for which they can demonstrate that the benchmark exceedance is due to natural background pollutant levels and they have documentation to support a determination that pollutants of concern are not expected to be present above natural background levels. In order to make a finding under this part, the criteria under Part I.I.7.a.i through iv must be met and documented in Part I.F.11.

4. Corrective Action Documentation Deadlines

a. In addition to b and c of this Part, the permittee must comply with reporting requirements in Part II.L.7 (Twenty-four Hour Reporting)

b. The permittee must document discovery of any condition listed in Part I.J.1 or I.J.2 as follows:

i. 24-hour documentation requirement. Within 24 hours of discovery of any condition listed in Part I.J.1, the permittee must document the following information:

(A) Identification of the condition triggering the need for corrective action review including AIM Level if applicable;

(B) Description of the problem identified; and

(C) Date the problem was identified.

ii. 14-day documentation requirement:

(A) Within 14 days of discovery of any condition listed in Parts I.J.1, the permittee must document the following information:

(B) Summary of corrective action taken or to be taken (or, for triggering events identified in Part I.J.2 where the permittee determines that corrective action is not necessary, the basis for this determination);

(C) Notice of whether SWMP modifications are required as a result of this discovery or corrective action;

(D) Date corrective action initiated; and

(E) Date corrective action completed or expected to be completed.

c. AIM Deadlines

Permittees must document Responses under the AIM requirements in Part I.J.3 as follows:

i. Level 1 AIM

(A) Within 7 days of knowledge of the trigger condition, document inspection of all industrial areas draining to the outfall.

(B) Within 14 days of knowledge of the trigger condition, document that control measures in the area reflect conditions in the Stormwater Management Plan.

ii. Level 2 AIM

(A) Within 14 days of knowledge of the Level 2 trigger, the permittee must document the results of the review of the selection, design and installation of facility control measures, describing modifications necessary to attain the benchmark threshold in this permit.

(B) Within 60 days the permittee must document the installation of any additional structural control measures or implementation of non-structural control measures that were determined necessary modifications under (A) above.

iii. Level 3 AIM

(A) Within 14 days after knowledge of the Level 3 trigger the permittee must document the schedule for installing the appropriate structural source controls (e.g., permanent controls such as permanent cover, berms, and secondary containment), and/or treatment controls (e.g., sand filters, hydrodynamic separators, oil-water separators, retention ponds, and infiltration structures).

(B) Within 60 days, the permittee must document the installation of all identified structural source and/or treatment stormwater control measures. If the permittee submitted to the division an alternative schedule as per Part I.J.3.d.ii(B), The permittee must document the installation of structural source and/or treatment stormwater control measures by the completion date established in the alternative schedule.

(C) The permittee must report Level 3 status to the division in accordance with Part I.K.2.

5. Substantially Identical Outfalls

If the event triggering corrective action is associated with an outfall that represents other substantially identical outfalls, the permittee's review must assess the need for corrective action for each outfall represented by the outfall that triggered the review. Any necessary changes to control measures that affect these other outfalls must also be performed consistent with Part I.C (Control Measures) of this permit, and the permittee must implement interim or temporary controls measures during the maintenance effort.

K. REPORTING AND RECORDKEEPING

1. Routine Reporting of Data- Discharge Monitoring Report

The permittee must report applicable monitoring data as specified in their certification on a quarterly basis, with the exception of benchmark monitoring under Sector S, which they must report monthly. Visual assessment results must be documented in the SWMP and are not reported in DMRs.

The permittee must submit these forms using the division's Net-DMR service unless a division has approved a waiver for the permittee, in which case hard copy forms may be submitted. When submitting monitoring

results via NetDMR, the Copy of Record must reflect that the DMR was signed and submitted no later than the 28th day of the month following the monitoring period. If a waiver is granted, monitoring results must be reported on division issued discharge monitoring report (DMR) forms. If mailed, one form must be mailed to the division, as indicated below, so that the DMR is received no later than the 28th day of the following month (for example, the DMR for the first calendar quarter must be received by the division by April 28th).

Required DMR reporting conventions are as follows:

- **If no discharge occurs during the reporting period, use the No Data Code (NODI) "C" for No Discharge.**
- **The Level 3 status appears in DMRs as "are you in compliance". This parameter is to be interpreted as "are you in Level 3". A level 3 status is not non-compliance and answering "FAIL" will not be deemed non-compliance.**
- **If the permittee's benchmark sampling frequency is reduced consistent with Part I.I.3.d (not exceeding/ natural background) of this permit (Benchmark Monitoring Actions – *Data not exceeding benchmarks*), the permittee must submit quarterly DMRs and indicate NODI code "9" for Conditional Monitoring – Not Required This Period in the applicable parameter's result field in NetDMR and indicate "Benchmark Met" in the comments.**
- **If the permittee's monitoring is subject to exception under Part I.H.12 (inactive/unstaffed sites) of this permit, the permittee must submit quarterly DMRs and indicate NODI code 9 for Conditional Monitoring – Not Required This Period in each parameter's result field in NetDMR and indicate "No Exposure" in the comments.**
- **If the permittee's sample result is greater than a benchmark concentration, as determined according to Parts I.I.2.e and I.I.7, and is higher due to natural background, the permittee must enter the result in the DMR Value field and "Natural Background" in the DMR Comment Field.**
- **When the permittee collects quarterly samples more frequently than required in this permit, the quarterly monitoring result is the average of all results within a quarter. This averaged value must also be used to calculate a rolling 4-sample quarterly average for comparison to benchmark values.**

Note: Whenever a NODI code is entered it is entered as an alternative to a data value. The permittee must either report data or report that they have no data at all to report, by using a NODI code, as NODI only applies to situations that cover the entire monitoring period. NODI does not apply to data sets that are simply missing values.

If mailing, the signed copy of each discharge monitoring report (DMR) must be submitted to the division at the following address, unless the division has an approved electronic submittal (i.e. NetDMR):

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

DMRs must be signed by an authorized person as identified in Part I.K.7.

2. Reporting of Level 3

The permittee must report in the 4th quarter DMR whether they reached or remained in Level 3 status for any part of the reporting year.

3. Annual Report

The permittee must submit an annual report to the division for the reporting period January 1 through December 31. Annual reports must be received by the division March 31 the following year. The Annual Report must include:

- **Name of permittee, address, phone number**
- **Permit certification number**

- Facility name and physical address
- Contact person name, title, and phone number
- Summary of inspection dates
- Corrective action documentation as required in Part I.J.4, and status of any outstanding corrective action(s). This must include:
    - Corrective actions discovered as a result of benchmark exceedance.
- For 24 -hour oral reports required under Part II.L.7, the date and division staff notified and the date that the 5-day follow-up written report was sent to the division.
- The permittee must report whether they have used high PAH sealant on paved surfaces where industrial activities are located during the permit term and must certify that the permittee did not discharge stormwater from areas where high PAH sealant was applied after the effective date of the permit.
- For the annual report following the first four quarters that the permit is effective, the permittee must submit a Discharger Preparation Plan, if required under Part I.I.9.

The signed copy of each annual report must be submitted to the division at the address below, unless the division has an approved electronic submittal, and a copy maintained with the SWMP.

Attn: Annual Report
Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

4. Additional Reporting

a. In addition to the reporting requirements stipulated in this Part, the permittee is also subject to the standard permit reporting provisions of Part II of this permit.

b. Notification to MS4. If the permittee discharges to a regulated municipal separate storm sewer system (MS4), they must provide written notification to the MS4 if conditions in Part I.J.1.a occur that reach the MS4 system. Notifications associated with Part I.J.1.a must be received within 2 business days following discovery.

5. SWMP Records

The permittee must retain copies of the facility SWMP, including any modifications made during the term of this permit, documentation related to corrective actions taken, all reports and certifications required by this permit, monitoring data, and records of all data used to complete the application to be covered by this permit, for a period of at least 3 years from the date that coverage under this permit expires or is terminated.

6. Sampling Records

The permittee must establish and maintain records for sampling and visual assessment (not for d and e). Those records must include the following:

a. The date, type, exact location, and time of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) the analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used;

f. The results of such analyses or visual assessment; and

g. Any other observations which may result in an impact on the quality or quantity of the discharge as indicated in 40 CFR 122.44 (i)(1)(iii).

The permittee must retain for a minimum of three years records of all monitoring information, including all original strip chart recordings for continuous monitoring instrumentation, all calibration and maintenance records, copies of all reports required by this permit and records of all data used to complete the application for this permit. This period of retention must be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the division or EPA.

7. Signatory and Certification Requirements

a. All reports and other information required by the division, must be signed and certified for accuracy by the permittee in accordance with the following criteria:

i. In the case of corporations, by a responsible corporate officer. For purposes of this section, the responsible corporate officer is responsible for the overall operation of the facility from which the discharge described in the form originates;

ii. In the case of a partnership, by a general partner;

iii. In the case of a sole proprietorship, by the proprietor;

iv. In the case of a municipal, state, or other public facility, by either a principal executive officer, or ranking elected official. For purposes of this section, a principal executive officer has responsibility for the overall operation of the facility from which the discharge originates;

v. By a duly authorized representative of a person described above, only if:

(A) The authorization is made in writing by a person described in i, ii, iii, or iv above;

(B) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and,

(C) The written authorization is submitted to the division.

b. If an authorization as described in this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of this section must be submitted to the division prior to or together with any reports, information, or applications to be signed by an authorized representative.

c. The permittee, or the duly authorized representative must make and sign the following certification on all such documents:

"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."

L. OTHER TERMS AND CONDITIONS

1. All dischargers must comply with the lawful requirements of counties, drainage districts and other state or local agencies regarding any discharges of stormwater to storm drain systems or other water courses under their jurisdiction. Nothing in this permit shall be construed to limit a local government's authority to impose land-use requirements.

2. Reporting to Municipality – Any permitted facility discharging to a municipal storm sewer must provide the municipality with a copy of the permit application, and/or Annual Reports, upon request. A copy of the SWMP must also be provided to the municipality upon request.

PART II

A. DUTY TO COMPLY

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Colorado Water Quality Control Act and is grounds for: 1) enforcement action; 2) permit termination, revocation and reissuance, or modification; or 3) denial of a permit renewal application.

2. Federal Enforcement:

   a. The permittee must comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal (see 40 CFR 122.2) established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

   b. The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Clean Water Act provides that any person who *negligently* violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402 (a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person must be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both. Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person must be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, must, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person must be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, must, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

   c. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

B. DUTY TO REAPPLY

If the permittee plans to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a permit application at least 180 days before this permit expires as required by Regulations 61.4 and 61.10.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. DUTY TO MITIGATE

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of this permit. See 40 C.F.R. §122.41(e).

F. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. Any request for modification, revocation, reissuance, or termination under this permit must comply with all terms and conditions of Regulation 61.8(8). See also 40 C.F.R. § 122.41(f).

G. PROPERTY RIGHTS

In accordance with 40 CFR §122.41(g) and Regulation 61.8(9):

1. **The issuance of a permit does not convey any property or water rights in either real or personal property, or stream flows or any exclusive privilege.**
2. **The issuance of a permit does not authorize any injury to person or property or any invasion of personal rights, nor does it authorize the infringement of federal, state, or local laws or regulations.**
3. **Except for any toxic effluent standard or prohibition imposed under Section 307 of the Clean Water Act or any standard for sewage sludge use or disposal under Section 405(d) of the Federal act, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Sections 301, 302, 306, 318, 403, and 405(a) and (b) of the Clean Water Act. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in Section 61.8(8) of the Colorado Discharge Permit System Regulations. See 61.8(9)(c).**

H. DUTY TO PROVIDE INFORMATION

The permittee shall furnish to the division, within a reasonable time, any information which the division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the division, upon request, copies of records required to be kept by this permit in accordance with 40 C.F.R. §122.41(h) and/or Regulation 61.8(3)(q).

I. INSPECTION AND ENTRY

The permittee shall allow the division and the authorized representative, including U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials as required by law, to conduct inspections in accordance with 40 C.F.R. §122.41(i), Regulation 61.8(3), and Regulation 61.8(4):

1. **To enter upon the permittee's premises where a regulated facility or activity is located or conducted in which any records are required to be kept under the terms and conditions of this permit;**
2. **At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit and to inspect any facilities, equipment (including monitoring and control equipment), practices, operations or monitoring method regulated or required in the permit;**
3. **To enter upon the permittee's premises in a reasonable manner and at a reasonable time to inspect or investigate, any actual, suspected, or potential source of water pollution, or to ascertain compliance or noncompliance with the Colorado Water Quality Control Act or any other applicable state or federal statute or regulation or any order promulgated by the division, and;**
4. **Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.**

J. MONITORING AND RECORDS

1. **Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity. See 40 C.F.R. § 122.41(j)(1).**

2. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. subchapters N or O. In the case of pollutants for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. subchapters N or O, monitoring must be conducted according to a test procedure specified in this permit for such pollutants. See 40 C.F.R. § 122.41(j)(4); 122.44(i)(1)(iv)(A).

3. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the division or Regional Administrator.

4. Records of monitoring information must include:

   a. The date, exact place, and time of sampling or measurements;

   b. The individual(s) who performed the sampling or measurements;

   c. The date(s) analyses were performed

   d. The individual(s) who performed the analyses;

   e. The analytical techniques or methods used; and

   f. The results of such analyses.

5. The permittee shall install, calibrate, use and maintain monitoring methods and equipment, including biological and indicated pollutant monitoring methods. See Regulation 61.8(4)(b)(iii). All sampling shall be performed by the permittee according to sufficiently sensitive test procedures required by 40 C.F.R. 122.44(i)(1)(iv) or methods approved by the division, in the absence of a method specified in or approved pursuant to 40 C.F.R. Part 136.

6. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

K. SIGNATORY REQUIREMENTS

1. Authorization to Sign: All documents required to be submitted to the division by the permit must be signed in accordance with 40 CFR §122.22, Regulation 61.4, and the following criteria:

   a. For a corporation: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   b. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

   c. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief or principal executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency. (e.g., Regional Administrator of EPA). For purposes of this section, a principal executive officer has responsibility for the overall operation of the facility from which the discharge originates.

d. By a duly authorized representative in accordance with 40 C.F.R. 122.22(b), only if:

i. the authorization is made in writing by a person described in Part II.K.1.a, b, or c above;

ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and,

iii. The written authorization is submitted to the division.

2. Any person(s) signing documents required for submittal to the division must make the following certification:

"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."

3. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both. See 40 C.F.R. §122.41(k)(2).

L. REPORTING REQUIREMENTS

1. Planned Changes: The permittee shall give advance notice to the division, in writing, of any planned physical alterations or additions to the permitted facility in accordance with 40 CFR §122.41(l) and Regulation 61.8(5)(a) and Part II.O of this permit. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR §122.41(a)(1).

c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. See 40 C.F.R. §122.41(l)(1)(iii).

2. Anticipated Non-Compliance: The permittee shall give advance notice to the division, in writing, of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. The timing of notification requirements differs based on the type of non-compliance as described below.

3. Transfer of Ownership or Control: The permittee shall notify the division, in writing, thirty (30) calendar days in advance of a proposed transfer of the permit. This permit is not transferable to any person except after notice to the division. The division may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act. See Regulation 61.8(6); 40 C.F.R. §§ 122.41(l)(iii) and 122.61.

4. Monitoring reports: Monitoring results must be reported at the intervals specified in this permit.

a. If the permittee monitors any pollutant at the approved monitoring locations listed in Part I more frequently than that required by this permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the division. See 40 CFR 122.41(l)(4).

b. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the division in the permit.

5. Submission of Discharge Monitoring Reports (DMRs): DMRs shall be submitted electronically through NetDMR system unless the permittee requests and is granted a waiver of the electronic reporting requirement by the division pursuant to Regulation 61.8(4)(d).

6. Compliance Schedules: Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule in the permit, shall be submitted on or before the date listed in the compliance schedule section. The fourteen (14) calendar day provision in Regulation 61.8(4)(n)(i) has been incorporated into the due date.

7. Twenty-four hour reporting:

a. In addition to the reports required elsewhere in this permit, the permittee shall report the following circumstances orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances, and shall mail to the division a written report containing the information requested within five working days after becoming aware of the following circumstances:

i. Circumstances leading to any noncompliance which may endanger health or the environment regardless of the cause of the incident;

ii. Circumstances leading to any unanticipated bypass which exceeds any effluent limitations in the permit;

iii. Circumstances leading to any upset which causes an exceedance of any effluent limitation in the permit; or

iv. Daily maximum violations for any of the pollutants limited by Part I of this permit as specified in Part III of this permit. This includes any toxic pollutant or hazardous substance or any pollutant specifically identified as the method to control any toxic pollutant or hazardous substance.

b. The report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

c. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combine sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. See 40 CFR 122.41(l)(6)(i).

i. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the permittee to the division.

8. Other non-compliance: A permittee must report all instances of noncompliance at the time monitoring reports are due. These reports may be submitted annually in accordance with Regulation 61.8(4)(p) and/or 61.8(5)(f), but may be submitted at a more frequent interval.

M. BYPASS

1. Definitions:

a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility in accordance with 40 CFR §122.41(m)(1)(i) and/or Regulation 61.2(12).

b. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. See 40 CFR §122.41(m)(1)(ii).

2. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of 40 CFR 122.41(m)(3) and (m)(4). See 40 CFR §122.41(m)(2).

3. Notice of bypass:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, the permittee shall submit prior notice, if possible, at least ten (10) days before the date of the bypass. See 40 CFR §122.41(m)(3)(i) and/or Regulation 61.9(5)(c).

   b. Unanticipated bypass. You must submit notice of an unanticipated bypass as required in Part II.L.7. See also 40 CFR §122.41(m)(3)(ii).

4. Prohibition of Bypass: Bypasses are prohibited and the division may take enforcement action against the permittee for bypass, unless:

   a. the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

   c. Proper notices were submitted to the division.

      i. The division may approve an anticipated bypass, after considering its adverse effects, if the division determines that it will meet the three conditions listed.

N. UPSET

1. Definition: "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with the permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR §122.41(n) and Regulation 61.2(113).

2. Effect of an upset: An upset constitutes an affirmative defense to an action brought for noncompliance with permit effluent limitations if the requirements of section 3 are met. A determination made during administrative review of claims that noncompliance was caused by upset is final administrative action subject to judicial review.

   ***special note:** this provision is consistent with the definition of "Upset" as codified in Regulation 61.2(113). However, the Colorado regulatory definition of upset is less stringent than the federal code of regulations, which restricts the use of an upset defense to noncompliance with technology-based permit effluent limitations only.*

3. Conditions necessary for demonstration of an Upset: A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed contemporaneous operating logs, or other relevant evidence that:

   a. an upset occurred and the permittee can identify the cause(s) of the upset;

   b. the permitted facility was at the time being properly maintained; and

   c. the permittee submitted notice of the upset as required in Part II.L.7 (24-hour notice); and

   d. The permittee complied with any remedial measure necessary to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. See also 40 C.F.R. 122.41(n)(3)(i)-(iv).

   ***special note:** this provision is consistent with the definition of "Conditions necessary for demonstration of upset" as codified in Regulation 61.8(3)(j)(ii). However, the Colorado regulatory definition of upset is less stringent than the federal code of regulations, which restricts the use of an upset defense to demonstrate that a facility was properly operated and maintained. Colorado's regulatory definition of "Conditions necessary for demonstration of upset" is less stringent than the requirements of the federal Clean Water Act.*

4. In addition to the demonstration required above, a permittee who wishes to establish the affirmative defense of upset for a violation of effluent limitations based upon water quality standards shall also demonstrate through monitoring, modeling or other methods that the relevant standards were achieved in the receiving water.

5. Burden of Proof: In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

O. REOPENER CLAUSE

Procedures for modification or revocation. Permit modification or revocation of this permit or coverage under this permit will be conducted according to Regulation 61.8(8). This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one of the following events occurs, including but not limited to:

1. Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. Wasteload Allocation: A wasteload allocation is developed and approved by the State of Colorado and/or EPA for incorporation in this permit.

P. OTHER INFORMATION

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the division or U.S. EPA, the Discharger shall promptly submit such facts or information. See 40 C.F.R. § 122.41(l)(8).

Q. SEVERABILITY

The provisions of this permit are severable. If any provisions or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances and the application of the remainder of this permit shall not be affected.

R. NOTIFICATION REQUIREMENTS

1. Notification to Parties: All notification requirements shall be directed as follows:

   a. Oral Notifications, during normal business hours shall be to:

      CDPHE-Emergency Reporting Line: 1-877-518-5608; or

      Water Quality Protection Section – Compliance Program
      Water Quality Control Division
      Telephone: (303) 692-3500

      After hours notifications should be made to the CDPHE-Emergency Reporting Line: 1-877-518-5608.

   b. Written notification shall be to:

      Water Quality Protection Section – Compliance Program
      Water Quality Control Division
      Colorado Department of Public Health and Environment
      WQCD-WQP-B2
      4300 Cherry Creek Drive South
      Denver, CO 80246-1530

S. RESPONSIBILITIES

Reduction, Loss, or Failure of Treatment Facility: The permittee has the duty to halt or reduce any activity if necessary to maintain compliance with the effluent limitations of the permit. It shall not be a defense for a permittee in an enforcement action that it would be necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

T. OIL AND HAZARDOUS SUBSTANCES LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject to under Section 311 (Oil and Hazardous Substance Liability) of the Clean Water Act.

U. EMERGENCY POWERS

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority granted by Section 510 of the Clean Water Act. Nothing in this permit shall be construed to prevent or limit application of any emergency power of the division.

V. CONFIDENTIALITY

Any information relating to any secret process, method of manufacture or production, or sales or marketing data which has been declared confidential by the permittee, and which may be acquired, ascertained, or discovered, whether in any sampling investigation, emergency investigation, Colorado Open Records Act (CORA) request, or otherwise, shall not be publicly disclosed by any member, officer, or employee of the Water Quality Control Commission or the division, but shall be kept confidential. Any person seeking to invoke the protection of this section shall bear the burden of proving its applicability. This section shall never be interpreted as preventing full disclosure of effluent data.

W. FEES

The permittee is required to submit payment of an annual fee as set forth in the 2016 amendments to the Water Quality Control Act. Section 25-8-502 (1.1) (b), and the Regulation 61.15 as amended. Failure to submit the required fee when due and payable is a violation of the permit and will result in enforcement action pursuant to Section 25-8-601 et. seq., C.R.S.1973 as amended.

X. DURATION OF PERMIT

The duration of a permit shall be for a fixed term and shall not exceed five (5) years. If the permittee desires to continue to discharge, a permit renewal application shall be submitted at least one hundred eighty (180) calendar days before this permit expires. Filing of a timely and complete application shall cause the expired permit to continue in force to the effective date of the new permit. The permit's duration may be extended only through administrative extensions and not through interim modifications. If the permittee anticipates there will be no discharge after the expiration date of this permit, the division should be promptly notified so that it can terminate the permit in accordance with Regulation 61.

Y. SECTION 307 TOXICS

If a toxic effluent standard or prohibition, including any applicable schedule of compliance specified, is established by regulation pursuant to Section 307 of the Clean Water Act for a toxic pollutant which is present in the permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in the discharge permit, the division shall institute proceedings to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition.

PART III

Sector-Specific Requirements for Industrial Activity

A. Sector A – Timber Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector A apply to stormwater discharges associated with industrial activity from Timber Products facilities as identified by the SIC Codes specified under Sector A in Table A-1 of Appendix A of the permit.

2. Limitation on Coverage

a. Prohibition of Discharges. (See also Part I.A.2) Not covered by this permit: stormwater discharges from areas where there may be contact with the chemical formulations sprayed to provide surface protection. These discharges must be covered by a separate CDPS permit.

b. Allowable Non-Stormwater Discharges. (See also Part I.A.1.b) Also authorized by this permit, provided the non-stormwater component of the discharge is in compliance with the requirements in Part I.D.1 (Practice-based Effluent Limits): discharges from the spray down of lumber and wood product storage yards where no chemical additives are used in the spray-down waters and no chemicals are applied to the wood during storage.

Source-water used for spray-down water must not contain pollutants in concentrations exceeding the State groundwater and surface water standards.

3. Additional Practice-Based Effluent Limits

Good Housekeeping. (See also Part I.D.1.b) In areas where storage, loading and unloading, and material handling occur, perform good housekeeping to limit the discharge of wood debris, minimize the leachate generated from decaying wood materials, and minimize the generation of dust.

4. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: processing areas, treatment chemical storage areas, treated wood and residue storage areas, wet decking areas, dry decking areas, untreated wood and residue storage areas, and treatment equipment storage areas.

b. Inventory of Exposed Materials. Where such information exists, if the permittee's facility has used chlorophenolic, creosote, or chromium-copper-arsenic formulations for wood surface protection or preserving, document in the SWMP the following: areas where contaminated soils, treatment equipment, and stored materials still remain and the management practices employed to minimize the contact of these materials with stormwater runoff.

c. Description of Stormwater Management Controls. Document measures implemented to address the following activities and sources: log, lumber, and wood product storage areas; residue storage areas; loading and unloading areas; material handling areas; chemical storage areas; and equipment and vehicle maintenance, storage, and repair areas. If the permittee's facility performs wood surface protection and preservation activities, address the specific control measures, including any BMPs, for these activities.

5. Additional Inspection Requirements (see also Part I.G)

If the permittee's facility performs wood surface protection and preservation activities, inspect processing areas, transport areas, and treated wood storage areas monthly to assess the usefulness of practices to minimize the deposit of treatment chemicals on unprotected soils and in areas that will come in contact with stormwater discharges.

6. Sector-Specific Benchmarks and PFAS Monitoring

Table III-1 identifies benchmarks that apply to the specific subsectors of Sector A. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the permittee's site activities.

Table A-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
All Sector A facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector A1. General Sawmills and Planing Mills (SIC 2421)	Chemical Oxygen Demand (COD)	120.0 mg/L	Quarterly
	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Zinc, total recoverable[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector A2. Wood Preserving (SIC 2491)	Arsenic, total recoverable	0.15 mg/L	Quarterly
	Copper, total recoverable[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector A3. Log Storage and Handling (SIC 2411)	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector A4. Hardwood Dimension and Flooring Mills; Special Products Sawmills, not elsewhere classified; Millwork, Veneer, Plywood, and Structural Wood; Wood Pallets and Skids; Wood Containers, not elsewhere classified; Wood Buildings and Mobile Homes; Reconstituted Wood Products; and Wood Products Facilities not elsewhere classified (SIC 2426, 2429, 2431-2439 (except 2434), 2441, 2448, 2449, 2451, 2452, 2493, and 2499)	Chemical Oxygen Demand (COD)	120.0 mg/L	Quarterly
	Total Suspended Solids (TSS)	100.0 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).

2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1 or later version.

3. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Copper, total recoverable (mg/L)	Zinc, total recoverable (mg/L)
0-24.99 mg/L	0.0038	0.04
25-49.99 mg/L	0.0056	0.05
50-74.99 mg/L	0.0090	0.08
75-99.99 mg/L	0.0123	0.11
100-124.99 mg/L	0.0156	0.13
125-149.99 mg/L	0.0189	0.16
150-174.99 mg/L	0.0221	0.18
175-199.99 mg/L	0.0253	0.20
200-224.99 mg/L	0.0285	0.23
225-249.99 mg/L	0.0316	0.25
250+ mg/L	0.0332	0.26

4. If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

7. Numeric Limits (Effluent Limitations Guidelines [ELGs])

Table A-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table A-2. Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**ELG[1]**
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas.	pH	6.0 - 9.0 s.u
	Debris (woody material such as bark, twigs, branches, heartwood, or sapwood)	No discharge of debris that will not pass through a 2.54-cm (1-in.) diameter round opening.

1. Monitor Annually.

B. Sector B – Paper and Allied Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector B apply to stormwater discharges associated with industrial activity from Paper and Allied Products Manufacturing facilities, as identified by the SIC Codes specified under Sector B in Table A-1 of Appendix A of the permit.

2. Sector-Specific Benchmarks and PFAS Monitoring

Table B-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
All Sector B facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector B1. Paperboard Mills (SIC Code 2631)	Chemical Oxygen Demand (COD)	120 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[3]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).

2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1 or later version.

3. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

C. Sector C – Chemical and Allied Products Manufacturing, and Refining

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector C apply to stormwater discharges associated with industrial activity from Chemical and Allied Products Manufacturing, and Refining facilities, as identified by the SIC Codes specified under Sector C in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) The following are not covered by this permit: non-stormwater discharges containing inks, paints, or substances (hazardous, nonhazardous, etc.) resulting from an onsite spill, including materials collected in drip pans; wash water from material handling and processing areas; and wash water from drum, tank, or container rinsing and cleaning.

3. Sector-Specific Benchmarks and PFAS Monitoring

Table C-1 identifies benchmarks that apply to the specific subsectors of Sector C. These benchmarks apply to both the permittee's primary industrial activity and any co-located industrial activities.

Table C-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Monitoring Frequency
All Sector C facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector C1. Agricultural Chemicals (SIC 2873-2879)	Nitrate plus Nitrite Nitrogen	0.68 mg/L	Quarterly
	Lead, potentially dissolved[3]	Hardness Dependent	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Zinc, total recoverable[3]	Hardness Dependent	Quarterly
	Phosphorus	2.0 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector C2. Industrial Inorganic Chemicals (SIC 2812-2819)	Aluminum, total recoverable	0.75 mg/ L	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Nitrate plus Nitrite Nitrogen	0.68 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector C3. Soaps, Detergents, Cosmetics, and Perfumes (SIC 2841-2844)	Nitrate plus Nitrite Nitrogen	0.68 mg/L	Quarterly
	Zinc, total recoverable[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual

Table C-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Monitoring Frequency**
Subsector C4. Plastics, Synthetics, and Resins (SIC 2821-2824)	Zinc, total recoverable[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[3]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).
2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1 or later version.
3. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Lead, potentially dissolved (mg/L)	Zinc, total recoverable (mg/L)
0-24.99 mg/L	0.014	0.04
25-49.99 mg/L	0.022	0.05
50-74.99 mg/L	0.039	0.08
75-99.99 mg/L	0.056	0.11
100-124.99 mg/L	0.073	0.13
125-149.99 mg/L	0.091	0.16
150-174.99 mg/L	0.109	0.18
175-199.99 mg/L	0.127	0.20
200-224.99 mg/L	0.145	0.23
225-249.99 mg/L	0.163	0.25
250+ mg/L	0.172	0.26

4. If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

4. Numeric Limits (ELGs)

Table C-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table C-2. Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit[1]**
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	Total Phosphorus (as P)	105.0 mg/L, daily maximum
		35 mg/L, 30-day avg.
	Fluoride	75.0 mg/L, daily maximum
		25.0 mg/L, 30-day avg.

[1] Monitor annually.

D. Sector D – Asphalt Paving and Roofing Materials and Lubricant Manufacturing

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector D apply to stormwater discharges associated with industrial activity from Asphalt Paving and Roofing Materials and Lubricant Manufacturing facilities, as identified by the SIC Codes specified under Sector D in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

The following stormwater discharges associated with industrial activity are not authorized by this permit (See also Part I.A.2)

a. Discharges from petroleum refining facilities, including those that manufacture asphalt or asphalt products, that are subject to nationally established effluent limitation guidelines found in 40 CFR Part 419 (Petroleum Refining); or

b. Discharges from oil recycling facilities; or

c. Discharges associated with fats and oils rendering.

3. Mobile Asphalt Batch Plants

Permit certifications for mobile asphalt batch plants (i.e., SIC code 2951) may be issued for a specific plant, with the equipment defined as the facility, which allows existing batch plants to move around the state without re-applying for permit coverage at each new location. If a mobile batch plant is moved, the permittee must also notify the MS4 they are moving from (if they discharged to that MS4) and must provide the MS4 they will be moving to (if they will discharge to the MS4) with a copy of the permit certification. Upon notification, the division will determine whether additional requirements, including, but not limited to, benchmarks and effluent limitations, are necessary to protect water quality standards. If additional requirements are necessary, the division will require the permittee to apply for a permit modification.

4. Sector-Specific Benchmarks

Table D-1 identifies benchmarks that apply to the specific subsectors of Sector D. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the permittee's site activities.

Table D-1. Benchmarks

Subsector	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Subsector D1. Asphalt Paving and Roofing Materials (SIC 2951, 2952)	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[1]	Annual

1. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

5. Numeric Limits (ELGs)

Table D-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table D-2 Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit**
Discharges from asphalt emulsion facilities.	Total Suspended Solids (TSS)	23.0 mg/L, daily maximum
		15.0 mg/L, 30-day avg.
	pH	6.0 - 9.0 s.u.
	Oil and Grease	15.0 mg/L, daily maximum
		10 mg/L, 30-day avg.

[1] Monitor annually.

E. Sector E – Glass, Clay, Cement, Concrete, and Gypsum Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector E apply to stormwater discharges associated with industrial activity from Glass, Clay, Cement, Concrete, and Gypsum Products facilities, as identified by the SIC Codes specified under Sector E in Table A-1 of Appendix A of the permit.

2. Mobile Concrete Batch Plants

Permit certifications for mobile concrete batch plants (i.e., SIC code 3273) may be issued for a specific plant, with the equipment defined as the facility, which allows existing batch plants to move around the state without re-applying for permit coverage at each new location. If a mobile batch plant is moved, the permittee must also notify the MS4 they are moving from (if they discharged to that MS4) and must provide the MS4 they will be moving to (if they will discharge to the MS4) with a copy of the permit certification. Permittees must notify the division in writing each time the mobile plant is moved, and must meet all permit requirements, terms and conditions for each location. Upon notification, the division will determine whether additional requirements, including, but not limited to, benchmarks and effluent limitations, are necessary to protect water quality standards. If additional requirements are necessary, the division will require the permittee to apply for a permit modification.

3. Additional Practice-Based Effluent Limits

Good Housekeeping Measures. (See also Part I.D.1.b) With good housekeeping, prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), kiln dust, fly ash, settled dust, or other significant material in stormwater from paved portions of the site that are exposed to stormwater. Consider sweeping regularly or using other equivalent measures to minimize the presence of these materials. Indicate in the facility SWMP the frequency of sweeping or equivalent measures. Determine the frequency based on the amount of industrial activity occurring in the area and the frequency of precipitation, but it must be performed at least once a month if cement, aggregate, kiln dust, fly ash, or settled dust are being handled or processed. The permittee must also prevent the exposure of fine granular solids (cement, fly ash, kiln dust, etc.) to stormwater, where practicable, by storing these materials in enclosed silos, hoppers, or buildings, or under other covering.

4. Additional SWMP Requirements (see also Part I.F)

Drainage Area Site Map. Document in the SWMP the locations of the following, as applicable: bag house or other dust control device; recycle/sedimentation pond, clarifier, or other device used for the treatment of process wastewater; and the areas that drain to the treatment device.

Certification. For facilities producing ready-mix concrete, concrete block, brick, or similar products, include in the non-stormwater discharge certification a description of measures that ensure that process waste waters resulting from washing trucks, mixers, transport buckets, forms, or other equipment are discharged in accordance with CDPS requirements or are recycled.

5. Sector-Specific Benchmarks and PFAS Monitoring

Table E-1 identifies benchmarks that apply to the specific subsectors of Sector E. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the permittee's site activities.

Table E-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
All Sector E facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector E1. Clay Product Manufacturers (SIC 3251-3259, 3261-3269)	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[3]	Annual
Subsector E2. Concrete and Gypsum Product Manufacturers (SIC 3271-3275)	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	pH	6.0 - 9.0 s.u.	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[3]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).

2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1 or later version.

3. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

6. Numeric Limits (ELGs)

Table E-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table E-2 Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit**
Discharges from material storage piles at cement manufacturing facilities	Total Suspended Solids (TSS)	50 mg/L, daily maximum
	pH	6.0 - 9.0 s.u.

1 Monitor annually.

F. Sector F – Primary Metals

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector F apply to stormwater discharges associated with industrial activity from Primary Metals facilities, as identified by the SIC Codes specified under Sector F in Table A-1 of Appendix A of the permit.

2. Additional Practice-Based Effluent Limits

Good Housekeeping Measures. (See also Part I.D.1.b) As part of the facility's good housekeeping program, include a cleaning and maintenance program for all impervious areas of the facility where particulate matter, dust, or debris may accumulate, especially areas where material loading and unloading, storage, handling, and processing occur; and, where practicable, the paving of areas where vehicle traffic or material storage occur but where vegetative or other stabilization methods are not practicable (institute a sweeping program in these areas too). For unstabilized areas where sweeping is not practicable, consider using stormwater management devices such as sediment traps, vegetative buffer strips, filter fabric fence, sediment filtering boom, gravel outlet protection, or other equivalent measures that effectively trap or remove sediment.

3. Additional SWMP Requirements (see also Part I.F)

Drainage Area Site Map. Identify in the SWMP where any of the following activities may be exposed to precipitation or surface runoff: storage or disposal of wastes such as spent solvents and baths, sand, slag and dross; liquid storage tanks and drums; processing areas including pollution control equipment (e.g., baghouses); and storage areas of raw material such as coal, coke, scrap, sand, fluxes, refractories, or metal in any form. In addition, indicate where an accumulation of significant amounts of particulate matter could occur from such sources as furnace or oven emissions, losses from coal and coke handling operations, etc., and could result in a discharge of pollutants to waters of the United States.

Inventory of Exposed Material. Include in the inventory of materials handled at the site that potentially may be exposed to precipitation or runoff, areas where deposition of particulate matter from process air emissions or losses during material-handling activities are possible

4. Additional Inspection Requirements (see also Part I.G)

As part of conducting the permittee's quarterly facility inspections, address all potential sources of pollutants, including (if applicable) air pollution control equipment (e.g., baghouses, electrostatic precipitators, scrubbers, and cyclones), for any signs of degradation (e.g., leaks, corrosion, or improper operation) that could limit their efficiency and lead to excessive emissions. Consider monitoring air flow at inlets and outlets (or use equivalent measures) to check for leaks (e.g., particulate deposition) or blockage in ducts. Also inspect all process and material handling equipment (e.g., conveyors, cranes, and vehicles) for leaks, drips, or the potential loss of material; and material storage areas (e.g., piles, bins, or hoppers for storing coke, coal, scrap, or slag, as well as chemicals stored in tanks and drums) for signs of material losses due to wind or stormwater runoff.

5. Sector-Specific Benchmarks

Table F-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
Subsector F1. Steel Works, Blast Furnaces, and Rolling and Finishing Mills (SIC 3312-3317)	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Zinc, total recoverable[1]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual
Subsector F2. Iron and Steel Foundries (SIC 3321-3325)	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Copper, total recoverable[1]	Hardness Dependent	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Zinc, total recoverable[1]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual
Subsector F3. Rolling, Drawing, and Extruding of Nonferrous Metals (SIC 3351-3357)	Copper, total recoverable[1]	Hardness Dependent	Quarterly
	Zinc, total recoverable[1]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual
Subsector F4. Nonferrous Foundries (SIC 3363-3369)	Copper, total recoverable[1]	Hardness Dependent	Quarterly
	Zinc, total recoverable[1]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual

1. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Copper, total recoverable (mg/L)	Zinc, total recoverable (mg/L)
0-24.99 mg/L	0.0038	0.04
25-49.99 mg/L	0.0056	0.05
50-74.99 mg/L	0.0090	0.08
75-99.99 mg/L	0.0123	0.11
100-124.99 mg/L	0.0156	0.13
125-149.99 mg/L	0.0189	0.16
150-174.99 mg/L	0.0221	0.18
175-199.99 mg/L	0.0253	0.20
200-224.99 mg/L	0.0285	0.23
225-249.99 mg/L	0.0316	0.25
250+ mg/L	0.0332	0.26

2. If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

I. Sector I – Oil and Gas Extraction

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector I apply to stormwater discharges associated with industrial activity from Oil and Gas Extraction facilities as identified by the SIC Codes specified under Sector I in Table A-1 of Appendix A of the permit.

Discharges of stormwater runoff from field activities or operations associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities are exempt from CDPS permit coverage unless, in accordance with 40 CFR 122.26(c)(1)(iii), the facility:

- **Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or**
- **Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or**
- **Contributes to a violation of a water quality standard.**

Any stormwater discharges that require permit coverage as a result of meeting one of the conditions of 122.26(c)(1)(iii) may be covered under this permit unless otherwise required to obtain coverage under an alternative CDPS general permit or an individual CDPS permit as specified in Part I.A.3.c.

2. Limitations on Coverage

Stormwater Discharges Subject to Effluent Limitation Guidelines. (See also Part I.A.2.e) This permit does not authorize stormwater discharges from petroleum drilling operations that are subject to nationally established effluent limitation guidelines found at 40 CFR Part 435, respectively.

Non-Stormwater Discharges. This permit does not authorize discharges of vehicle and equipment wash water, including tank-cleaning operations. Alternatively, wash water discharges must be authorized under a separate CDPS permit, or be discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements.

3. Additional Practice-Based Effluent Limits

Vegetative Controls. Implement vegetative practices designed to preserve existing vegetation, where attainable, and revegetate open areas as soon as practicable after grade drilling. Consider the following (or equivalent measures): temporary or permanent seeding, mulching, sod stabilization, vegetative buffer strips, and tree protection practices. Begin implementing appropriate vegetative practices on all disturbed areas within 14 days following the last activity in that area.

4. Additional SWMP Requirement (see also Part I.F)

Drainage Area Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: Reportable Quantity (RQ) releases; locations used for the treatment, storage, or disposal of wastes; processing areas and storage areas; chemical mixing areas; construction and drilling areas; all areas subject to the effluent guidelines requirements for "No Discharge" in accordance with 40 CFR 435.32; and the structural controls to achieve compliance with the "No Discharge" requirements.

Potential Pollutant Sources. In addition, document in the facility's SWMP the following sources and activities that have potential pollutants associated with them: chemical, cement, mud, or gel mixing activities; drilling or mining activities; and equipment cleaning and rehabilitation activities. In addition, include information about the reportable quantity (RQ) release that triggered the permit application requirements: the nature of the release (e.g., spill of oil from a drum storage area), amount of oil or hazardous substance released, amount of substance recovered, date of the release, cause of the release (e.g., poor handling techniques and lack of containment in the area), areas affected by the release (i.e., land and water), procedure to clean up release, actions or procedures implemented to prevent or improve response to a release, and remaining potential contamination of stormwater from release (taking into account human health risks, the control of drinking water intakes, and the designated uses of the receiving water).

Erosion and Sedimentation Control. Unless covered by the current General Permit for Stormwater Discharges Associated with Construction Activity, the additional documentation requirements for sediment and erosion controls for well drillings and sand/shale mining areas include the following:

Site Description. Also include a description in the facility's SWMP of the nature of the exploration activity, estimates of the total area of site and area disturbed due to exploration activity, an estimate of runoff coefficient of the site, a site drainage map, including approximate slopes, and the names of all receiving waters.

Vegetative Controls. Document vegetative practices used consistent with Part III.I.3 in the SWMP.

5. **Additional Inspection Requirements (see also Part I.G)**

   All erosion and sedimentation control measures must be inspected every 7 days.

K. Sector K – Hazardous Waste Treatment, Storage, or Disposal Facilities

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector K apply to stormwater discharges associated with industrial activity from Hazardous Waste Treatment, Storage, or Disposal facilities (TSDFs) as identified by the Activity Code specified under Sector K in Table A-1 of Appendix A of the permit.

2. Industrial Activities Covered by Sector K

This permit authorizes stormwater discharges associated with industrial activity from facilities that treat, store, or dispose of hazardous wastes, including those that are operating under interim status or a permit under subtitle C of RCRA. Disposal facilities that have been properly closed and capped, and have no significant materials exposed to stormwater, are considered inactive and do not require permits.

3. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) The following are not authorized by this permit: leachate, gas collection condensate, drained free liquids; contaminated ground water, laboratory-derived wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come indirect contact with solid waste at the landfill facility.

4. Definitions

a. Contaminated stormwater - stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in Part III.K.4.d. Some specific areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

b. Drained free liquids - aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

c. Landfill - an area of land or an excavation in which wastes are placed for permanent disposal, but that is not a land application or land treatment unit, surface impoundment, underground injection well, waste pile, salt dome formation, salt bed formation, underground mine, or cave as these terms are defined in 40 CFR 257.2, 258.2, and 260.10.

d. Landfill wastewater - as defined in 40 CFR Part 445 (Landfills Point Source Category), all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated groundwater, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated stormwater, and contact wash water from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

e. Leachate - liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

f. Non-contaminated stormwater - stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in Part III.K.4.d. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

5. Sector-Specific Benchmarks and PFAS Monitoring

Table K-1 identifies benchmarks that apply to the specific subsectors of Sector K. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the permittee's site activities.

Table K-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
All Subsector K facilities[1]	PFAS	Monitoring only[2]	Quarterly
Subsector K1. ALL - Industrial Activity Code "HZ". Benchmarks only applicable to discharges not subject to effluent limitations in 40 CFR Part 445 Subpart A (see below).	Ammonia	2.14 mg/L	Quarterly
	Chemical Oxygen Demand (COD)	120 mg/L	Quarterly
	Arsenic, total recoverable	0.15 mg/L	Quarterly
	Cadmium, potentially dissolved[3]	Hardness Dependent	Quarterly
	Free Cyanide	0.005 mg/L	Quarterly
	Lead, potentially dissolved[3]	Hardness Dependent	Quarterly
	Mercury, total recoverable	0.0014 mg/L	Quarterly
	Selenium, total recoverable	0.0015 (lentic) or 0.0031 (lotic)	Quarterly
	Silver, potentially dissolved[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual

1. Applies to discharges to waters classified as water supply. The permittee must monitor and report the results of four quarterly samples. Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs.

2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.

3. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Cadmium, potentially dissolved (mg/L)	Lead, potentially dissolved (mg/L)	Silver, potentially dissolved (mg/L)
0-24.99 mg/L	0.0005	0.014	0.0002
25-49.99 mg/L	0.0007	0.022	0.0004
50-74.99 mg/L	0.0012	0.039	0.0009
75-99.99 mg/L	0.0016	0.056	0.0016
100-124.99 mg/L	0.0020	0.073	0.0025
125-149.99 mg/L	0.0024	0.091	0.0035
150-174.99 mg/L	0.0028	0.109	0.0047
175-199.99 mg/L	0.0032	0.127	0.0060
200-224.99 mg/L	0.0036	0.145	0.0074
225-249.99 mg/L	0.0040	0.163	0.0090
250+ mg/L	0.0042	0.172	0.0098

4. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

6. Numeric Limits (ELGs)

Table K-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table K-2. Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit**
Discharges from hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart A (see footnote).	Biochemical Oxygen Demand (BOD_5)	220 mg/L, daily maximum
		56 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.042 mg/L, daily maximum
		0.019 mg/L, monthly avg. maximum
	Aniline	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Benzoic Acid	0.119 mg/L, daily maximum
		0.073 mg/L, monthly avg. maximum
	Naphthalene	0.059 mg/L, daily maximum
		0.022 mg/L, monthly avg. maximum
	p-Cresol	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Phenol	0.048 mg/L, daily maximum
		0.029 mg/L, monthly avg. maximum
	Pyridine	0.072 mg/L, daily maximum
		0.025 mg/L, monthly avg. maximum
	Arsenic, total recoverable	1.1 mg/L, daily maximum
		0.54 mg/L, monthly avg. maximum
	Total Chromium	1.1 mg/L, daily maximum
		0.46 mg/L, monthly avg. maximum
	Zinc, total recoverable	0.535 mg/L, daily maximum
		0.296 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

1. Monitor annually. As set forth at 40 CFR Part 445 Subpart A, these numeric limitations apply to contaminated stormwater discharges from hazardous waste landfills subject to the provisions of RCRA Subtitle C at 40 CFR Parts 264 (Subpart N) and 265 (Subpart N) except for any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

(b) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

(c) Landfills operated in conjunction with Centralized Waste Treatment (CWT) facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

L. Sector L – Landfills, Land Application Sites, and Open Dumps

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector L apply to stormwater discharges associated with industrial activity from Landfills and Land Application Sites and Open Dumps as identified by the Activity Code specified under Sector L in Table A-1 of Appendix A of the permit.

2. Industrial Activities Covered by Sector L

This permit may authorize stormwater discharges for Sector L facilities associated with waste disposal at landfills, land application sites, and open dumps that receive or have received industrial waste, as defined at 5 CCR 1002-61.3(2)(e)(iii)(E), including sites subject to regulation under Subtitle D of RCRA. This permit does not cover discharges from landfills that receive only municipal wastes, unless otherwise designated by the division in accordance with Part I.A.1.a.ii of this permit.

3. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) The following discharges are not authorized by this permit: leachate, gas collection condensate, drained free liquids; contaminated ground water, laboratory wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

4. Definitions

a. Contaminated stormwater - stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Some areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

b. Drained free liquids - aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

c. Landfill wastewater - as defined in 40 CFR Part 445 (Landfills Point Source Category) all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated groundwater, and wastewater from recovery pumping wells. Landfill process wastewater includes, but is not limited to, leachate; gas collection condensate; drained free liquids; laboratory-derived wastewater; contaminated stormwater; and contact wash water from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

d. Leachate - liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

e. Non-contaminated stormwater - stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

5. Additional Practice-Based Effluent Limits. (see also Part I.D.1)

a. Preventive Maintenance Program. As part of the facility's preventive maintenance program, maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.

b. Erosion and Sedimentation Control. Provide temporary stabilization (e.g., temporary seeding, mulching, and placing geotextiles on the inactive portions of stockpiles) for the following: materials stockpiled for daily, intermediate, and final cover; inactive areas of the landfill or open dump; landfills or open dump areas that have gotten final covers but where vegetation has yet to establish itself; and land application sites where waste application has been completed but final vegetation has not yet been established.

c. Unauthorized Discharge Test Certification. The discharge test and certification must also be conducted for the presence of leachate and vehicle wash water.

6. Additional SWMP Requirements. (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: active and closed landfill cells or trenches, active and closed land application areas, locations where open dumping is occurring or has occurred, locations of any known leachate springs or other areas where uncontrolled leachate may commingle with runoff, and leachate collection and handling systems.

b. Summary of Potential Pollutant Sources. Document in the facility's SWMP the following sources and activities that have potential pollutants associated with them: fertilizer, herbicide, and pesticide application; earth and soil moving; waste hauling and loading or unloading; outdoor storage of significant materials, including daily, interim, and final cover material stockpiles as well as temporary waste storage areas; exposure of active and inactive landfill and land application areas; uncontrolled leachate flows; and failure or leaks from leachate collection and treatment systems.

7. Additional Inspection Requirements (see also Part I.G)

a. Inspections of Active Sites. Inspect operating landfills, open dumps, and land application sites at least once every month. Focus on areas of landfills that have not yet been finally stabilized; active land application areas, areas used for storage of material and wastes that are exposed to precipitation, stabilization, and structural control measures; leachate collection and treatment systems; and locations where equipment and waste trucks enter and exit the site. Ensure that sediment and erosion control measures are operating properly. For stabilized sites and areas where land application has been completed, conduct inspections at least once every quarter, consistent with Part I.G of the permit.

b. Inspections of Inactive Sites. Inspect inactive landfills, open dumps, and land application sites at least quarterly, consistent with Part I.G of the permit. Qualified personnel must inspect landfill (or open dump) stabilization and structural erosion control measures, leachate collection and treatment systems, and all closed land application areas.

8. Additional Post-Authorization Documentation Requirements

Recordkeeping and Internal Reporting. Keep records with the facility's SWMP of the types of wastes disposed of in each cell or trench of a landfill or open dump. For land application sites, track the types and quantities of wastes applied in specific areas.

9. Sector-Specific Benchmarks and PFAS Monitoring

Table L-1 identifies benchmarks that apply to the specific subsectors of Sector L. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the site activities.

Table L-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
All Sector L facilities[2, 5], except landfills that only accept coal ash	PFAS	Monitoring only[2]	Quarterly
Subsector L1. All Landfill, Land Application Sites and Open Dumps (Industrial Activity Code "LF")	Total Suspended Solids (TSS)[3]	100 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual
Subsector L2. All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance	Iron, total recoverable	1.0 mg/L	Quarterly

Table L-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
with 40 CFR 258.60 (Industrial Activity Code "LF")	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual

1. Applies to discharges to waters classified as water supply. The permittee must monitor and report the results of four quarterly samples. Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs.
2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.
3. Benchmark monitoring for TSS and total iron required only for discharges not subject to effluent limitations in 40 CFR Part 445 Subpart B (see Table L-2 above).
4. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.
5. Coal Combustion Residual (CCR) landfills are not exempted unless they only contain coal ash and no other waste from their operations such as but not limited to cooling tower solids and flue gas waste.

10. Effluent Limits (ELGs)

Table L-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table L-2. Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit**
Discharges from non-hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart B.	Biochemical Oxygen Demand (BOD_5)	140 mg/L, daily maximum
		37 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.033 mg/L, daily maximum
		0.016 mg/L monthly avg. maximum
	Benzoic Acid	0.12 mg/L, daily maximum
		0.071 mg/L, monthly avg. maximum
	p-Cresol	0.025 mg/L, daily maximum
		0.014 mg/L, monthly avg. maximum
	Phenol	0.026 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Zinc, total recoverable	0.20 mg/L, daily maximum
		0.11 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

1. Monitor annually. As set forth at 40 CFR Part 445 Subpart B, these numeric limitations apply to contaminated stormwater discharges from MSWLFs that have not been closed in accordance with 40 CFR 258.60, and to contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR Part 257 except for discharges from any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

(b) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation, or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

(c) landfills operated in conjunction with CWT facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

M. Sector M – Automobile Salvage Yards

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. **Covered Stormwater Discharges.**

   The requirements in Sector M apply to stormwater discharges associated with industrial activity from Automobile Salvage Yards as identified by the SIC Code specified under Sector M in Table A-1 of Appendix A of this permit.

2. **Additional Practice-Based Effluent Limits. (see also Part I.D.1)**

   a. **Minimize Exposure. Consider the following exposure minimization practices: remove mercury switches, batteries and wheel weights from vehicles upon arrival at the site (or as soon thereafter as feasible)**

   b. **Spill and Leak Prevention Procedures. Drain vehicles intended to be dismantled of all fluids upon arrival at the site (or as soon thereafter as feasible), or employ some other equivalent means to prevent spills and leaks.**

   c. **Employee Training. If applicable to the permittee's facility, address the following areas (at a minimum) in the permittee's employee training program: proper handling (collection, storage, and disposal) of oil, used mineral spirits, anti-freeze, mercury switches, batteries and solvents.**

   d. **Management of Runoff. Consider the following management practices: berms or drainage ditches on the property line (to help prevent run-on from neighboring properties); berms for uncovered outdoor storage of oily parts, engine blocks, and above-ground liquid storage; installation of detention ponds; and installation of filtering devices and oil and water separators.**

3. **Additional SWMP Requirements. (see also Part I.F)**

   a. **Drainage Area Site Map. Identify locations used for dismantling, storage, and maintenance of used motor vehicle parts. Also, identify where any of the following may be exposed to precipitation or surface runoff: dismantling areas, parts (e.g., engine blocks, tires, hubcaps, batteries, hoods, mufflers) storage areas, and liquid storage tanks and drums for fuel and other fluids.**

   b. **Potential Pollutant Sources. Assess the potential for the following to contribute pollutants to stormwater discharges: vehicle storage areas, dismantling areas, parts storage areas (e.g., engine blocks, tires, hubcaps, batteries, hoods, mufflers), and fueling stations.**

4. **Additional Inspection Requirements (see also Part I.G)**

   Immediately (or as soon thereafter as feasible), inspect vehicles arriving at the site for leaks. Inspect quarterly for signs of leakage all equipment containing oily parts, hydraulic fluids, any other types of fluids, or mercury switches. Also, inspect quarterly for signs of leakage all vessels and areas where hazardous materials and general automotive fluids are stored, including, but not limited to, mercury switches, brake fluid, transmission fluid, radiator water, and antifreeze.

5. **Sector-Specific Benchmarks**

Table M-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Subsector M1. Automobile Salvage Yards (SIC 5015)	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Lead, potentially dissolved[1]	Hardness Dependent	Quarterly

Table M-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual

[1] The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Lead, potentially dissolved (mg/L)
0-24.99 mg/L	0.014
25-49.99 mg/L	0.022
50-74.99 mg/L	0.039
75-99.99 mg/L	0.056
100-124.99 mg/L	0.073
125-149.99 mg/L	0.091
150-174.99 mg/L	0.109
175-199.99 mg/L	0.127
200-224.99 mg/L	0.145
225-249.99 mg/L	0.163
250+ mg/L	0.172

[2] If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

N. Sector N – Scrap Recycling and Waste Recycling Facilities

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector N apply to stormwater discharges associated with industrial activity from Scrap Recycling and Waste Recycling facilities as identified by the SIC Code specified under Sector N in Table A-1 of Appendix A of the permit.

2. Limitation on Coverage

Separate permit requirements have been established for recycling facilities that only receive, process, and do wholesale distribution of only source-separated recyclable materials primarily from non-industrial and residential sources (i.e., common consumer products including paper, newspaper, glass, cardboard, plastic containers, and aluminum and tin cans). This includes recycling facilities commonly referred to as material recovery facilities (MRF).

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) Non-stormwater discharges from turnings containment areas are not covered by this permit. Discharges from containment areas in the absence of a storm event are prohibited unless covered by a separate CDPS permit.

3. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Scrap and Waste Recycling Facilities (Non-Source Separated, Nonliquid Recyclable Materials). Requirements for facilities that receive, process, and do wholesale distribution of nonliquid recyclable wastes (e.g., ferrous and nonferrous metals, plastics, glass, cardboard, and paper). These facilities may receive both nonrecyclable and recyclable materials. This section is not intended for those facilities that accept recyclables only from primarily non-industrial and residential sources.

i. **Inbound Recyclable and Waste Material Control Program. Minimize the chance of accepting materials that could be significant sources of pollutants by conducting inspections of inbound recyclables and waste materials. Following are some control measure options: (a) provide information and education to suppliers of scrap and recyclable waste materials on draining and properly disposing of residual fluids (e.g., from vehicles and equipment engines, radiators and transmissions, oil filled transformers, and individual containers or drums) and removal of mercury switches from vehicles before delivery to the permittee's facility; (b) consider removing mercury switches, batteries and wheel weights from vehicles upon arrival at the site (or as soon thereafter as feasible) (c) establish procedures to minimize the potential of any residual fluids from coming into contact with precipitation or runoff; (d) establish procedures for accepting scrap lead-acid batteries (additional requirements for the handling, storage, and disposal or recycling of batteries are contained in the scrap lead-acid battery program provisions in Part III.N.3.a.vi); (e) provide training targeted for those personnel engaged in the inspection and acceptance of inbound recyclable materials; and (f) establish procedures to ensure that liquid wastes, including used oil, are stored in materially compatible and non-leaking containers and are disposed of or recycled in accordance with the Resource Conservation and Recovery Act (RCRA).**

ii. **Scrap and Waste Material Stockpiles and Storage (Outdoor). Minimize contact of stormwater runoff with stockpiled materials, processed materials, and nonrecyclable wastes. Following are some control measure options: (a) permanent or semi-permanent covers; (b) sediment traps, vegetated swales and strips, catch basin filters, and sand filters to facilitate settling or filtering of pollutants; (c) dikes, berms, containment trenches, culverts, and surface grading to divert runoff from storage areas; (d) silt fencing; and (e) oil and water separators, sumps, and dry absorbents for areas where potential sources of residual fluids are stockpiled (e.g., automobile engine storage areas).**

iii. **Stockpiling of Turnings Exposed to Cutting Fluids (Outdoor Storage). Minimize contact of surface runoff with residual cutting fluids by: (a) storing all turnings exposed to cutting fluids under some form of permanent or semi-permanent cover, or (b) establishing dedicated containment areas for all turnings that have been exposed to cutting fluids. Any containment areas must be constructed of concrete, asphalt, or other equivalent types of impermeable material and include a barrier (e.g., berms, curbing, elevated pads) to prevent contact with stormwater run-on. Stormwater runoff from these areas can be discharged, provided that any runoff is first collected and treated by an oil and**

water separator or its equivalent. The permittee must regularly maintain the oil and water separator (or its equivalent) and properly dispose of or recycle collected residual fluids.

iv. Scrap and Waste Material Stockpiles and Storage (Covered or Indoor Storage). Minimize contact of residual liquids and particulate matter from materials stored indoors or under cover with surface runoff. Following are some control measure options: (a) good housekeeping measures, including the use of dry absorbents or wet vacuuming to contain, dispose of, or recycle residual liquids originating from recyclable containers, or mercury spill kits for spills from storage of mercury switches; (b) not allowing wash water from tipping floors or other processing areas to discharge to the storm sewer system; and (c) disconnecting or sealing off all floor drains connected to the storm sewer system.

v. Scrap and Recyclable Waste Processing Areas. Minimize surface runoff from coming in contact with scrap processing equipment. Pay attention to operations that generate visible amounts of particulate residue (e.g., shredding) to minimize the contact of accumulated particulate matter and residual fluids with runoff (i.e., through good housekeeping, preventive maintenance, etc.). Following are some control measure options: (a) regularly inspect equipment for spills or leaks and malfunctioning, worn, or corroded parts or equipment; (b) establish a preventive maintenance program for processing equipment; (c) use dry-absorbents or other cleanup practices to collect and dispose of or recycle spilled or leaking fluids or use mercury spill kits for spills from storage of mercury switches; (d) on unattended hydraulic reservoirs over 150 gallons in capacity, install protection devices such as low-level alarms or equivalent devices, or secondary containment that can hold the entire volume of the reservoir; (e) containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading to minimize contact of stormwater runoff with outdoor processing equipment or stored materials; (f) oil and water separators or sumps; (g) permanent or semi-permanent covers in processing areas where there are residual fluids and grease; (h) retention or detention ponds or basins; sediment traps, and vegetated swales or strips (for pollutant settling and filtration); (i) catch basin filters or sand filters.

vi. Scrap Lead-Acid Battery Program. Properly handle, store, and dispose of scrap lead-acid batteries. Following are some control measure options (a) segregate scrap lead-acid batteries from other scrap materials; (b) properly handle, store, and dispose of cracked or broken batteries; (c) collect and dispose of leaking lead-acid battery fluid; (d) minimize or eliminate (if possible) exposure of scrap lead-acid batteries to precipitation or runoff; and (e) provide employee training for the management of scrap batteries.

vii. Spill Prevention and Response Procedures. Install alarms and/or pump shutoff systems on outdoor equipment with hydraulic reservoirs exceeding 150 gallons in the event of a line break. Alternatively, a secondary containment system capable of holding the entire contents of the reservoir plus room for precipitation can be used. Use a mercury spill kit for any release of mercury from switches, anti-lock brake systems, and switch storage areas.

viii. Supplier Notification Program. As appropriate, notify major suppliers, which scrap materials will not be accepted at the facility or will be accepted only under certain conditions.

b. Waste Recycling Facilities (Liquid Recyclable Materials).

i. Waste Material Storage (Indoor). Minimize or eliminate contact between residual liquids from waste materials stored indoors and from surface runoff. The plan may refer to applicable portions of other existing plans, such as Spill Prevention, Control, and Countermeasure (SPCC) plans required under 40 CFR Part 112. Following are some control measure options (a) procedures for material handling (including labeling and marking); (b) clean up spills and leaks with dry absorbent materials, a wet vacuum system; (c) appropriate containment structures (trenching, curbing, gutters, etc.); and (d) a drainage system, including appurtenances (e.g., pumps or ejectors, manually operated valves), to handle discharges from diked or bermed areas. Drainage should be discharged to an appropriate treatment facility or sanitary sewer system, or otherwise disposed of properly. These discharges may require coverage under a separate CDPS wastewater permit or industrial user permit under the pretreatment program.

ii. Waste Material Storage (Outdoor). Minimize contact between stored residual liquids and precipitation or runoff. The plan may refer to applicable portions of other existing plans, such as SPCC plans required under 40 CFR Part 112. Discharges of precipitation from containment areas containing used oil must also be in accordance with applicable sections of 40 CFR Part 112. Following are some control measure options (a) appropriate containment structures (e.g., dikes, berms, curbing, pits) to

store the volume of the largest tank, with sufficient extra capacity for precipitation; (b) drainage control and other diversionary structures; (c) corrosion protection and/or leak detection systems for storage tanks; and (d) dry-absorbent materials or a wet vacuum system to collect spills.

iii. Trucks and Rail Car Waste Transfer Areas. Minimize pollutants in discharges from truck and rail car loading and unloading areas. Include measures to clean up minor spills and leaks resulting from the transfer of liquid wastes. Following are two control measure options: (a) containment and diversionary structures to minimize contact with precipitation or runoff, and (b) dry clean-up methods, wet vacuuming, roof coverings, or runoff controls.

c. Recycling Facilities (Source-Separated Materials). The following identifies considerations for facilities that receive only source-separated recyclables, primarily from non-industrial and residential sources.

i. Inbound Recyclable Material Control. Minimize the chance of accepting nonrecyclables (e.g., hazardous materials) that could be a significant source of pollutants by conducting inspections of inbound materials. Following are some control measure options: (a) providing information and education measures to inform suppliers of recyclables about acceptable and non-acceptable materials, (b) training drivers responsible for pickup of recycled material, (c) clearly marking public drop-off containers regarding which materials can be accepted, (d) rejecting nonrecyclable wastes or household hazardous wastes at the source, and (e) establishing procedures for handling and disposal of nonrecyclable material.

ii. Outdoor Storage. Minimize exposure of recyclables to precipitation and runoff. Use good housekeeping measures to prevent accumulation of particulate matter and fluids, particularly in high traffic areas. Following are some control measure options (a) provide totally enclosed drop-off containers for the public; (b) install a sump and pump with each container pit and treat or discharge collected fluids to a sanitary sewer system; (c) provide dikes and curbs for secondary containment (e.g., around bales of recyclable waste paper); (d) divert surface water runoff away from outside material storage areas; (e) provide covers over containment bins, dumpsters, and roll-off boxes; and (f) store the equivalent of one day's volume of recyclable material indoors.

iii. Indoor Storage and Material Processing. Minimize the release of pollutants from indoor storage and processing areas. Following are some control measure options (a) schedule routine good housekeeping measures for all storage and processing areas, (b) prohibit tipping floor wash water from draining to the storm sewer system, and (c) provide employee training on pollution prevention practices.

iv. Vehicle and Equipment Maintenance. Following are some control measure options for areas where vehicle and equipment maintenance occur outdoors (a) prohibit vehicle and equipment wash water from discharging to the storm sewer system, (b) minimize or eliminate outdoor maintenance areas whenever possible, (c) establish spill prevention and clean-up procedures in fueling areas, (d) avoid topping off fuel tanks, (e) divert runoff from fueling areas, (f) store lubricants and hydraulic fluids indoors, and (g) provide employee training on proper handling and storage of hydraulic fluids and lubricants.

4. Additional SWMP Requirements. (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP the locations of any of the following activities or sources that may be exposed to precipitation or surface runoff: scrap and waste material storage, outdoor scrap and waste processing equipment; and containment areas for turnings exposed to cutting fluids.

b. Maintenance Schedules/Procedures for Collection, Handling, and Disposal or Recycling of Residual Fluids at Scrap and Waste Recycling Facilities. If the permittee is subject to Part III.N.3.a.iii, the facility's SWMP must identify any applicable maintenance schedule and the procedures to collect, handle, and dispose of or recycle residual fluids.

5. Additional Inspection Requirements (see also Part I.G)

Inspections for Waste Recycling Facilities. The inspections must be performed monthly, and include, at a minimum, all areas where waste is generated, received, stored, treated, or disposed of and that are exposed to either precipitation or stormwater runoff.

6. Sector-Specific Benchmarks and PFAS Monitoring

Table N-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
All Sector N facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector N1. Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling (SIC 5093)	Chemical Oxygen Demand (COD)	120 mg/L	Quarterly
	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Copper, total recoverable[3]	Hardness Dependent	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Lead, potentially dissolved[3]	Hardness Dependent	Quarterly
	Zinc, total recoverable[3]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[4]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).
2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.
3. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Copper, total recoverable (mg/L)	Lead, potentially dissolved (mg/L)	Zinc, total recoverable (mg/L)
0-25 mg/L	0.0038	0.014	0.04
25-50 mg/L	0.0056	0.022	0.05
50-75 mg/L	0.0090	0.039	0.08
75-100 mg/L	0.0123	0.056	0.11
100-125 mg/L	0.0156	0.073	0.13
125-150 mg/L	0.0189	0.091	0.16
150-175 mg/L	0.0221	0.109	0.18
175-200 mg/L	0.0253	0.127	0.20
200-225 mg/L	0.0285	0.145	0.23
225-250 mg/L	0.0316	0.163	0.25
250+ mg/L	0.0332	0.172	0.26

4. **If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3.**

O. Sector O – Steam Electric Generating Facilities

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector O apply to stormwater discharges associated with industrial activity from Steam Electric Power Generating Facilities as identified by the Activity Code specified under Sector O in Table A-1 of Appendix A of the permit.

2. Industrial Activities Covered by Sector O

This permit authorizes stormwater discharges from the following industrial activities at Sector O facilities:

- **a. steam electric power generation using coal, natural gas, oil, nuclear energy, etc., to produce a steam source, including coal handling areas (does not include geothermal power);**
- **b. coal pile runoff, including effluent limitations established by 40 CFR Part 423; and**
- **c. dual fuel facilities that could employ a steam boiler.**

3. Limitations on Coverage

- **a. Prohibition of Non-Stormwater Discharges. Non-stormwater discharges subject to effluent limitations guidelines are not covered by this permit.**
- **b. Prohibition of Stormwater Discharges. Stormwater discharges from the following are not covered by this permit:**
  - i. **ancillary facilities (e.g., fleet centers and substations) that are not contiguous to a steam electric power generating facility;**
  - ii. **gas turbine facilities (providing the facility is not a dual-fuel facility that includes a steam boiler), and combined-cycle facilities where no supplemental fuel oil is burned (and the facility is not a dual-fuel facility that includes a steam boiler); and**
  - iii. **cogeneration (combined heat and power) facilities utilizing a gas turbine.**

4. Additional Practice-Based Effluent Limits. The following good housekeeping measures are required in addition to Part I.D.1.b:

- **a. Fugitive Dust Emissions. Minimize fugitive dust emissions from coal handling areas. To minimize the tracking of coal dust offsite, consider procedures such as installing specially designed tires or washing vehicles in a designated area before they leave the site and controlling the wash water.**
- **b. Delivery Vehicles. Minimize contamination of stormwater runoff from delivery vehicles arriving at the plant site. Consider procedures to inspect delivery vehicles arriving at the plant site and ensure overall integrity of the body or container and procedures to deal with leakage or spillage from vehicles or containers.**
- **c. Fuel Oil Unloading Areas. Minimize contamination of precipitation or surface runoff from fuel oil unloading areas. Consider using containment curbs in unloading areas, having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up, and using spill and overflow protection devices (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).**
- **d. Chemical Loading and Unloading. Minimize contamination of precipitation or surface runoff from chemical loading and unloading areas. Consider using containment curbs at chemical loading and unloading areas to contain spills, having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up, and loading and unloading in covered areas and storing chemicals indoors.**
- **e. Miscellaneous Loading and Unloading Areas. Minimize contamination of precipitation or surface runoff from loading and unloading areas. Consider covering the loading area; grading, berming, or curbing**

around the loading area to divert run-on; locating the loading and unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems; or equivalent procedures.

f. Liquid Storage Tanks. Minimize contamination of surface runoff from above-ground liquid storage tanks. Consider protective guards around tanks, containment curbs, spill and overflow protection, dry cleanup methods, or equivalent measures.

g. Large Bulk Fuel Storage Tanks. Minimize contamination of surface runoff from large bulk fuel storage tanks. Consider containment berms (or their equivalent). The permittee must also comply with applicable State and Federal laws, including Spill Prevention, Control and Countermeasure (SPCC) Plan requirements.

h. Spill Reduction Measures. Minimize the potential for an oil or chemical spill, or reference the appropriate part of the permittee's SPCC plan. Visually inspect as part of the permittee's routine facility inspection the structural integrity of all above-ground tanks, pipelines, pumps, and related equipment that may be exposed to stormwater, and make any necessary repairs immediately.

i. Oil-Bearing Equipment in Switchyards. Minimize contamination of surface runoff from oil-bearing equipment in switchyard areas. Consider using level grades and gravel surfaces to retard flows and limit the spread of spills, or collecting runoff in perimeter ditches.

j. Residue-Hauling Vehicles. Inspect all residue-hauling vehicles for proper covering over the load, adequate gate sealing, and overall integrity of the container body. Repair vehicles without load covering or adequate gate sealing, or with leaking containers or beds.

k. Ash Loading Areas. Reduce or control the tracking of ash and residue from ash loading areas. Clear the ash building floor and immediately adjacent roadways of spillage, debris, and excess water before departure of each loaded vehicle.

l. Areas Adjacent to Disposal Ponds or Landfills. Minimize contamination of surface runoff from areas adjacent to disposal ponds or landfills. Reduce ash residue that may be tracked on to access roads traveled by residue handling vehicles, and reduce ash residue on exit roads leading into and out of residue handling areas.

m. Landfills, Scrap yards, Surface Impoundments, Open Dumps, General Refuse Sites. Minimize the potential for contamination of runoff from these areas.

5. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP the locations of any of the following activities or sources that may be exposed to precipitation or surface runoff: storage tanks, scrap yards, and general refuse areas; short- and long-term storage of general materials (including but not limited to supplies, construction materials, paint equipment, oils, fuels, used and unused solvents, cleaning materials, paint, water treatment chemicals, fertilizer, and pesticides); landfills and construction sites; and stock pile areas (e.g., coal or limestone piles).

b. Documentation of Good Housekeeping Measures. The permittee must document in the facility's SWMP the good housekeeping measures implemented to meet the effluent limits in Part III.O.4.

6. Additional Inspection Requirements (see also Part I.G)

Site Inspections. As part of facility's inspection, inspect the following areas quarterly: coal handling areas, loading or unloading areas, switchyards, fueling areas, bulk storage areas, ash handling areas, areas adjacent to disposal ponds and landfills, maintenance areas, liquid storage tanks, and long term and short term material storage areas.

7. Sector-Specific Benchmarks and PFAS Monitoring

Table O-1 identifies benchmarks that apply to the specific subsectors of Sector O. These benchmarks apply to both the facility's primary industrial activity and any co-located industrial activities, which describe the facility's site activities.

Table O-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
All Sector O facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly
Subsector O1. Steam Electric Generating Facilities (Industrial Activity Code "SE")	Iron, total recoverable	1.0 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[3]	Annual

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).
2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.
3. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

8. Effluent Limit (ELGs)

Table O-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table O-2[1]. Numeric Limits (ELGs)[1]		
Industrial Activity	**Parameter**	**Effluent Limit**
Discharges from coal storage piles at Steam Electric Generating Facilities	TSS	50 mg/l[2]
	pH	6.0 min - 9.0 max

1. Monitor annually.
2. If the facility is designed, constructed, and operated to treat the volume of coal pile runoff that is associated with a 10-year, 24-hour rainfall event, any untreated overflow of coal pile runoff from the treatment unit is not subject to the 50 mg/L limitation for total suspended solids.

P. Sector P – Land Transportation and Warehousing

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector P apply to stormwater discharges associated with industrial activity from Land Transportation and Warehousing facilities as identified by the SIC Codes specified under Sector P in Table A-1 of Appendix A of the permit.

2. Limitation on Coverage

Prohibited Discharges (see also Part I.A.2) This permit does not authorize the discharge of vehicle/equipment/surface wash water, including tank-cleaning operations. Such discharges must be authorized under a separate CDPS permit, discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or recycled on-site.

3. Additional Practice-Based Effluent Limits. (see also Part I.D.1)

a. Good Housekeeping Measures. In addition to the Good Housekeeping requirements in Part I.D.1.b, the permittee must do the following. Recommended control measures are discussed as indicated:

i. **Vehicle and Equipment Storage Areas. Minimize the potential for stormwater exposure to leaky or leak-prone vehicles/equipment awaiting maintenance. Consider the following (or other equivalent measures): use of drip pans under vehicles/equipment, indoor storage of vehicles and equipment, installation of berms or dikes, use of absorbents, roofing or covering storage areas, and cleaning pavement surfaces to remove oil and grease.**

ii. **Fueling Areas. Minimize contamination of stormwater runoff from fueling areas. Consider the following (or other equivalent measures): Covering the fueling area; using spill/overflow protection and cleanup equipment; minimizing stormwater run-on/runoff to the fueling area; using dry cleanup methods; and treating and/or recycling collected stormwater runoff.**

iii. **Material Storage Areas. Maintain all material storage vessels (e.g., for used oil/oil filters, spent solvents, paint wastes, hydraulic fluids) to prevent contamination of stormwater and plainly label them (e.g., "Used Oil," "Spent Solvents," etc.). Consider the following (or other equivalent measures): storing the materials indoors; installing berms/dikes around the areas; minimizing runoff of stormwater to the areas; using dry cleanup methods; and treating and/or recycling collected stormwater runoff.**

iv. **Vehicle and Equipment Cleaning Areas. Minimize contamination of stormwater runoff from all areas used for vehicle/equipment cleaning. Consider the following (or other equivalent measures): performing all cleaning operations indoors; covering the cleaning operation, ensuring that all wash water drains to a proper collection system (i.e., not the stormwater drainage system); treating and/or recycling collected wash water, or other equivalent measures.**

v. **Vehicle and Equipment Maintenance Areas. Minimize contamination of stormwater runoff from all areas used for vehicle/equipment maintenance. Consider the following (or other equivalent measures): performing maintenance activities indoors; using drip pans; keeping an organized inventory of materials used in the shop; draining all parts of fluid prior to disposal; prohibiting wet clean up practices if these practices would result in the discharge of pollutants to stormwater drainage systems; using dry cleanup methods; treating and/or recycling collected stormwater runoff, minimizing run on/runoff of stormwater to maintenance areas.**

vi. **Locomotive Sanding (Loading Sand for Traction) Areas. Consider the following (or other equivalent measures): covering sanding areas; minimizing stormwater run on/runoff; or appropriate sediment removal practices to minimize the offsite transport of sanding material by stormwater.**

b. Employee Training. Train personnel at least once a year and address the following activities, as applicable: used oil and spent solvent management; fueling procedures; general good housekeeping practices; proper painting procedures; and used battery management.

4. Additional SWMP Requirements. (see also Part I.F)

   a. Drainage Area Site Map. Identify in the SWMP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/surface runoff: Fueling stations; vehicle/equipment maintenance or cleaning areas; storage areas for vehicle/equipment with actual or potential fluid leaks; loading/unloading areas; areas where treatment, storage or disposal of wastes occur; liquid storage tanks; processing areas; and storage areas.

   b. Potential Pollutant Sources. Assess the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: Onsite waste storage or disposal; dirt/gravel parking areas for vehicles awaiting maintenance; illicit plumbing connections between shop floor drains and the stormwater conveyance system(s); and fueling areas. Describe these activities in the SWMP.

   c. Description of Good Housekeeping Measures. The permittee must document in the facility's SWMP the good housekeeping measures the permittee implements consistent with Part III.P.3.

   d. Vehicle and Equipment Wash Water Requirements. If applicable, attach to or reference in the facility's SWMP, a copy of the CDPS permit issued for vehicle/equipment wash water or, if a CDPS permit has not been issued, a copy of the pending application. If an industrial user permit is issued under a local pretreatment program, attach a copy to the facility's SWMP. In any case, implement all non-stormwater discharge permit conditions or pretreatment conditions in the facility's SWMP. If wash water is handled in another manner (e.g., hauled offsite), describe the disposal method and attach all pertinent documentation/information (e.g., frequency, volume, destination, etc.) in the plan.

5. Additional Inspection Requirements (see also Part I.G)

   Inspect all the following areas/activities: storage areas for vehicles/equipment awaiting maintenance, fueling areas, indoor and outdoor vehicle/equipment maintenance areas, material storage areas, vehicle/equipment cleaning areas and loading/unloading areas.

6. Sector-Specific Benchmarks and PFAS Monitoring

Table P-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Sector P1 facilities with SIC 5171[1]	PFAS	Monitoring only[2]	Quarterly

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities with SIC code 5171 (only) that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).
2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.

Q. Sector Q – Water Transportation

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector Q apply to stormwater discharges associated with industrial activity from Water Transportation facilities as identified by the SIC Codes specified under Sector Q in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) Not covered by this permit: bilge and ballast water, sanitary wastes, pressure wash water, and cooling water originating from vessels.

3. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Good Housekeeping Measures. The permittee must implement the following good housekeeping measures in addition to the requirements of Part I.D.1.b:

i. **Pressure Washing Area. If pressure washing is used to remove marine growth from vessels, the discharge water must be permitted by a separate CDPS permit. Collect or contain the discharges from the pressures washing area so that they are not co-mingled with stormwater discharges authorized by this permit.**

ii. **Blasting and Painting Area. Minimize the potential for spent abrasives, paint chips, and overspray to discharge into receiving waters or the storm sewer systems. Consider containing all blasting and painting activities or use other measures to minimize the discharge of contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.**

iii. **Material Storage Areas. Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or surface runoff from the storage areas. Specify which materials are stored indoors, and consider containment or enclosure for those stored outdoors. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Consider implementing an inventory control plan to limit the presence of potentially hazardous materials onsite.**

iv. **Engine Maintenance and Repair Areas. Minimize the contamination of precipitation or surface runoff from all areas used for engine maintenance and repair. Consider the following (or their equivalents): performing all maintenance activities indoors, maintaining an organized inventory of materials used in the shop, draining all parts of fluid prior to disposal, prohibiting the practice of hosing down the shop floor, using dry cleanup methods, and treating and/or recycling stormwater runoff collected from the maintenance area.**

v. **Material Handling Area. Minimize the contamination of precipitation or surface runoff from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels). Consider the following (or their equivalents): covering fueling areas, using spill and overflow protection, mixing paints and solvents in a designated area (preferably indoors or under a shed), and minimizing runoff of stormwater to material handling areas.**

vi. **Drydock Activities. Routinely maintain and clean the dry dock to minimize pollutants in stormwater runoff. Address the cleaning of accessible areas of the dry dock prior to flooding, and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, and fuel spills occurring on the dry dock. Consider the following (or their equivalents): sweeping rather than hosing off debris and spent blasting material from accessible areas of the dry dock prior to flooding and making absorbent materials and oil containment booms readily available to clean up or contain any spills.**

b. Employee Training. As part of the permittee' employee training program, address, at a minimum, the following activities (as applicable): used oil management, spent solvent management, disposal of spent

abrasives, disposal of vessel wastewaters, spill prevention and control, fueling procedures, general good housekeeping practices, painting and blasting procedures, and used battery management.

c. Preventive Maintenance. As part of the permittee's preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

4. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: fueling; engine maintenance and repair; vessel maintenance and repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; locations used for the treatment, storage, or disposal of wastes; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

b. Summary of Potential Pollutant Sources. Document in the SWMP the following additional sources and activities that have potential pollutants associated with them: outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting.)

5. Additional Inspection Requirements (see also Part I.G)

Include the following in all quarterly routine facility inspections: pressure washing area; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; drydock area; and general yard area.

6. Sector-Specific Benchmarks

Table Q-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Subsector Q1. Water Transportation Facilities (SIC 4412-4499)	Aluminum, total recoverable	0.75 mg/L	Quarterly
	Iron, total recoverable	1.0 mg/L	Quarterly
	Lead, potentially dissolved[1]	Hardness Dependent	Quarterly
	Zinc, total recoverable[1]	Hardness Dependent	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	Annual

1. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Lead, potentially dissolved (mg/L)	Zinc, total recoverable (mg/L)
0-24.99 mg/L	0.014	0.04
25-49.99 mg/L	0.022	0.05
50-74.99 mg/L	0.039	0.08
75-99.99 mg/L	0.056	0.11
100-124.99 mg/L	0.073	0.13

Water Hardness Range	Lead, potentially dissolved (mg/L)	Zinc, total recoverable (mg/L)
125-149.99 mg/L	0.091	0.16
150-174.99 mg/L	0.109	0.18
175-199.99 mg/L	0.127	0.20
200-224.99 mg/L	0.145	0.23
225-249.99 mg/L	0.163	0.25
250+ mg/L	0.172	0.26

2. If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

R. Sector R – Ship and Boat Building and Repair Yards

The permittee must comply with Part III sector-specific requirements associated with the facility primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector R apply to stormwater discharges associated with industrial activity from Ship and Boat Building and Repair Yards as identified by the SIC Codes specified under Sector R in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) Discharges containing bilge and ballast water, sanitary wastes, pressure wash water, and cooling water originating from vessels are not covered by this permit.

3. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Good Housekeeping Measures

i. **Pressure Washing Area. If pressure washing is used to remove marine growth from vessels, the discharged water must be permitted as a process wastewater by a separate CDPS permit.**

ii. **Blasting and Painting Area. Minimize the potential for spent abrasives, paint chips, and overspray to discharging into the receiving water or the storm sewer systems. Consider containing all blasting and painting activities, or use other measures to prevent the discharge of the contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.**

iii. **Material Storage Areas. Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or surface runoff from the storage areas. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Consider implementing an inventory control plan to limit the presence of potentially hazardous materials onsite.**

iv. **Engine Maintenance and Repair Areas. Minimize the contamination of precipitation or surface runoff from all areas used for engine maintenance and repair. Consider the following (or their equivalents): performing all maintenance activities indoors, maintaining an organized inventory of materials used in the shop, draining all parts of fluid prior to disposal, prohibiting the practice of hosing down the shop floor, using dry cleanup methods, and treating and/or recycling stormwater runoff collected from the maintenance area.**

v. **Material Handling Area. Minimize the contamination of precipitation or surface runoff from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels). Consider the following (or their equivalents): covering fueling areas, using spill and overflow protection, mixing paints and solvents in a designated area (preferably indoors or under a shed), and minimizing stormwater run-on to material handling areas.**

vi. **Drydock Activities. Routinely maintain and clean the dry dock to minimize pollutants in stormwater runoff. Clean accessible areas of the dry dock prior to flooding and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, or fuel spills occurring on the dry dock. Consider the following (or their equivalents): sweeping rather than hosing off debris and spent blasting material from accessible areas of the dry dock prior to flooding, and having absorbent materials and oil containment booms readily available to clean up and contain any spills.**

b. Employee Training. As part of the permittee's employee training program, address, at a minimum, the following activities (as applicable): used oil management, spent solvent management, disposal of spent abrasives, disposal of vessel wastewaters, spill prevention and control, fueling procedures, general good housekeeping practices, painting and blasting procedures, and used battery management.

c. Preventive Maintenance. As part of the permittee's preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators

and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

4. Additional SWMP Requirements (see also Part I.F)

   a. Drainage Area Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: fueling; engine maintenance or repair; vessel maintenance or repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; treatment, storage, and waste disposal areas; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

   b. Potential Pollutant Sources. Document in the facility's SWMP the following additional sources and activities that have potential pollutants associated with them (if applicable): outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting).

   c. Documentation of Good Housekeeping Measures. Document in the facility's SWMP any good housekeeping measures implemented to meet the effluent limits in Part III.R.3.

      i. Blasting and Painting Areas. Document in the SWMP any standard operating practices relating to blasting and painting (e.g., prohibiting uncontained blasting and painting over open water or prohibiting blasting and painting during windy conditions, which can render containment ineffective).

      ii. Storage Areas. Specify in the facility's SWMP which materials are stored indoors, and consider containment or enclosure for those stored outdoors.

5. Additional Inspection Requirements (see also Part I.G)

   Include the following in all quarterly routine facility inspections: pressure washing area; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; dry dock area; and general yard area.

S. Sector S – Air Transportation

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector S apply to stormwater discharges associated with industrial activity from Air Transportation facilities identified by the SIC Codes specified under Sector S in Table A-1 of Appendix A of the permit.

2. Limitation on Coverage

a. This permit authorizes stormwater discharges from portions of the air transportation facility that are involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling and lubrication), equipment cleaning operations, deicing operations.

Note: "deicing" will generally be used to imply both deicing (removing frost, snow or ice) and anti-icing (preventing accumulation of frost, snow or ice) activities, unless specific mention is made regarding anti-icing and/or deicing activities.

b. Prohibition of Non-Stormwater Discharges. (See also Part I.A.2 and Part III.S.3) This permit does not authorize the discharge of aircraft; ground vehicle, runway and equipment wash waters nor the dry weather discharge of deicing chemicals. Such discharges must be covered by separate CDPS permit(s). Note that a discharge resulting from snowmelt is not a dry weather discharge.

c. Multiple Operators at Air Transportation Facilities

d. Air transportation facilities often have more than one operator who could discharge stormwater associated with industrial activity. Operators include the airport authority and airport tenants, including air passenger or cargo companies, fixed based operators, and other parties who routinely perform industrial activities on airport property.

i. **Permit Coverage/Submittal of Applications. Where an airport transportation facility has multiple industrial operators that discharge stormwater, each individual operator must obtain coverage under a CDPS stormwater permit. To obtain coverage under the COR900000 permit, all such operators must meet the eligibility requirements in Part I.A.1 and must submit an application, per Part I.A.3 (or, if appropriate, a no exposure certification.**

ii. **Permit Implementation Responsibilities for Airport Authority and Tenants. The airport authority, in collaboration with its tenants, may choose to implement certain permit requirements on behalf of its tenants in order to increase efficiency and eliminate redundancy or duplication of effort. Options available to the airport authority and its tenants for implementation of permit requirements include:**

- **The airport authority performs certain activities on behalf of itself and its tenants and reports on its activities;**
- **Tenants provide the airport authority with relevant inputs about tenants' activities, including deicing chemical usage, and the airport authority compiles and reports on tenants' and its own activities;**
- **Tenants independently perform, document and submit required information on their activities.**

iii. **SWMP Requirements. A single comprehensive SWMP must be developed for all stormwater discharges associated with industrial activity at the airport before submittal of any applications. The comprehensive SWMP should be developed collaboratively by the airport authority and tenants. If any operator develops a SWMP for discharges from its own areas of the airport, that SWMP must be coordinated and integrated with the comprehensive SWMP. All operators and their separate SWMP contributions and compliance responsibilities must be clearly identified in the comprehensive SWMP, which all operators must sign and certify per Part I.E.3. As applicable, the SWMP must clearly specify the COR900000 requirements to be complied with by:**

- **The airport authority for itself;**

- **The airport authority on behalf of its tenants;**
- **Tenants for themselves.**

For each activity that an operator (e.g., the airport authority) conducts on behalf of another operator (e.g., a tenant), the SWMP must describe a process for reporting results to the latter operator and for ensuring appropriate follow-up, if necessary, by all affected operators. This is to ensure all actions are taken to correct any potential deficiencies or permit violations. For example, where the airport authority is conducting monitoring for itself and its tenants, the SWMP must identify how the airport authority will share the monitoring results with its tenants, and then follow-up with its tenants where there are any exceedances of benchmarks, effluent limits, or water quality standards. In turn, the SWMP must describe how the tenants will also follow-up to ensure permit compliance.

iv. **Duty to Comply. All individual operators are responsible for implementing their assigned portion of the comprehensive SWMP, and operators must ensure that their individual activities do not render another operator's stormwater controls ineffective. In addition, the standard permit conditions found in Part II apply to each individual operator, including II.A Duty to Comply (which states, in part, "The permittee [each individual operator] must comply with all conditions of this permit."). For multiple operators at an airport this means that each individual operator remains responsible for ensuring all requirements of its own COR900000 coverage are met regardless of whether the comprehensive SWMP allocates the actual implementation of any of those responsibilities to another entity. That is, the failure of the entity allocated responsibility in the SWMP to implement a COR900000 requirement on behalf of other operators does not negate the other operators' ultimate liability.**

3. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Good Housekeeping Measures

i. **Aircraft, Ground Vehicle and Equipment Maintenance Areas. Minimize the contamination of stormwater runoff from all areas used for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangers). Consider the following practices (or their equivalents): performing maintenance activities indoors; maintaining an organized inventory of material used in the maintenance areas; draining all parts of fluids prior to disposal; prohibiting the practice of hosing down the apron or hanger floor; using dry cleanup methods; and collecting the stormwater runoff from the maintenance area and providing treatment or recycling.**

ii. **Aircraft, Ground Vehicle and Equipment Cleaning Areas. Clearly demarcate these areas on the ground using signage or other appropriate means. Minimize the contamination of stormwater runoff from cleaning areas.**

iii. **Aircraft, Ground Vehicle and Equipment Storage Areas. Store all aircraft, ground vehicles and equipment awaiting maintenance in designated areas only and minimize the contamination of stormwater runoff from these storage areas. Consider the following control measures, including any BMPs (or their equivalents): storing aircraft and ground vehicles indoors; using drip pans for the collection of fluid leaks; and perimeter drains, dikes or berms surrounding the storage areas.**

iv. **Material Storage Areas. Maintain the vessels of stored materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) in good condition, to prevent or minimize contamination of stormwater. Also plainly label the vessels (e.g., "used oil," "Contaminated Jet A," etc.). To minimize contamination of precipitation/runoff from these areas. Consider the following control measures (or their equivalents): storing materials indoors; storing waste materials in a centralized location; and installing berms/dikes around storage areas.**

v. **Airport Fuel System and Fueling Areas. Minimize the discharge of fuel to the storm sewer/surface waters resulting from fuel servicing activities or other operations conducted in support of the airport fuel system. Consider the following control measures (or their equivalents): implementing spill and overflow practices (e.g., placing absorptive materials beneath aircraft during fueling operations); using only dry cleanup methods; and collecting stormwater runoff. If you have implemented a SPCC plan developed in accordance with the 2006 amendments to the SPCC rule, you may cite the relevant aspects from your SPCC plan that comply with the requirements of this section in your SWMP.**

vi. **Source Reduction. Consistent with safety considerations, minimize the use of urea and glycol-based deicing chemicals, in order to reduce the aggregate amount of deicing chemicals used and/or lessen**

the environmental impact. Chemical options to replace ethylene glycol, propylene glycol and urea include: potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.

(A) Runway Deicing Operation: To minimize the discharge of pollutants in stormwater from runway deicing operations, implement source reduction control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): metered application of chemicals; pre-wetting dry chemical constituents prior to application; installing a runway ice detection system; implementing anti-icing operations as a preventive measure against ice buildup; heating sand; and product substitution. Chemical options to replace pavement deicers (urea or glycol) include (list not exclusive): potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.

(B) Aircraft Deicing Operations. Minimize contamination of stormwater runoff from aircraft deicing operations. Determine whether excessive application of deicing chemicals occurs and adjust as necessary, consistent with considerations of flight safety. This evaluation should be carried out by the personnel most familiar with the particular aircraft and flight operations in question (versus an outside entity such as the airport authority). Consider using alternative deicing/anti-icing agents as well as containment measures for all applied chemicals. Also consider these control measure options (or their equivalents) for reducing deicing fluid use: forced-air deicing systems, computer-controlled fixed-gantry systems, infrared technology, hot water, varying glycol content to air temperature, enclosed-basket deicing trucks, mechanical methods, solar radiation, hangar storage, aircraft covers, and thermal blankets for MD-80s and DC-9s. Also consider using ice-detection systems and airport traffic flow strategies and departure slot allocation systems where feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations. The evaluations and determinations required by this Part should be carried out by the personnel most familiar with the particular aircraft and flight operations and related systems in question (versus an outside entity such as the airport authority).

vii. Management of Runoff. (See also Part I.D.1.f) Minimize the discharge of pollutants in stormwater from deicing chemicals in stormwater. To minimize discharges of pollutants in stormwater from aircraft deicing, implement stormwater control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): installing a centralized deicing pad to recover deicing fluid following application; plug- and-pump (PnP); using vacuum/collection trucks (glycol recovery vehicles); storing contaminated stormwater/deicing fluids in tanks; recycling collected deicing fluid where feasible; releasing controlled amounts to a publicly owned treatment works; separation of contaminated snow; conveying contaminated stormwater into an impoundment for biochemical decomposition (be aware of attracting wildlife that may prove hazardous to flight operations); and directing stormwater into vegetative swales or other infiltration measures. To minimize discharges of pollutants in stormwater from runway deicing, implement stormwater control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): mechanical systems (snow plows, brushes); conveying contaminated stormwater into swales and/or an impoundment; and pollution prevention practices such as ice detection systems, and airfield prewetting.

When applying deicing fluids during non-precipitation events (also referred to as “clear ice deicing”), implement control measures to prevent unauthorized discharge of pollutants (dry-weather discharges of pollutants would need coverage under an CDPS wastewater permit), or to minimize the discharge of pollutants from deicing fluids in later stormwater discharges, implement control measures such as the following, where determined to be feasible and that accommodate considerations safety, space, operational constraints, and flight considerations (list not exclusive): recovering deicing fluids; preventing the fluids from entering storm sewers or other stormwater discharge conveyances (e.g., covering storm sewer inlets, using booms, installing absorptive interceptors in the drains); releasing controlled amounts to a publicly owned treatment works. Used deicing fluid should be recycled whenever practicable.

b. Deicing Season. The permittee must determine the seasonal timeframe (e.g., December- February, October - March, etc.) during which deicing activities typically occur at the facility. Implementation of control measures, including any BMPs, facility inspections and monitoring must be conducted with particular emphasis throughout the defined deicing season. If the permittee meets the deicing chemical

usage thresholds of 100,000 gallons glycol and/or 100 tons of urea, the deicing season the permittee identified is the timeframe during which the permittee must obtain the four required benchmark monitoring event results for deicing-related parameters, i.e., BOD, COD, ammonia and pH. See also Part III.S.6.

c. Firefighting. When emergency firefighting activity is conducted in areas that contribute to industrial stormwater runoff, the permittee must follow spill response procedures to minimize the discharge of firefighting residuals including PFAS-containing foam, as soon as the scene is safe. Firefighting residuals that include PFAS-containing-foam must be removed from containment measures and placed in storage containers to the extent possible within 48 hours of use.

d. If the permittee owns firefighting equipment that previously was used with PFAS-containing foam, the permittee must develop and document decontamination procedures to minimize the potential for equipment to contribute PFAS to industrial stormwater. The permittee must follow the developed decontamination procedures. These decontamination procedures do not apply when the use of PFAS-containing foam is required or authorized by state or federal law. Where the permittee has developed and implemented procedures prior to the effective date of this permit they are not required to develop or implement new procedures provided they have documentation on the procedures and dates of implementation in the SWMP.

e. Except for emergency firefighting, the permittee must implement control measures to prevent PFAS-containing foam from coming into contact with stormwater due to accidental release. Examples of control measures include but are not limited to automatic shutoff valves and secondary containment.

4. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Document in the SWMP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/surface runoff: aircraft and runway deicing operations; fueling stations; aircraft, ground vehicle and equipment maintenance/cleaning areas; storage areas for aircraft, ground vehicles and equipment awaiting maintenance.

b. Potential Pollutant Sources. In the permittee's inventory of exposed materials, describe in the facility's SWMP the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: aircraft, runway, ground vehicle and equipment maintenance and cleaning; aircraft and runway deicing operations (including apron and centralized aircraft deicing stations, runways, taxiways and ramps). If the permittee uses deicing chemicals, the permittee must maintain a record of the types (including the Material Safety Data Sheets [MSDS]) used and the monthly quantities, either as measured or, in the absence of metering, as estimated to the best of the permittee's knowledge. This includes all deicing chemicals, not just glycols and urea (e.g., potassium acetate), because large quantities of these other chemicals can still have an adverse impact on receiving waters. Deicing operators must provide the above information to the airport authority for inclusion with any comprehensive airport SWMPs. If materials containing PFAS are stored, document the location, quantity, method of storage, and current disposal practices, if any. Tenants or other fixed-based operations that conduct deicing operations must provide the above information to the airport authority for inclusion with any comprehensive airport SWMPs.

c. Vehicle and Equipment Wash Water Requirements. Attach to or reference in the facility's SWMP, a copy of the CDPS permit issued for vehicle/equipment wash water or, if a CDPS permit has not been issued, a copy of the pending application. If an industrial user permit is issued under a local pretreatment program, include a copy in the facility's SWMP. In any case, if the permittee is subject to another permit, describe the facility's control measures for implementing all non-stormwater discharge permit conditions or pretreatment requirements in the facility's SWMP. If wash water is handled in another manner (e.g., hauled offsite, retained onsite), describe the disposal method and attach all pertinent documentation/information (e.g., frequency, volume, destination, etc.) in the facility's SWMP.

d. Documentation of Control Measures Used for Management of Runoff. Document in the facility's SWMP the control measures used for collecting or containing contaminated melt water from collection areas used for disposal of contaminated snow. Document control measures for storage and transfer of PFAS-containing foam,the proper collection and disposal methods in the event of a release from a container, and decontamination procedures from Part III.S.3.d.

5. Additional Inspection Requirements (see also Part I.G)

a. Inspection Frequency. At a minimum, conduct visual inspections at least monthly during the deicing season (e.g., October through April for most mid-latitude airports) if deicing occurs within a month. If the permittee's facility needs to deice before or after this period, expand the monthly inspections to include all months during which deicing chemicals may be used. The division may specifically require the permittee to increase inspection frequencies.

6. Sector-Specific Benchmarks and PFAS Monitoring

a. Applicable Benchmarks and monitoring requirements are listed in Table S-1 and S-2.

Table S-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Sector S facilities that are located at Part 139 airports or airports where PFAS-containing foam has been stored, used, or released[1]	PFAS	monitor only[2, 3]	Quarterly
For airports where a single permittee, or a combination of permitted facilities use more than 100,000 gallons of glycol-based deicing chemicals and/or 100 tons or more of urea on an average annual basis, monitor the first four parameters in ONLY those outfalls that collect runoff from areas where deicing activities occur (SIC 4512-4581).	Biochemical Oxygen Demand (BOD_5)[4]	30 mg/L	Quarterly
	Chemical Oxygen Demand (COD)[4]	120 mg/L	Quarterly
	Ammonia[4]	2.14 mg/L	Quarterly
	pH[4]	6.0 - 9.0 s.u.	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[5]	Annual

1. Applies to discharges covered by this permit to waters classified as water supply. The permittee must monitor and report the results of four quarterly samples. Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs.
2. Tenants and airport operators may coordinate sampling such that samples are collected at locations representative of combined discharges. Where the sample is collected downstream of the permittee's outfall through coordinated monitoring with other permittees, the permittee will report NODI code A in the DMR and must report results of the downstream sample analyses in the annual report. At any time, the division may require permittees to conduct separate quarterly monitoring at their respective outfalls.
3. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.
4. These are deicing-related parameters. Collect the four benchmark samples, and any required follow-up benchmark samples, during the timeframe defined in Part III.S.3.b when deicing activities are occurring.
5. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

7. Effluent Limits (ELGs)

a. Airfield Pavement Deicing. For both existing and new "primary airports" (as defined at 40 CFR 449.2 with 1,000 or more annual non-propeller aircraft departures that discharge stormwater from airfield pavement deicing activities), there must be no discharge of airfield pavement deicers containing urea. To comply with this limitation, such airports must do one of the following: (1) certify annually on the annual report that you do not use pavement deicers containing urea, or (2) meet the effluent limitation in Table S-2.

b. Aircraft Deicing. Airports that are both "primary airports" (as defined at 40 CFR 449.2) and new sources ("new airports") with 1,000 or more annual non-propeller aircraft departures must meet the applicable

requirements for aircraft deicing at 40 CFR 449.11(a). Discharges of the collected aircraft deicing fluid directly to waters of the U.S. are not eligible for coverage under this permit.

c. Monitoring, Reporting and Recordkeeping. New and existing airports subject to the effluent limitations in Part III.S.7.a and b of this permit must comply with the applicable monitoring, reporting and recordkeeping requirements outlined in 40 CFR 449.20.

Table S-2. Numeric Limits (ELGs)		
Industrial Activity	**Parameter**	**Effluent Limitation**
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Ammonia as Nitrogen	14.7 mg/L daily maximum

T. Sector T – Treatment Works

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector T apply to stormwater discharges associated with industrial activity from Treatment Works as identified by the Activity Code specified under Sector T in Table A-1 of Appendix A of the permit.

2. Industrial Activities Covered by Sector T

The requirements listed under this part apply to all existing point source stormwater discharges associated with the following activities:

- **d. Treatment works treating domestic sewage, or any other sewage sludge or wastewater treatment device or system used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge; that are located within the confines of a facility with a design flow of 1.0 million gallons per day (MGD) or more; or are required to have an approved pretreatment program under 40 CFR Part 403.**
- **e. The following are not required to have permit coverage: farmlands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located within the facility, or areas that are in compliance with Section 405 of the CWA.**

3. Limitations on Coverage

- **a. Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) Sanitary and industrial wastewater, equipment, and vehicle wash water are not authorized by this permit.**

4. Additional Practice-Based Effluent Limits (see also Part I.D.1)

- **a. Control Measures. In addition to the other control measures, consider the following: routing stormwater to the treatment works; or covering exposed materials (i.e., from the following areas: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station).**
- **b. Employee Training. At a minimum, training must address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and controls; fueling procedures; general good housekeeping practices; and proper procedures for using fertilizer, herbicides, and pesticides.**

5. Additional SWMP Requirements (see also Part I.F)

- **a. Site Map. Document in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and storage areas for process chemicals, petroleum products, solvents, fertilizers, herbicides, and pesticides.**
- **b. Potential Pollutant Sources. Document in the facility's SWMP the following additional sources and activities that have potential pollutants associated with them, as applicable: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and access roads and rail lines.**
- **c. Wastewater and Washwater Requirements. Keep a copy of all the permittee' current CDPS permits issued for wastewater and industrial, vehicle and equipment wash water discharges or, if an CDPS permit has not yet been issued, a copy of the pending application(s) with the permittee's SWMP. If the wash water is handled in another manner, the disposal method must be described and all pertinent documentation must be retained onsite.**

6. Additional Inspection Requirements (see also Part I.G)

Include the following areas in all inspections: access roads and rail lines; grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station.

U. Sector U – Food and Kindred Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector U apply to stormwater discharges associated with industrial activity from Food and Kindred Products facilities as identified by the SIC Codes specified in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) The following discharges are not authorized by this permit: discharges containing boiler blowdown, cooling tower overflow and blowdown, ammonia refrigeration purging, and vehicle washing and clean-out operations.

3. Additional Practice-based Effluent Limitations (see also Part I.D.1)

Employee Training. Address pest control in the permittee's employee training program.

4. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Document in the facility's SWMP the locations of the following activities if they are exposed to precipitation or runoff: vents and stacks from cooking, drying, and similar operations; dry product vacuum transfer lines; animal holding pens; spoiled product; and broken product container storage areas.

b. Potential Pollutant Sources. Document in the facility's SWMP, in addition to food and kindred products processing-related industrial activities, application and storage of pest control chemicals (e.g., rodenticides, insecticides, fungicides) used on plant grounds.

5. Additional Inspection Requirements (see also Part I.G)

Inspect on a quarterly basis, at a minimum, the following areas where the potential for exposure to stormwater exists: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; vents and stacks emanating from industrial activities; spoiled product and broken product container holding areas; animal holding pens; staging areas; and air pollution control equipment.

6. Sector-Specific Benchmarks

Table U-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one Sector / Subsector)	Parameter	Benchmark Monitoring Concentration	Reporting Frequency
Subsector U1. Grain Mill Products (SIC 2041-2048)	Total Suspended Solids (TSS)	100 mg/L	Quarterly
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[1]	Annual
Subsector U2. Fats and Oils Products (SIC 2074-2079)	Biochemical Oxygen Demand (BOD_5)	30 mg/L	Quarterly
	Chemical Oxygen Demand (COD)	120 mg/L	Quarterly
	Nitrate plus Nitrite Nitrogen	0.68 mg/L	Quarterly
	Total Suspended Solids (TSS)	100 mg/L	Quarterly

Table U-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one Sector / Subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[1]	Annual

1. If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

V. Sector V – Textile Mills, Apparel, and Other Fabric Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector V apply to stormwater discharges associated with industrial activity from Textile Mills, Apparel, and Other Fabric Product manufacturing as identified by the SIC Codes specified under Sector V in Table A-1 of Appendix A of the permit.

2. Limitations on Coverage

Prohibition of Non-Stormwater Discharges. (See also Part I.A.2) The following are not authorized by this permit: discharges of wastewater (e.g., wastewater resulting from wet processing or from any processes relating to the production process), reused or recycled water, and waters used in cooling towers. If the permittee has these types of discharges from the permittee's facility, the permittee must cover them under a separate CDPS permit.

3. Additional Practice-Based Limitations (See also Part I.D.1)

a. Good Housekeeping Measures

i. **Material Storage Areas. Plainly label and store all containerized materials (e.g., fuels, petroleum products, solvents, and dyes) in a protected area, away from drains. Minimize contamination of the stormwater runoff from such storage areas. Also, consider an inventory control plan to prevent excessive purchasing of potentially hazardous substances. For storing empty chemical drums or containers, ensure that the drums and containers are clean (consider triple-rinsing) and that there is no contact of residuals with precipitation or runoff. Collect and dispose of wash water from these cleanings properly.**

ii. **Material Handling Areas. Minimize contamination of stormwater runoff from material handling operations and areas. Consider the following (or their equivalents): use of spill and overflow protection; covering fueling areas; and covering or enclosing areas where the transfer of material may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines, and pipes that may carry chemicals, dyes, or wastewater.**

iii. **Fueling Areas. Minimize contamination of stormwater runoff from fueling areas. Consider the following (or their equivalents): covering the fueling area, using spill and overflow protection, minimizing run-on of stormwater to the fueling areas, using dry cleanup methods, and treating and/or recycling stormwater runoff collected from the fueling area.**

iv. **Above-Ground Storage Tank Area. Minimize contamination of the stormwater runoff from above-ground storage tank areas, including the associated piping and valves. Consider the following (or their equivalents): regular cleanup of these areas; including measures for tanks, piping and valves explicitly in the permittee's SPCC program; minimizing runoff of stormwater from adjacent areas; restricting access to the area; inserting filters in adjacent catch basins; providing absorbent booms in unbermed fueling areas; using dry cleanup methods; and permanently sealing drains within critical areas that may discharge to a storm drain.**

b. Employee Training. As part of the permittee's employee training program, address, at a minimum, the following activities (as applicable): use of reused and recycled waters, solvents management, proper disposal of dyes, proper disposal of petroleum products and spent lubricants, spill prevention and control, fueling procedures, and general good housekeeping practices.

4. Additional SWMP Requirements (see also Part I.F)

a. Potential Pollutant Sources. Document in the facility's SWMP the following additional sources and activities that have potential pollutants associated with them: industry-specific significant materials and industrial activities (e.g., backwinding, beaming, bleaching, backing bonding, carbonizing, carding, cut and sew operations, desizing, drawing, dyeing locking, fulling, knitting, mercerizing, opening, packing, plying, scouring, slashing, spinning, synthetic-felt processing, textile waste processing, tufting, turning, weaving, web forming, winging, yarn spinning, and yarn texturing).

b. Description of Good Housekeeping Measures for Material Storage Areas. Document in the SWMP the permittee's containment area or enclosure for materials stored outdoors in connection with Part III.V.3.a.i above.

5. Additional Inspection Requirements (see also Part I.G)

Inspect, at least monthly, the following activities and areas (at a minimum): transfer and transmission lines, spill prevention, good housekeeping practices, management of process waste products, and all structural and nonstructural management practices.

W. Sector W – Furniture and Fixtures

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector W apply to stormwater discharges associated with industrial activity from Furniture and Fixtures facilities as identified by the SIC Codes specified under Sector W in Table A-1 of Appendix A of the permit.

2. Additional SWMP Requirements (see also Part I.F)

Drainage Area Site Map. Document in the permittee's SWMP where any of the following may be exposed to precipitation or surface runoff: material storage (including tanks or other vessels used for liquid or waste storage) areas; outdoor material processing areas; areas where wastes are treated, stored, or disposed of; access roads; and rail spurs.

X. Sector X – Printing and Publishing

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector X apply to stormwater discharges associated with industrial activity from Printing and Publishing facilities as identified by the SIC Codes specified under Sector X in Table A-1 of Appendix A of the permit.

2. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Good Housekeeping Measures

i. **Material Storage Areas. Plainly label and store all containerized materials (e.g., skids, pallets, solvents, bulk inks, hazardous waste, empty drums, portable and mobile containers of plant debris, wood crates, steel racks, and fuel oil) in a protected area, away from drains. Minimize contamination of the stormwater runoff from such storage areas. Also, consider an inventory control plan to prevent excessive purchasing of potentially hazardous substances.**

ii. **Material Handling Area. Minimize contamination of stormwater runoff from material handling operations and areas (e.g., blanket wash, mixing solvents, loading and unloading materials). Consider the following (or their equivalents): using spill and overflow protection, covering fueling areas, and covering or enclosing areas where the transfer of materials may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines, and pipes that may carry chemicals or wastewater.**

iii. **Fueling Areas. Minimize contamination of stormwater runoff from fueling areas. Consider the following (or their equivalents): covering the fueling area, using spill and overflow protection, minimizing runoff of stormwater to the fueling areas, using dry cleanup methods, and treating and/or recycling stormwater runoff collected from the fueling area.**

iv. **Above Ground Storage Tank Area. Minimize contamination of the stormwater runoff from above-ground storage tank areas, including the associated piping and valves. Consider the following (or their equivalents): regularly cleaning these areas, explicitly addressing tanks, piping and valves in the SPCC program, minimizing stormwater runoff from adjacent areas, restricting access to the area, inserting filters in adjacent catch basins, providing absorbent booms in unbermed fueling areas, using dry cleanup methods, and permanently sealing drains within critical areas that may discharge to a storm drain.**

b. Employee Training.

As part of the permittee's employee training program, address, at a minimum, the following activities (as applicable): spent solvent management, spill prevention and control, used oil management, fueling procedures, and general good housekeeping practices.

3. Additional SWMP Requirements (see also Part I.F)

Description of Good Housekeeping Measures for Material Storage Areas. In connection with Part III.X.2.a.i, describe in the SWMP the containment area or enclosure for materials stored outdoors.

Y. Sector Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee' facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector Y apply to stormwater discharges associated with industrial activity from Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries facilities as identified by the SIC Codes specified under Sector Y in Table A-1 of Appendix A of the permit.

2. Additional Practice-Based Effluent Limits (see also Part I.D.1)

a. Controls for Rubber Manufacturers. Minimize the discharge of zinc in the permittee's stormwater discharges. Parts III.Y.2.a.i to Y.2.a.v give possible sources of zinc to be reviewed and list some specific control measures to be considered for implementation (or their equivalents). Following are some general control measure options to consider: using chemicals purchased in pre-weighed, sealed polyethylene bags; storing in-use materials in sealable containers, ensuring an airspace between the container and the cover to minimize "puffing" losses when the container is opened, and using automatic dispensing and weighing equipment.

i. **Zinc Bags. Ensure proper handling and storage of zinc bags at the permittee's facility. Following are some control measure options: employee training on the handling and storage of zinc bags, indoor storage of zinc bags, and cleanup of zinc spills without washing the zinc into the storm drain, and the use of 2,500-pound sacks of zinc rather than 50- to 100-pound sacks.**

ii. **Dumpsters. Minimize discharges of zinc from dumpsters. Following are some control measure options: covering the dumpster, moving the dumpster indoors, or providing a lining for the dumpster.**

iii. **Dust Collectors and Baghouses. Minimize contributions of zinc to stormwater from dust collectors and baghouses. Replace or repair, as appropriate, improperly operating dust collectors and baghouses.**

iv. **Grinding Operations. Minimize contamination of stormwater as a result of dust generation from rubber grinding operations. One control measure option is to install a dust collection system.**

v. **Zinc Stearate Coating Operations. Minimize the potential for stormwater contamination from drips and spills of zinc stearate slurry that may be released to the storm drain. One control measure option is to use alternative compounds to zinc stearate.**

b. Controls for Plastic Products Manufacturers. Minimize the discharge of plastic resin pellets in the permittee's stormwater discharges. Control measures to be considered for implementation (or their equivalents) include minimizing spills, cleaning up of spills promptly and thoroughly, sweeping thoroughly, pellet capturing, employee education, and disposal precautions.

3. Additional SWMP Requirements (see also Part I.F)

Potential Pollutant Sources for Rubber Manufacturers. Document in the permittee's SWMP the use of zinc at the permittee's facility and the possible pathways through which zinc may be discharged in stormwater runoff.

4. Sector-Specific Benchmarks

Table Y-1. Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**	**Reporting Frequency**
Subsector Y1. Rubber Products Manufacturing (SIC 3011, 3021, 3052, 3053, 3061, 3069)	**Zinc, total recoverable[1]**	**Hardness Dependent**	**Quarterly**
	Are you in compliance (Have you Reached Level 3 this reporting year?)	[2]	**Annual**

1. The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:

Water Hardness Range	Zinc, total recoverable (mg/L)
0-24.99 mg/L	0.04
25-49.99 mg/L	0.05
50-74.99 mg/L	0.08
75-99.99 mg/L	0.11
100-124.99 mg/L	0.13
125-149.99 mg/L	0.16
150-174.99 mg/L	0.18
175-199.99 mg/L	0.20
200-224.99 mg/L	0.23
225-249.99 mg/L	0.25
250+ mg/L	0.26

2. If you have NOT reached Level 3 indicate “Pass”. If you have reached Level 3 indicate “Fail”. A “Fail” for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.

Z. Sector Z – Leather Tanning and Finishing

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee' facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector Z apply to stormwater discharges associated with industrial activity from Leather Tanning and Finishing facilities as identified by the SIC Code specified under Sector Z in Table A-1 of Appendix A of the permit.

2. Additional Practice-Based Effluent Limits

a. Good Housekeeping Measures (See also Part I.D.1.b)

i. **Storage Areas for Raw, Semiprocessed, or Finished Tannery By-products. Minimize contamination of stormwater runoff from pallets and bales of raw, semiprocessed, or finished tannery by-products (e.g., splits, trimmings, shavings). Consider indoor storage or protection with polyethylene wrapping, tarpaulins, roofed storage, etc. Consider placing materials on an impermeable surface and enclosing or putting berms (or equivalent measures) around the area to prevent stormwater run-on and runoff.**

ii. **Material Storage Areas. Label storage containers of all materials (e.g., specific chemicals, hazardous materials, spent solvents, waste materials) minimize contact of such materials with stormwater.**

iii. **Buffing and Shaving Areas. Minimize contamination of stormwater runoff with leather dust from buffing and shaving areas. Consider dust collection enclosures, preventive inspection and maintenance programs, or other appropriate preventive measures.**

iv. **Receiving, Unloading, and Storage Areas. Minimize contamination of stormwater runoff from receiving, unloading, and storage areas. If these areas are exposed, consider the following (or their equivalents): covering all hides and chemical supplies, diverting drainage to the process sewer, or grade berming or curbing the area to prevent stormwater runoff.**

v. **Outdoor Storage of Contaminated Equipment. Minimize contact of stormwater with contaminated equipment. Consider the following (or their equivalents): covering equipment, diverting drainage to the process sewer, and cleaning thoroughly prior to storage.**

vi. **Waste Management. Minimize contamination of stormwater runoff from waste storage areas. Consider the following (or their equivalents): covering dumpsters, moving waste management activities indoors, covering waste piles with temporary covering material such as tarpaulins or polyethylene, and minimizing stormwater runoff by enclosing the area or building berms around the area.**

3. Additional SWMP Requirements (see also Part I.F)

a. Drainage Area Site Map. Identify in the permittee's SWMP where any of the following may be exposed to precipitation or surface runoff: processing and storage areas of the beamhouse, tanyard, and re-tan wet finishing and dry finishing operations.

b. Potential Pollutant Sources. Document in the facility's SWMP the following sources and activities that have potential pollutants associated with them (as appropriate): temporary or permanent storage of fresh and brine-cured hides; extraneous hide substances and hair; leather dust, scraps, trimmings, and shavings.

AA. Sector AA – Fabricated Metal Products

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector AA apply to stormwater discharges associated with industrial activity from Fabricated Metal Products facilities as identified by the SIC Codes specified under Sector AA in Table A-1 of Appendix A of the permit.

2. Additional Practice-Based Effluent Limits (see also Part I.D.1.)

a. Good Housekeeping Measures

i. **Raw Steel Handling Storage. Minimize the generation of and/or recover and properly manage scrap metals, fines, and iron dust. Include measures for containing materials within storage handling areas.**

ii. **Paints and Painting Equipment. Minimize exposure of paint and painting equipment to stormwater.**

b. Spill Prevention and Response Procedures. Ensure that the necessary equipment to implement a cleanup is available to personnel. The following areas should be addressed

i. **Metal Fabricating Areas. Maintain clean, dry, orderly conditions in these areas. Consider using dry clean-up techniques.**

ii. **Storage Areas for Raw Metal. Keep these areas free of conditions that could cause, or impede appropriate and timely response to, spills or leakage of materials. Consider the following (or their equivalents): maintaining storage areas so that there is easy access in the event of a spill, and labeling stored materials to aid in identifying spill contents.**

iii. **Metal Working Fluid Storage Areas. Minimize the potential for stormwater contamination from storage areas for metal working fluids.**

iv. **Cleaners and Rinse Water. Control and clean up spills of solvents and other liquid cleaners, control sand buildup and disbursement from sand-blasting operations, and prevent exposure of recyclable wastes. Substitute environmentally benign cleaners when possible.**

v. **Lubricating Oil and Hydraulic Fluid Operations. Minimize the potential for stormwater contamination from lubricating oil and hydraulic fluid operations. Consider using monitoring equipment or other devices to detect and control leaks and overflows. Consider installing perimeter controls such as dikes, curbs, grass filter strips, or equivalent measures.**

vi. **Chemical Storage Areas. Minimize stormwater contamination and accidental spillage in chemical storage areas. Include a program to inspect containers and identify proper disposal methods.**

c. Spills and Leaks. In the permittee's spill prevention and response procedures, required by Part I.D.1.d, pay attention to the following materials (at a minimum): chromium, toluene, pickle liquor, sulfuric acid, zinc and other water priority chemicals, and hazardous chemicals and wastes.

3. Additional SWMP Requirements (see also Part I.F)

Drainage Area Site Map. Document in facility's SWMP where any of the following may be exposed to precipitation or surface runoff: raw metal storage areas; finished metal storage areas; scrap disposal collection sites; equipment storage areas; retention and detention basins; temporary and permanent diversion dikes or berms; right-of-way or perimeter diversion devices; sediment traps and barriers; processing areas, including outside painting areas; wood preparation; recycling; and raw material storage.

Potential Pollutant Sources. Document in the facility's SWMP the following additional sources and activities that have potential pollutants associated with them: loading and unloading operations for paints, chemicals, and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cobs, chemicals, and scrap metals; outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, and brazing; onsite waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingot pieces, and refuse and waste piles.

4. **Additional Inspection Requirements (see also Part I.G)**

   Inspections. At a minimum, include the following areas in all inspections: raw metal storage areas, finished product storage areas, material and chemical storage areas, recycling areas, loading and unloading areas, equipment storage areas, paint areas, and vehicle fueling and maintenance areas.

   As part of the permittee's inspection, also inspect areas associated with the storage of raw metals, spent solvents and chemicals storage areas, outdoor paint areas, and drainage from roof. Potential pollutants include chromium, zinc, lubricating oil, solvents, aluminum, oil and grease, methyl ethyl ketone, steel, and related materials.

5. **Sector-Specific Benchmarks and PFAS Monitoring**

Table AA-1 Benchmarks			
Subsector (The permittee may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration/ Exceedance Level**	**Reporting Frequency**
All Sector AA facilities with increased risk of PFAS in discharge[1]	**PFAS**	**Monitoring only[2]**	**Quarterly**
Subsector AA1. Fabricated Metal Products, except Coating (SIC 3411-3499; 3911-3915)	**Aluminum, total recoverable**	**0.75 mg/L**	**Quarterly**
	Iron, total recoverable	**1.0 mg/L**	**Quarterly**
	Zinc, total recoverable[3]	**Hardness Dependent**	**Quarterly**
	Nitrate plus Nitrite Nitrogen	**0.68 mg/L**	**Quarterly**
	Are you in compliance (Have you Reached Level 3 this reporting year?)	**[4]**	**Annual**
Subsector AA2. Fabricated Metal Coating and Engraving (SIC 3479)	**Zinc, total recoverable[3]**	**Hardness Dependent**	**Quarterly**
	Nitrate plus Nitrite Nitrogen	**0.68 mg/L**	**Quarterly**
	Are you in compliance (Have you Reached Level 3 this reporting year?)	**[4]**	**Annual**

1. **Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).**

2. **PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.**

3. **The benchmark values of some metals are dependent on water hardness. The ranges occur in 25 mg/L increments. Hardness Dependent Benchmarks follow in the table below:**

Water Hardness Range	Zinc, total recoverable (mg/L)
0-25 mg/L	0.04
25-50 mg/L	0.05
50-75 mg/L	0.08
75-100 mg/L	0.11
100-125 mg/L	0.13
125-150 mg/L	0.16
150-175 mg/L	0.18
175-200 mg/L	0.20
200-225 mg/L	0.23
225-250 mg/L	0.25
250+ mg/L	0.26

4. **If you have NOT reached Level 3 indicate "Pass". If you have reached Level 3 indicate "Fail". A "Fail" for Level 3 does not put you into non-compliance as long as long as you have complied with corrective actions in Part I.J.3 and 4.**

AB. Sector AB – Transportation Equipment, Industrial or Commercial Machinery Facilities

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector AB apply to stormwater discharges associated with industrial activity from Transportation Equipment, Industrial or Commercial Machinery facilities as identified by the SIC Codes specified under Sector AB in Table A-1 of Appendix A of the permit.

2. Additional SWMP Requirements (see also Part I.F)

Drainage Area Site Map. Identify in the facility's SWMP where any of the following may be exposed to precipitation or surface runoff: vents and stacks from metal processing and similar operations.

AC. Sector AC –Electronic and Electrical Equipment and Components, Photographic and Optical Goods

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

The requirements in Sector AC apply to stormwater discharges associated with industrial activity from facilities that manufacture Electronic and Electrical Equipment and Components, Photographic and Optical goods as identified by the SIC Codes specified in Table A-1 of Appendix A of the permit.

2. Additional Requirements

No additional sector-specific requirements apply.

3. Sector-Specific Benchmarks and PFAS Monitoring

Table AC-1. Benchmarks

Subsector (The permittee may be subject to requirements for more than one sector/ subsector)	Parameter	Benchmark Monitoring Concentration/ Exceedance Level	Reporting Frequency
All Sector AC facilities with increased risk of PFAS in discharge[1]	PFAS	Monitoring only[2]	Quarterly

1. Applies to discharges to waters classified as water supply. Facilities with increased risk of PFAS in discharge include those facilities that use, store, or have had an untreated release of materials containing PFAS to land or surface water (see Appendix D). Once four quarterly samples have been collected and analyzed permittees may discontinue sampling and report NODI code 9 in DMRs. Permittees in this Sector are exempt from PFAS monitoring if they can maintain No Exposure conditions for all identified materials containing PFAS (See decision tree in Appendix D).

2. PFAS monitoring results collected within 5 years prior to the effective date of this permit may be used to satisfy the requirement to collect four samples, provided the sampling and analysis was conducted consistent with methods and procedures required in this permit or is compliant with the requirements set forth in DoD QSM 5.1.

AD. Sector AD – Stormwater Discharges Designated by the Division as Requiring Permits

The permittee must comply with Part III sector-specific requirements associated with the facility's primary industrial activity and any co-located industrial activities, as defined in Appendix C. The sector-specific requirements apply to those areas of the permittee's facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

1. Covered Stormwater Discharges

Sector AD is used to provide permit coverage for facilities designated by the division as needing a stormwater permit, and any discharges of stormwater associated with industrial activity that do not meet the description of an industrial activity covered by Sectors A-AC.

a. Eligibility for Permit Coverage. Because this sector is primarily intended for use by discharges designated by the division as needing a stormwater permit (which is an atypical circumstance), and the permittee's facility may or may not normally be discharging stormwater associated with industrial activity, the permittee must obtain the division's written permission to use this permit prior to submitting an application. If the permittee is authorized to use this permit, the permittee will still be required to ensure that the facility's discharges meet the basic eligibility provisions of this permit at Part I.A.1.

2. Sector-Specific Benchmarks and Effluent Limits

The division will establish any additional monitoring and reporting requirements for the permittee's facility prior to authorizing the permittee to be covered by this permit. Additional monitoring requirements would be based on the nature of activities at the permittee's facility and the facility's stormwater discharges.

APPENDIX A. Facilities and Activities Covered

Permit eligibility is limited to discharges from facilities in the "sectors" of industrial activity summarized in Table A-1. These sector descriptions are based on Standard Industrial Classification (SIC) Codes and Industrial Activity Codes. References to "sectors" in this permit (e.g., sector-specific monitoring requirements) refer to these groupings. A facility may be subject to more than one sector/subsector.

Table A-1. Sectors of Industrial Activity Covered by This Permit

Subsector	SIC Code or Activity Code[1]	Activity Represented
Sector A – Timber Products		
A1	2421	General Sawmills and Planing Mills
A2	2491	Wood Preserving
A3	2411	Log Storage and Handling
A4	2426	Hardwood Dimension and Flooring Mills
	2429	Special Product Sawmills, Not Elsewhere Classified
	2431-2439 (except 2434)	Millwork, Veneer, Plywood, and Structural Wood (see Sector W)
	2441	Nailed and Lock Corner Wood Boxes and Shook
	2448	Wood Pallets and Skids
	2449	Wood Containers, Not Elsewhere Classified
	2451, 2452	Wood Buildings and Mobile Homes
	2493	Reconstituted Wood Products
	2499	Wood Products, Not Elsewhere Classified
Sector B – Paper and Allied Products		
B1	2631	Paperboard Mills
B2	2611	Pulp Mills
	2621	Paper Mills
	2652-2657	Paperboard Containers and Boxes
	2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
Sector C – Chemical and Allied Products Manufacturing, and Refining		
C1	2873-2879	Agricultural Chemicals
C2	2812-2819	Industrial Inorganic Chemicals
C3	2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
C4	2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass
C5	2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; in vitro and in vivo Diagnostic Substances; and Biological Products, Except Diagnostic Substances
	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
	2861-2869	Industrial Organic Chemicals
	2891-2899	Miscellaneous Chemical Products
	3952 (limited to list of inks and paints)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors

[1] A complete list of SIC Codes (and conversions from the newer North American Industry Classification System" (NAICS)) can be obtained from the Internet at https://www.census.gov/naics or in paper form from various locations in the document titled *Handbook of Standard Industrial Classifications*, Office of Management and Budget, 1987.

Table A-1. Sectors of Industrial Activity Covered by This Permit		
	2911	Petroleum Refining
Sector D – Asphalt Paving and Roofing Materials and Lubricant Manufacturing		
D1	2951, 2952	Asphalt Paving and Roofing Materials
D2	2992, 2999	Miscellaneous Products of Petroleum and Coal
Sector E – Glass, Clay, Cement, Concrete, and Gypsum Products		
E1	3251-3259	Structural Clay Products
	3261-3269	Pottery and Related Products
E2	3271-3275	Concrete, Gypsum, and Plaster Products
E3	3211	Flat Glass
	3221, 3229	Glass and Glassware, Pressed or Blown
	3231	Glass Products Made of Purchased Glass
	3241	Hydraulic Cement
	3281	Cut Stone and Stone Products
	3291-3299	Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products
Sector F – Primary Metals		
F1	3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
F2	3321-3325	Iron and Steel Foundries
F3	3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
F4	3363-3369	Nonferrous Foundries (Castings)
F5	3331-3339	Primary Smelting and Refining of Nonferrous Metals
	3341	Secondary Smelting and Refining of Nonferrous Metals
	3398, 3399	Miscellaneous Primary Metal Products
Sector I – Oil and Gas Extraction		
I1	1311	Crude Petroleum and Natural Gas
	1321	Natural Gas Liquids
	1381-1389	Oil and Gas Field Services
Sector K – Hazardous Waste Treatment, Storage, or Disposal Facilities		
K1	HZ	Hazardous Waste Treatment, Storage, or Disposal Facilities, including those that are operating under interim status or a permit under subtitle C of RCRA
Sector L – Landfills, Land Application Sites, and Open Dumps		
L1	LF	All Landfill, Land Application Sites and Open Dumps
L2	LF	All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60
Sector M – Automobile Salvage Yards		
M1	5015	Automobile Salvage Yards
Sector N – Scrap Recycling and Waste Recycling Facilities		
N1	5093	Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling
N2	5093	Source-separated Recycling Facility
Sector O – Steam Electric Generating Facilities		
O1	SE	Steam Electric Generating Facilities, including coal handling sites
Sector P – Land Transportation and Warehousing		
	4011, 4013	Railroad Transportation
	4111-4173	Local and Highway Passenger Transportation
	4212-4231	Motor Freight Transportation and Warehousing

Table A-1. Sectors of Industrial Activity Covered by This Permit		
P1 [2]	4311	United States Postal Service
	5171	Petroleum Bulk Stations and Terminals
Sector Q – Water Transportation		
Q1	4412-4499	Water Transportation Facilities
Sector R – Ship and Boat Building and Repair Yards		
R1	3731, 3732	Ship and Boat Building or Repairing Yards
Sector S – Air Transportation		
S1	4512-4581	Air Transportation Facilities
Sector T – Treatment Works		
T1	TW	Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which not physically located in the confines of the facility, or areas that are in are compliance with section 405 of the CWA.
Sector U – Food and Kindred Products		
U1	2041-2048	Grain Mill Products
U2	2074-2079	Fats and Oils Products
U3	2011-2015	Meat Products
	2021-2026	Dairy Products
	2032-2038	Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties
	2051-2053	Bakery Products
	2061-2068	Sugar and Confectionery Products
	2082-2087	Beverages
	2091-2099	Miscellaneous Food Preparations and Kindred Products
	2111-2141	Tobacco Products
Sector V – Textile Mills, Apparel, and Other Fabric Products		
V1	2211-2299	Textile Mill Products
	2311-2399	Apparel and Other Finished Products Made from Fabrics and Similar Materials
	3131-3199	Leather and Leather Products (note: see Sector Z1 for Leather Tanning and Finishing)
Sector W – Furniture and Fixtures		
W1	2434	Wood Kitchen Cabinets
	2511-2599	Furniture and Fixtures
Sector X – Printing and Publishing		
X1	2711-2796	Printing, Publishing, and Allied Industries

[2] For transportation facilities classified as SIC codes 40, 41, 42 (except 4221 - 4225), 43, 44, 45, and 5171, only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or are associated with industrial activity in another section of Table A.

Table A-1. Sectors of Industrial Activity Covered by This Permit		
Sector Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries		
Y1	3011	Tires and Inner Tubes
	3021	Rubber and Plastics Footwear
	3052, 3053	Gaskets, Packing and Sealing Devices, and Rubber and Plastic Hoses and Belting
	3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
Y2	3081-3089	Miscellaneous Plastics Products
	3931	Musical Instruments
	3942-3949	Dolls, Toys, Games, and Sporting and Athletic Goods
	3951-3955 (except 3952 – see Sector C)	Pens, Pencils, and Other Artists' Materials
	3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal
	3991-3999	Miscellaneous Manufacturing Industries
Sector Z – Leather Tanning and Finishing		
Z1	3111	Leather Tanning and Finishing
Sector AA – Fabricated Metal Products		
AA1	3411-3499 (except 3479)	Fabricated Metal Products, Except Machinery and Transportation Equipment, and Coating, Engraving, and Allied Services.
	3911-3915	Jewelry, Silverware, and Plated Ware
AA2	3479	Fabricated Metal Coating and Engraving
Sector AB - Transportation Equipment, Industrial or Commercial Machinery Facilities		
AB1	3511-3599 (except 3571-3579)	Industrial and Commercial Machinery, Except Computer and Office Equipment (see Sector AC)
	3711-3799 (except 3731, 3732)	Transportation Equipment Except Ship and Boat Building and Repairing (see Sector R)
AC. Sector AC –Electronic and Electrical Equipment and Components, Photographic and Optical Goods		
AC1	3571-3579	Computer and Office Equipment
	3812-3873	Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches, and Clocks
	3612-3699	Electronic and Electrical Equipment and Components, Except Computer Equipment
AD. Sector AD – Stormwater Discharges Designated by the Division as Requiring Permits		
AD1	Other stormwater discharges designated by the Division as needing a permit (see 40 CFR 122.26(a)(9)(i)(C) & (D)) or any facility discharging stormwater associated with industrial activity not described by any of Sectors A-AC. NOTE: Facilities may not elect to be covered under Sector AD. Only the Division may assign a facility to Sector AD.	

APPENDIX B: Information Summaries

1. Permit Required Reports and Submittals

Permit Part	Report or Submittal	Minimum Frequency	Due Date
Part I.A.3	Application for permit coverage	As necessary	90 days prior to discharge
Parts I.E and I.F	SWMP	At division request	Within 14 days of request
Part I.J.4.iii(C)	Level status	As needed	4th Quarter DMR following discovery of Level 3 status.
Part I.K.1	Discharge Monitoring Reports	Quarterly	Each calendar quarter, no later than the 28th day of the following month
Part I.K.2.	Annual Report	Annually	March 31 of each year
Part II.A	Noncompliance notification	As necessary	As necessary

2. Permit Required Inspections and Monitoring

Permit Part	Report or Submittal	Minimum Frequency	Due Date
Part I.G	Facility Inspections	Quarterly	None
Part I.I.2	Visual Assessment	Quarterly	Quarterly
Part I.I.3	Benchmark monitoring (except for deicing chemicals in Sector S)	Quarterly	Quarterly
Part I.I.3	Benchmark monitoring for deicing chemicals in Sector S	Four samples between October 1 and April 30	Monthly DMRs
Part I.I.4	Numeric limits monitoring	Annually	Annually
Part I.I.4	Additional monitoring	As specified in Certification	As specified in Certification

3. Permit Required Onsite Documentation

Permit Part	Document Title
Part I.E.5	SWMP
Part I.E.4	Copy of Permit
Part I.E.4	Copy of Permit Certification
Part I.G.3	Site Inspection Reports
Parts I.K.5 and 6	Original Sampling Records (Field Notes and Laboratory Reports)
Part I.J.4 and Part I.K	Copies of Corrective Action Documentation Report
Part I.K.2	Copies of Annual Reports

APPENDIX C. Definitions and Abbreviations (for the purposes of this permit)

Applicable Water Quality Standard - A water quality standard promulgated pursuant to section 25-8-204 C.R.S., found in Regulations 31-39, as assessed in the receiving water.

Best Management Practices (BMPs) – schedules of activities, practices (and prohibitions of practices), structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to state waters. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. See 5 CCR 1002-61.2(9).

Co-located Industrial Activities – Any industrial activities, excluding the primary industrial activity(ies), located on-site that are defined by the stormwater regulations at 5 CCR 1002-61.3(2). An activity at a facility is not considered co-located if the activity, when considered separately, does not meet the description of a category of industrial activity covered by the stormwater regulations or identified by the SIC code list in Appendix A.

Control Measure Requiring Routine Maintenance - Any control measure that is still operating in accordance with its design and the requirements of this permit, but requires preventative maintenance to prevent a breach of the control measure in subsequent storms.

Compliance Schedule (also referred to as schedule of compliance) - a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard. See § 25-8-103(18), C.R.S.

Control Measure – refers to any BMP or other method (including effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the state.

Discharge – when used without qualification, means the "discharge of a pollutant." See 5 CCR 1002-61.2(22).

Discharge of a pollutant – the introduction or addition of a pollutant into state waters. See § 25-8-103(3) C.R.S.

EPA Approved or Established Total Maximum Daily Loads (TMDLs) – "EPA Approved TMDLs" are those that are developed by a State and approved by EPA. "EPA Established TMDLs" are those that are developed by EPA.

Existing Discharger – an operator applying for coverage under this permit for discharges authorized previously under an NPDES general or individual permit.

Good Engineering, Hydrologic and Pollution Control Practices – methods, procedures, and practices that a) are based on basic scientific fact(s); b) reflect best industry practices and standards; c) are appropriate for the conditions and pollutant sources; and d) provide appropriate solutions to meet the associated permit requirements, including all effluent limitations.

High PAH Sealants – For the purpose of the COR900000 permit, high PAH sealants are pavement sealants that contain greater than 0.1 percent PAHs by weight.

Inadequate Control Measure - Any control measure that is not designed or implemented in accordance with the requirements of the permit and/or any control measure that is not implemented to operate in accordance with its design.

Infeasible – Not technologically possible, or not economically practicable and achievable in light of best industry practices.

Impaired Water (or "Water Quality Impaired Water" or "Water Quality Limited Segment") – A water is impaired for purposes of this permit if it has been identified by a State or EPA pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State water quality standards (these waters are called "water quality limited segments" under 40 CFR 30.2(j)). Impaired waters include both waters with approved or established TMDLs, and those for which a TMDL has not yet been approved or established.

Industrial Activity – the 10 categories of industrial activities included in the definition of "stormwater discharges associated with industrial activity" as defined in 5 CCR 1002-61.3(2).

Industrial Stormwater – stormwater runoff from industrial activity.

Material handling activities – the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas.

Measurable storm event – a storm event that results in an actual discharge from the facility.

Minimize – reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practice.

Municipal Separate Storm Sewer – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW). See 5 CCR 1002-61.2(62).

New Discharger – In the context of ELGs means any building, structure, facility, or installation from which there is or may be a discharge of pollutants that did not commence at the particular site before August 13, 1979, that is not a new source, and that has never received a final effective permit for discharges at the site. See 5 CCR 1002-61.2(65).

New Source –means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the promulgation of standards of performance for the particular source, pursuant to section 306 of the Clean Water Act. The term also applies where a standard of performance has been proposed, provided that the standard is promulgated within 120 days of its proposal. Except as otherwise provided in an applicable new source performance standard, a source is a "new source" if it meets this definition of "new source", and:

(a) It is constructed at a site at which no other source is located; or

(b) It totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

(c) Its processes are substantially independent of an existing source at the same site. In determining whether these processes are substantially independent, the division shall consider such factors as the extent to which the new facility is integrated with the existing plant; and the extent to which the new facility is engaged in the same general type of activity as the existing source. See 5 CCR 1002-61.2(67).

New Source Performance Standards (NSPS) – technology-based standards for facilities that qualify as new sources under 40 CFR 122.2 and 40 CFR 122.29.

No exposure – all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. 5 CCR 1002-61.3(2)(h).

No exposure certification – A "No Exposure" certification is an alternative to obtaining coverage under the COR900000 permit. In this context, "No Exposure" means that storm-resistant sheltering is in place to prevent exposure to rain, snow, snowmelt and/or runoff. To be eligible for this exclusion, you must apply for and obtain division approval through the issuance of a certification. Part G of the application contains a self-certifying checklist for you to assess whether your facility meets conditions of "No Exposure."

Outfall - In general, an industrial outfall is the point where stormwater associated with industrial activity discharges to waters of the State or a municipal separate storm sewer system (MS4). An outfall does not include conveyances, pipes or tunnels connecting segments of the same system (see regulatory definition below). Sometimes the actual receiving waterbody may be some distance away from the industrial site, (for example, when a facility's stormwater flows offsite to an outfall via a conveyance that is not part of an MS4 (sometimes being commingled with discharges from other facilities, roadways, etc. along the way). In such cases, the facility's outfall is considered to be the location where the discharges leave the industrial site.

Operator – any entity with a stormwater discharge associated with industrial activity that meets either of the following two criteria:

(i) The entity has operational control over industrial activities, including the ability to modify those activities; or

(ii) The entity has day-to-day operational control of activities at a facility necessary to ensure compliance with the permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by the permit).

Outstanding Waters – For antidegradation purposes, pursuant to outstanding waters are identified by states as having high quality waters constituting an Outstanding Natural Resource Water (ONRW), such as waters of National Parks and State Parks, wildlife refuges, and waters of exceptional recreational or ecological significance.

Person – an individual, corporation, partnership, association, state or political subdivision thereof, federal agency, state agency, municipality, Commission, or interstate body. See 5 CCR 1002-61.2(73).

Point source – any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. "Point Source" does not include irrigation return flow. See 5 CCR 1002-61.2(75).

Pollutant – dredged spoil, dirt, slurry, solid waste, incinerator residue, sewage, sewage sludge, garbage, trash, chemical waste, biological nutrient, biological material, radioactive material, heat, wrecked or discarded equipment, rock, sand, or any industrial, municipal or agricultural waste. See 5 CCR 1002-61.2(76).

Primary industrial activity – includes any activities performed on-site which are (1) identified by the facility's primary SIC code; or (2) included in the narrative descriptions of 5 CCR 1002-61.3(2). [For co-located activities covered by multiple SIC codes, it is recommended that the primary industrial determination be based on the value of receipts or revenues or, if such information is not available for a particular facility, the number of employees or production rate for each process may be compared. The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the primary industrial activity.]

Qualified Personnel – Qualified personnel are those who possess the knowledge and skills to assess conditions and activities that could impact stormwater quality and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit.

Reportable Quantity Release – a release of a hazardous substance at or above the established legal threshold that requires emergency notification. Refer to 40 CFR Parts 110, 117, and 302 for complete definitions and reportable quantities for which notification is required.

Reviewable Waters – For antidegradation purposes, reviewable waters are characterized as having water quality that exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water.

Significant materials – includes, but is not limited to raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA as amended by SARA (1986); any chemical the facility is required to report pursuant to Section 313 of Title III of SARA (1986); fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges. See 5 CCR 1002-61.2(76).

State Waters - means any and all surface and subsurface waters which are contained in or flow in or through this State, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage. See 5 CCR 1002-61.2(103).

Stormwater Discharges Associated with Industrial Activity – the discharge from any conveyance that is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. Except for the provision of 61.3(2)(c) that addresses construction activities associated with oil and gas operations or facilities, the term does not include discharges from facilities or activities excluded from the NPDES program under 40 CFR Part 122 or the CDPS program under Regulation No. 61.

For the categories of industries identified in this permit, the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. See 5 CCR 1002-61.3(2)(e).

Sufficiently sensitive test procedures – An analytical method is ''sufficiently sensitive'' under the conditions below.

i. **the method detects and accurately and precisely quantifies the amount of the analyte. In other words, there is a valid positive result; or**

ii. **the method accurately and precisely quantifies the result to the AWQC, as demonstrated by the ML is less than or equal to the AWQC. In other words, the level of precision is adequate to inform decision making; or**

iii. **when the method achieves the required level of accuracy and precision, as demonstrated by the ML is less than or equal to the PQL. In other words, the most sensitive method is being used and properly followed.**

Note that if the ML and the division established minimum PQL are above the AWQC, then the analytical method with the lowest available ML should be used for the analysis.

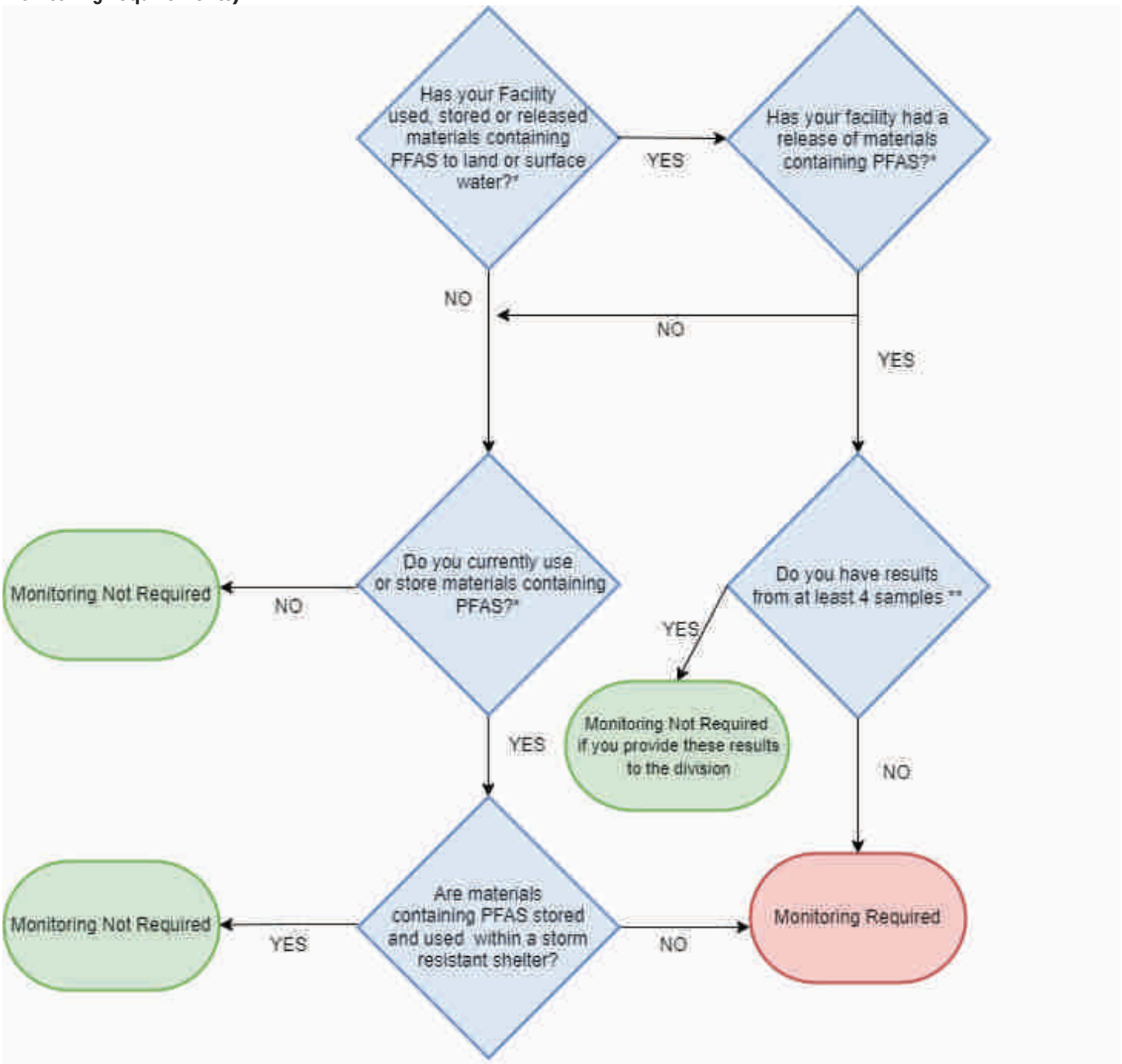
Total Maximum Daily Loads (TMDLs) – A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL includes wasteload allocations (WLAs) for point source discharges; load allocations for nonpoint sources and/or natural background, and must include a margin of safety and account for seasonal variations. (See section 303(d) of the Clean Water Act and 40 CFR 130.2 and 130.7).

Water Quality Impaired – See 'Impaired Water'.

Water Quality Standards – means a narrative and/or numeric restriction established by the Commission applied to state surface waters to protect one or more beneficial uses of such waters. Whenever only numeric or only narrative standards are intended, the wording shall specifically designate which is intended. See 5 CCR 1002- 31.5(37).

APPENDIX D. Flow Diagram to Determine PFAS Monitoring Requirements

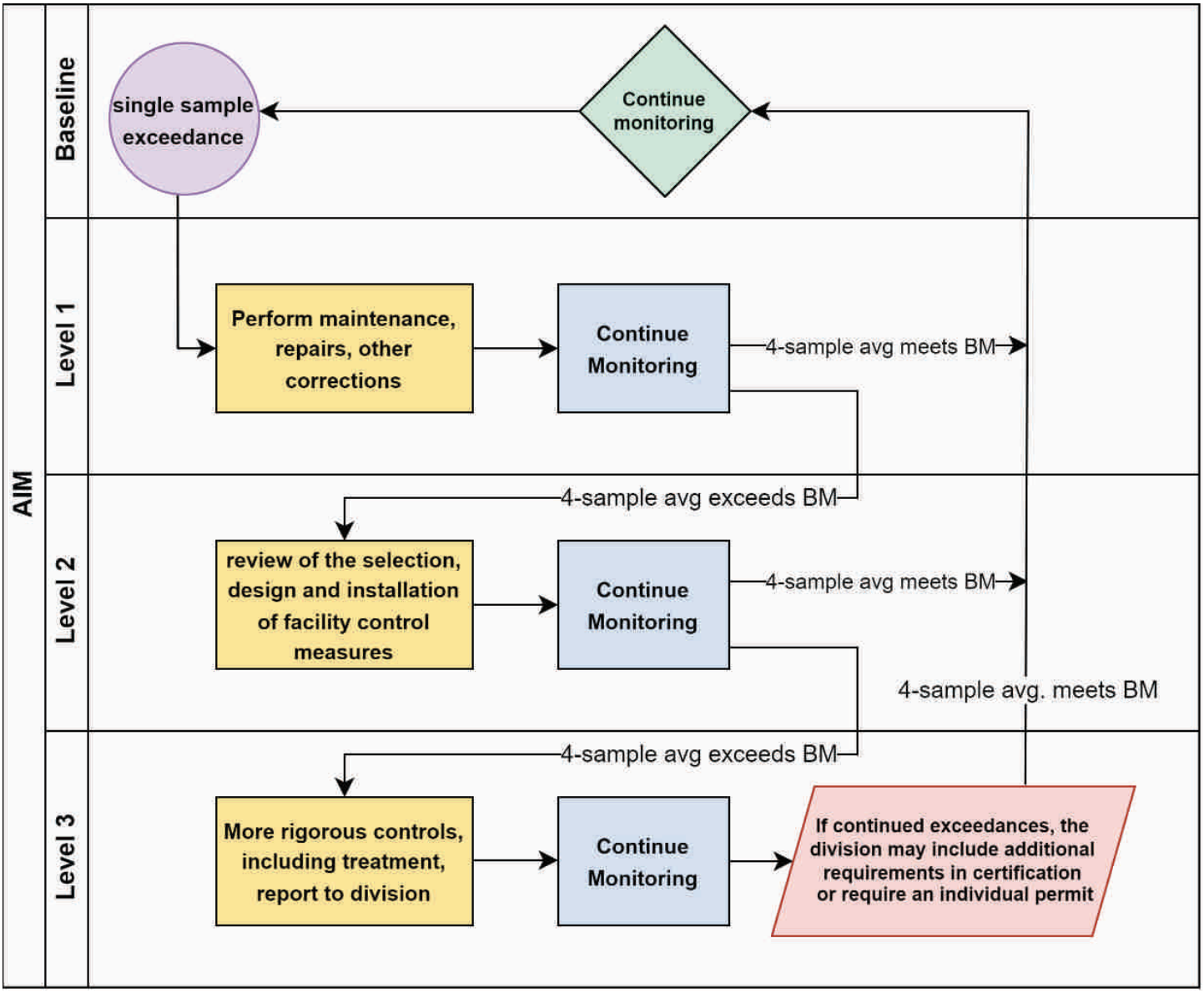
Applies to High Risk Sectors (A, B, C, E, N, O, P (SIC code 5171 only), AA, and AC) only (Sector S has automatic monitoring requirements).



*For existing permittees (as of 5/1/2023) in high risk sectors, the division will send a new survey requiring information corresponding to this flow chart. Recipients must complete the survey unless the survey letter indicates that completion is only required to provide the division updated information.

**All 4 samples must have been collected after 8/1/2019. Samples collected prior to 7/1/2024 must be analyzed using a method compliant with the requirements set forth in DoD QSM 5.1 and results must be provided for all PFAS constituents listed in the most recent version of WQCC Policy 20-1. Samples collected on or after 7/1/2024 must be analyzed using EPA Method 1633 for each parameter in Table 3.

APPENDIX E. Flow Diagram to Demonstrate Additional Implementation Measures (AIM)



APPENDIX F. ABBREVIATIONS

AIM – Additional Implementation Measures
BMP – Best Management Practice
BOD5 – Biochemical Oxygen Demand (5-day)
CDPS – Colorado Discharge Permit System
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
COD – Chemical Oxygen Demand
CORA – Colorado Open Records Act
DoD – Department of Defense
QSM – Quality Systems Manual
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq.)
DMR – Discharge Monitoring Report
ELG – Effluent Limitation Guideline
EPA – U. S. Environmental Protection Agency
LUST – Leaking Underground Storage Tank
mg/L – milligrams per Liter
MGD – Million Gallons per Day
ML – Minimum Level
MRF – Material Recovery Facility
MS4 – Municipal Separate Storm Sewer System
MSWLF – Municipal Solid Waste Landfill
NODI – No Discharge
NPDES – National Pollutant Discharge Elimination System (change to)
NSPS – New Source Performance Standard
ONRW – Outstanding National Resource Water
PFAS – Per and Polyfluoroalkyl Substances
PFOA – Perfluorooctanoic Acid
POTW – Publicly Owned Treatment Works
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SARA – Superfund Amendments and Reauthorization Act
SIC – Standard Industrial Classification
SPCC – Spill Prevention, Control, and Countermeasures
SWMP – Stormwater Management Plan
TDS – Total Dissolved Solids
TMDL – Total Maximum Daily Load
TSDF – Treatment, Storage, or Disposal Facility
TSS – Total Suspended Solids
USGS – United States Geological Survey
VCUP – Voluntary Cleanup
WLA – Wasteload Allocation
WQS – Water Quality Standard

COLORADO
Department of Public Health & Environment

CERTIFICATION TO DISCHARGE UNDER CDPS GENERAL PERMIT COR900000
STORMWATER ASSOCIATED WITH NON-EXTRACTIVE INDUSTRIAL ACTIVITY
Certification Number: COR900439
This Certification to Discharge specifically authorizes:
Five Part Development LLC dba Alpine Waste and Rec
to discharge stormwater from the facility identified as
East Regional LandFill
to:Unnamed tributary - West Sand Creek

Facility Located at:	**8201 Schumaker Rd Bennett Adams County, CO 80102**
	Center Point Latitude 39.843055 Longitude -104.497777

Outfalls	Latitude	Longitude
001	39.846853	-104.495524
002	39.842891	-104.500748

All discharges must comply with the lawful requirements of federal agencies municipalities, counties, drainage districts and other local agencies regarding any discharges to storm drain systems, conveyances, or other water courses under their jurisdiction.

In accordance with Parts I.B.2 of the general permit, discharges authorized under this general permit must be controlled as necessary, to meet applicable water quality standards.

A. SECTOR SPECIFIC REQUIREMENTS
Discharges authorized by the general permit must comply with sector specific requirements listed in Part III.L of the general permit, in addition to requirements in Parts I and II of the general permit.

B. VISUAL MONITORING (Quarterly)
Visual monitoring is required for this facility in accordance with Table 4 and Part I.I.2 of the general permit.

C. BENCHMARK MONITORING, Table 4 and Part I.I.3 Sectors L1, L2

Subsector	Parameter	Benchmark Monitoring Concentration[1]	Monitoring Frequency	Sample Type[2]
All for which benchmarks apply	Level 3 status (appears as "Are you in compliance in NetDMR")	Pass/Fail[3]	Quarterly[4]	NA
C1	Lead, potentially dissolved 01318	0.172 mg/l	Quarterly	Grab
C1	Zinc, total recoverable 01094	0.26 mg/l	Quarterly	Grab
C1	Nitrate plus Nitrite Nitrogen 00630	0.68 mg/l	Quarterly	Grab
C1, L2	Iron, total recoverable 00980	1.0 mg/l	Quarterly	Grab
C1	Total Phosphorus 00665	2.0 mg/l	Quarterly	Grab
L1	Total Suspended Solids (TSS) 00530	100 mg/l	Quarterly	Grab

1. **The Permittee compares quarterly average or rolling 4-sample average to benchmark in accordance with Part I.J.3 of the General Permit**
2. **The default sample type in your DMR is Grab. Part I.H.6.a of the permit allows composite sampling for some parameters. If you anticipate collecting composite samples for parameters, you must request a modification of your certification.**
3. **If you have not reached or remained at Level 3 status within the reporting year report as "Pass". If you have reached or remained in Level 3 within the reporting year report as "Fail". A Level 3 status is not non-compliance and answering "FAIL" will not be deemed non-compliance.**
4. **Report Level 3 status in the 4th Quarter DMR only.**

D. PER- AND POLYFLUOROALKL SUBSTANCES. Table 4 and Part I.D.3.b, Part III). Monitoring Requirements apply to Outfalls 001, 002

Parameter	Units	Quarterly Average[1, 2, 3]	Monitoring Frequency	Sample Type and Method[4]
PFAS Sum[2] 87006	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorooctanoic acid (PFOA) 51521	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorobutanoic acid (PFBA) 51522	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorooctanesulfonamide [PFOSA (or FOSA)] 51525	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoropentanoic acid (PFPeA) 51623	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorohexanoic acid (PFHxA) 51624	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoroheptanoic Sulfonic Acid (PFHpA) 51625	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorononanoic acid (PFNA) 51626	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorodecanoic acid (PFDA) 51627	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoroundecanoic acid [PFUnA (or PFUdA)] 51628	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorododecanoic3-sulphonic acid (PFDoA) 51629	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorotridecanoic acid [PFTrDA (or RFTriA)] 51630	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorotetradecanoic acid [PFTeDA (or PFTA or PFTeA)] 51631	ng/L	Report	1/quarter	Grab, EPA Method 1633
2-[N-ethylperfluorooctanesulfonamido] acetic acid (NEtFOSAA) 51643	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorododecanesulfonic acid (PFDoS) 52632	ng/L	Report	1/quarter	Grab, EPA Method 1633
N-methyl perfluorooctanesulfonamide [NMeFOSA], ng/l 52641	ng/L	Report	1/quarter	Grab, EPA Method 1633
N-ethyl perfluorooctanesulfonamide [NEtFOSA] 52642	ng/L	Report	1/quarter	Grab, EPA Method 1633
N-methyl perfluorooctanesulfonamidoethanol [NMeFOSE] 51642	ng/L	Report	1/quarter	Grab, EPA Method 1633
N-ethyl perfluorooctanesulfonamidoethanol [NEtFOSE] 51641	ng/L	Report	1/quarter	Grab, EPA Method 1633
4,8-Dioxa-3H-perfluorononanoic acid [ADONA] 52636	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoro(2-ethoxyethane)sulfonic acid [PFEESA]	ng/L	Report	1/quarter	Grab, EPA Method 1633

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Parameter	Units	Quarterly Average[1, 2, 3]	Monitoring Frequency	Sample Type and Method[4]
52629				
2-(N-methylperfluorooctane sulfonamido) (NMeFOSAA) 51644	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorobutanesulfonic acid (PFBS) 52602	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorodecanesulfonic acid (PFDS) 52603	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoroheptane sulfonic acid (PFHpS) 52604	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorohexanesulfonic acid (PFHxS) 52605	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorooctanesulfonic acid (PFOS) 52606	ng/L	Report	1/quarter	Grab, EPA Method 1633
4:2 Fluorotelomer sulphonic acid (4:2 FTS) 52607	ng/L	Report	1/quarter	Grab, EPA Method 1633
6:2 Fluorotelomer sulphonic acid (6:2 FTS) 52608	ng/L	Report	1/quarter	Grab, EPA Method 1633
8:2 Fluorotelomer sulphonic acid (8:2 FTS) 52609	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoropentane Sulfonic acid (PFPeS) 52610	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluorononanesulfonic Acid (PFNS) 52611	ng/L	Report	1/quarter	Grab, EPA Method 1633
Hexafluoropropylene oxide dimer acid (Gen-X [or HFPO-DA or HPFADA]) 52612	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoro-3-methoxypropanoic acid [PFMPA] PF002	ng/L	Report	1/quarter	Grab, EPA Method 1633
9-Chlorohexadecafluoro-3- oxanonane-1-sulfonic acid [9CLPF3ONS] PF003	ng/L	Report	1/quarter	Grab, EPA Method 1633
11-Chloroeicosafluoro-3- oxaundecane-1-sulfonic acid [11CLPF3OUDS] PF004	ng/L	Report	1/quarter	Grab, EPA Method 1633
Perfluoro-4-methoxybutanoic acid [PFMBA] PF006	ng/L	Report	1/quarter	Grab, EPA Method 1633
Nonafluoro-3,6-dioxaheptanoic acid [NFDHA] 52626	ng/L	Report	1/quarter	Grab, EPA Method 1633
3-Perfluoropropyl propanoic acid 3:3 [FTCA] PF001	ng/L	Report	1/quarter	Grab, EPA Method 1633
2H,2H,3H,3H-Perfluorooctanoic acid [5:3 FTCA] PF007	ng/L	Report	1/quarter	Grab, EPA Method 1633
3-Perfluoroheptyl propanoic acid [7:3 FTCA] PF005	ng/L	Report	1/quarter	Grab, EPA Method 1633

1. Monitoring results are subject to the 24-hour reporting requirements in Part II.L of the general permit.
2. The PFAS Sum is calculated based the following equation: PFOA + PFOSA + PFNA + (NEtFOSAA x 0.85) + (NMeFOSAA x 0.88) + PFOS + (8:2 FTS x 0.78). This calculation is performed for each sampling event, and the resulting quarterly average result must be reported on the discharge monitoring report submitted for the quarterly monitoring period.
3. You must monitor and report a total of 4 quarterly averages for each outfall specified. If you are claiming "substantially identical outfalls" per Part I.H.3 of the permit, you must continue to monitor and report until all of the outfalls specified are monitored at least once. Once you have met these requirements, you may discontinue PFAS monitoring and report in your DMR NODI code 9.
4. All PFAS sampling and analysis must comply with the Laboratory Method and Sampling Considerations outlined in WQCC Policy 20-1 (see pages 6-9).

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E. ANNUAL REPORTS

ICIS Code	Description	Due Date	Frequency
00308	The permittee must submit an annual report to the division for the reporting period January 1 through December 31	March 31	Annual (10)

Certification issued 6/4/2024 **Effective: 07/01/2024**

General Permit Expiration Date: 06/30/2029

This certification under the general permit requires that specific actions be performed at designated times. The certification holder is legally obligated to comply with all terms and conditions of the general permit. This certification was issued prior to the effective date of the general permit and, subsequently, this certification. The requirements of the renewed general permit and this certification do not go into effect until July 1, 2024.

Certification approved by

Mary Welch
Permits Unit 1 Acting Work Group Lead
Water Quality Control Division

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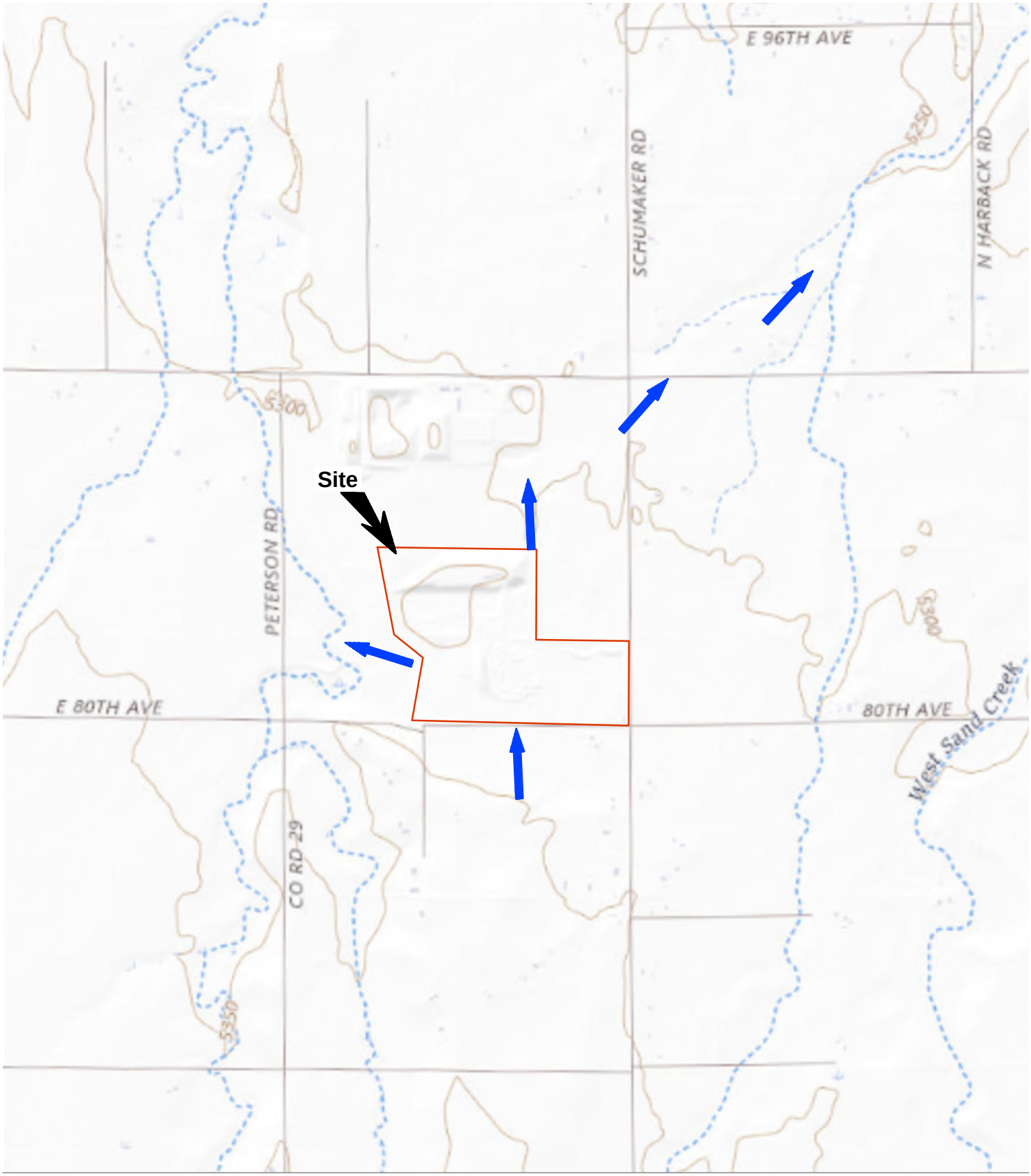
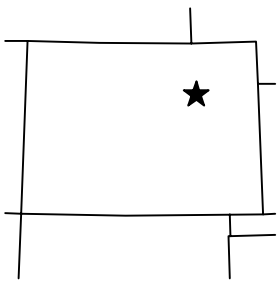
Appendix B

Facility Maps

File:P:\6000s\6067.00\Graphics Files\CAD\East Regional Landfill\SWMP and SPCC Plans\SWMP\East Regional Landfill Locus Plan.dwg Plot Date: 4-1-24

c 2024 SANBORN, HEAD & ASSOCIATES, INC.





N
W E
S

NOTES:
USGS The National Map was taken from ESRI through ArcGIS Online.

Assumed Stormwater Flow Direction Flow

Drawn By: J. Sousa
Designed By: J. Sousa
Reviewed By: M. Kozlowski
Project No: 6067.03
Date: April 2024

1,000 0 2,000 Feet

SANBORN HEAD

Figure No. 1

Locus Plan

Stormwater Management Plan

East Regional Landfill
Bennett, Colorado

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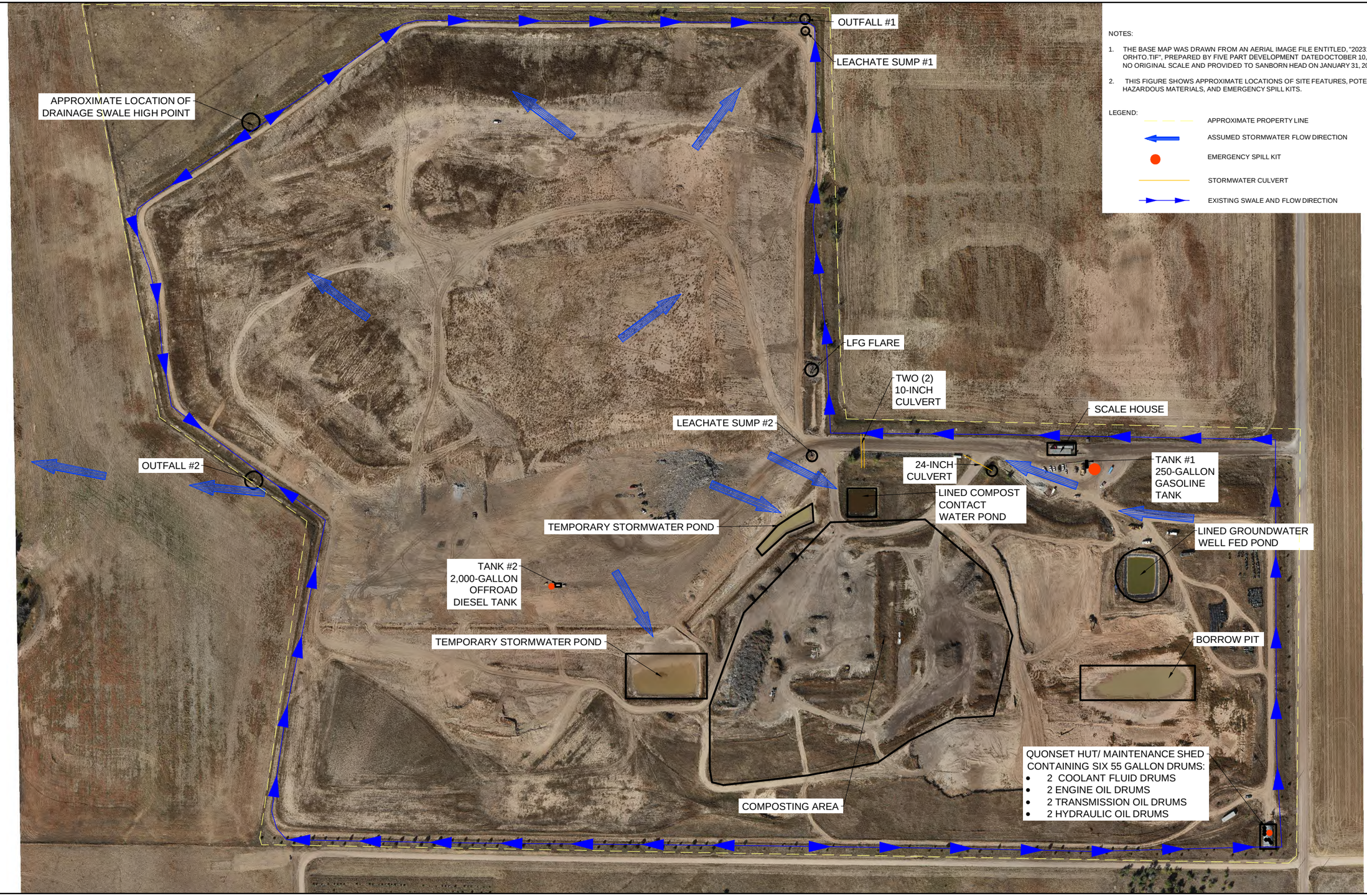

NOTES:

1. THE BASE MAP WAS DRAWN FROM AN AERIAL IMAGE FILE ENTITLED, "202310-10 REPUBLIC ORHTO.TIF", PREPARED BY FIVE PART DEVELOPMENT DATED OCTOBER 10, 2023 AND WITH NO ORIGINAL SCALE AND PROVIDED TO SANBORN HEAD ON JANUARY 31, 2024.
2. THIS FIGURE SHOWS APPROXIMATE LOCATIONS OF SITE FEATURES, POTENTIAL HAZARDOUS MATERIALS, AND EMERGENCY SPILL KITS.

LEGEND:

- APPROXIMATE PROPERTY LINE
- ASSUMED STORMWATER FLOW DIRECTION
- EMERGENCY SPILL KIT
- STORMWATER CULVERT
- EXISTING SWALE AND FLOW DIRECTION

SANBORN HEAD

GRAPHICAL SCALE
100' 50' 0' 100' 200'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: J. SOUSA
DESIGNED BY: J. SOUSA
REVIEWED BY: M. KOZLOWSKI
PROJECT MGR: M. KOZLOWSKI
PIC: J. SCOTT
DATE: APRIL 2024

FIVE PART DEVELOPMENT, LLC
STORMWATER MANAGEMENT PLAN
EAST REGIONAL LANDFILL
BENNETT, COLORADO

PROJECT NUMBER: 6067.03

FACILITY MAP

FIGURE NUMBER: 2

Appendix C

Description of Reportable Quantity (RQ) Releases

Description of Reportable Quantity (RQ) Releases

The facility must document all significant spills and leaks of oil or toxic or hazardous pollutants that occurred at exposed areas, or that drained to a stormwater conveyance, in the three years prior to the date of preparation or amendment of the SWMP.

Significant spills and leaks include, but are not limited to, releases of oil or hazardous substances greater than quantities that are reportable under the Clean Water Act (CWA) Section 311 or Section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC § 9602.

Spill Report
Five Part Development
8201 Schumaker Road, Bennett, Colorado 80102

Verbal Notification Record

CDPHE	**Within 2 hours of Release** **(877) 518 – 5608**	**NRC**	**As soon as you have knowledge of release** **(800) 424 – 8802**
Other Agencies Notified:		Notification Criteria:	

Facility and Contact Information

Reporter Name and Phone Number:	Reporter Title:
Facility Contact Name and Phone Number:	Facility Contact Title:
Owner Name:	Owner Phone Number:

Spill Information

Date and Time:	Weather Conditions:
Location:	Source:
Name of Substance:	Volume:
Description of Incident and Release:	

Immediate Response Actions	Comments/Response from Authorities

A written Spill Report must be submitted to the EPA within **5 days** of knowledge of an RQ release:
U.S. EPA Region 8, Office of Environmental Agriculture, 1595 Wynkoop Street, Denver, CO 80202

Spill Report
Five Part Development
8201 Schumaker Road, Bennett, Colorado 80102

Facility and Contact Information	
Facility Contact Name and Phone Number:	Facility Contact Title:
Owner Name:	Owner Phone Number:
Spill Information	
Date and Time:	Weather Conditions:
Location:	Source:
Name of Substance:	Volume:
Description of Incident and Release:	
Immediate Response Actions and Procedure	
Parties Notified	**Comments/Response from Authorities**
Revisions to Stormwater Management Plan	
Report Prepared By:	PPT Leader Signature:

A written Spill Report must be submitted to the EPA within **5 days** of knowledge of an RQ release:
U.S. EPA Region 8, Office of Environmental Agriculture, 1595 Wynkoop Street, Denver, CO 80202

Spill Report
Five Part Development
8201 Schumaker Road, Bennett, Colorado 80102

Additional Notes:

Page of

PPT Leaders Initials:

Appendix D

Training Records

Appendix E

Monthly Routine Inspection Checklist and Quarterly Visual Inspection Log

Five Part Development			
8201 Schumaker Road, Bennett Colorado 80102			
Monthly Stormwater Management Plan Routine Inspection Checklist			
Procedure: SWMP		Attachment:	
Inspector Name/Signature:		Date/Time:	
Weather Conditions:			
Item	**Potential Pollutant**	**Corrective Actions Needed**	**Corrective Actions Completed**
Drums/Totes	Miscellaneous Chemicals		
Outfall 001	All		
Outfall 002	All		
Drainage Swales	All		
Temporary Stormwater Ponds	All		
Leachate Pond	All		
Chemical Delivery Area	Sulfuric Acid/Caustic Soda		
Tank #1	Diesel		
Tank #2	Diesel		
Maintenance Shed Stprage	Miscellaneous Chemicals		
Access Roads	All		
Lay Down Area	Oil, Metals		

Observations of Control Measures:

- Description of discharge (if any);
- Outfall observations (e.g., device integrity, presence of pollutants);
- Are there any previously unidentified discharges/pollutants (yes/no)?
- Any evidence of pollutants entering the stormwater drainage system (yes/no)?
- Do control measures need maintenance, repair or replacement (yes/no)?
- Are there any potential problems that may cause stormwater pollution (yes/no)?

Note: *Attach additional sheets as necessary. Retain completed checklists in environmental files.*

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations

Signature: _____ **Date:** _____

Responsible Corporate Officer/Duly Authorized Representative

Quarterly Visual Inspection Procedure

Title: Visual Inspection of Stormwater Discharges
Objective: To identify sources of stormwater pollution and optimize SWMP effectiveness
Frequency: Quarterly
Personnel: Pollution Prevention Team member
Records: Visual Inspection Logs

1. Obtain several clear, glass, one-liter jars prior to the sampling event. Label the jars prior to the sampling event, if multiple samples are to be obtained or if more than one outfall is to be sampled.
2. Within thirty minutes after stormwater runoff begins discharging from the facility outfalls, collect one full sample jar from each outfall required to be monitored. (Note: there is generally a lag time between the start of rainfall and the start of discharge, depending on site conditions).
3. Bring the collected samples to a well-lit area and perform the visual inspection as soon as is practical.
4. Using the Visual Inspection Log included with this Procedure, record your observations of the quality of the stormwater in each sample. Use a separate log for each sample, and record any observations of odor, color, turbidity, floatables, deposits, stains, and vegetation conditions.
5. In the appropriate location on the Log, record your opinion of the probable source of any pollution observed in each sample.
6. Plan to conduct inspections of each area of the facility thought to be a potential source of any observed pollution in each sample.
7. As soon as practical, perform inspections of the areas identified in steps 5 and 6.
8. Record the results of the inspections in the appropriate location on the Log. Attach additional sheets, as necessary.
9. If the results of the visual inspections and the subsequent facility inspections indicate deficiencies in the facility SWMP, make provisions to update the SWMP as soon as possible.
10. Sign and certify the statement by a responsible corporate officer or duly authorized representative.
11. Retain the Visual Inspection Log in environmental files.

Five Part Development
8201 Schumaker Road, Bennett, Colorado 80102

Quarterly Visual SWMP Inspection Log

Procedure: SWMP **Attachment:**

LOCATION: Outfall # 001 / 002 (circle) **Date/Time:** _____ **Inspected By:** _____

CONDITIONS

Rain: Yes No Sunny Cloudy

PHYSICAL OBSERVATIONS

Odor:	None	Sewage	Oil	Gas	Rancid-Sour	Other:
Color:	None	Yellow	Brown	Green	Gray	Other:
Turbidity:	None	Cloudy	Opaque	Other:		
Floatables:	None	Petroleum Sheen		Sewage	Other: _____ (Collect	
Deposits:	None	Sediment	Oily	Describe: _____ (Collect		
Stains:	None	Gray	Brown	Black	Rust	Other:
Vegetation Conditions:		Normal	Excessive Growth		Inhibited Growth	

Extent:

DAMAGE TO OUTFALL STRUCTURES

Identify Structure: _____

Damage: None Concrete Cracking Concrete Spalling Paint Peeling Corrosion

Other Damage:

_____

Extent:

_____

Overall Condition: Good Fair Poor

Comments:

_____

_____

_____

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations

Signature: _____ **Date:** _____

Responsible Corporate Officer/Duly Authorized Representative

Retain Completed Visual Inspection Logs in Environmental Files

Appendix F

Waiver Forms

Waiver for Quarterly Visual Monitoring Inactive and Unstaffed Site Certification

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations.

Name:
Title:

Signature: _____

Date: _____

Waiver for Quarterly Visual Monitoring Adverse Climatic Conditions Certification

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations.

Name:
Title:

Signature: _____

Date: _____

Waiver for Alternate Certification for Sampling

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 gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained 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 fines and imprisonment for knowing violations.

Name:
Title:

Signature: _____

Date: _____

Appendix G

Plan Review Log

PLAN REVIEW LOG

Person Completing Review	Date	Activity	PE Certification Required?	Comments/Amendments

Appendix H

Quarterly Waste Records