Construction Quality Assurance Report
Chiquita Canyon Landfill
Soil Barrier Construction Project

Chiquita Canyon, LLC
29201 Henry Mayo Dr
Castaic, CA 91384

SCS ENGINEERS

01204123.41 | May 2025
Revised January 2026

3900 Kilroy Airport Way Suite 300
Long Beach, CA 90806
562-426-9544

Title Page and Index

Construction Quality Assurance Report

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Soil Barrier Construction Project

Section Page

Appendices

1 PROJECT OVERVIEW

SCS Engineers (SCS) presents this Construction Quality Assurance (CQA) Report for the construction of the vertical soil barrier on the interim waste slope at the Chiquita Canyon Landfill (Landfill) at 29201 Henry Mayo Dr, Castaic, CA 91384 in September 2024. Pursuant to Section 5.1.2(c) of the California Department of Toxic Substances Control's (DTSC) Imminent and Substantial Endangerment Determination and Order, Docket No. HSA-FY24/25-082, effective April 2, 2025 (the Order), this report provides information and data to document construction and quality assurance activities associated with the soil barrier. This report was initially prepared in May 2025 and is being revised to address DTSC's October 15, 2025 comments.

1.1 PROJECT SUMMARY

Chiquita Canyon, LLC (Chiquita) personnel constructed and installed the soil barrier. The record drawings for the project were prepared by SCS and are included in **Appendix A**.

SCS performed the following CQA activities for the construction of the vertical soil barrier, as further described in Section 2 of this report:

- Installed 40 by 40-foot offset construction stakes to verify 5 feet of soil cover depth;
- Observed placement of approximately 108,000 cubic yards of clean general fill obtained from the Landfill's soil stockpile in an area of 68,000 square yards at a depth of 5 feet to construct the soil barrier;
- Obtained soil properties for the fill material from the Cell 8 expansion geotechnical report where soils were obtained from the same area, the results of which are included in **Appendix B**; and
- Observed, documented, and photographed construction activities, and created a construction photo log, which is presented as **Appendix C**.

1.2 PROJECT CONTACT LIST

Owner/Contractor
Chiquita Canyon, LLC
29201 Henry Mayo Dr.
Castaic, CA 91384

Construction Quality Assurance Engineer
SCS Engineers
3900 Kilroy Airport Way Suite 300
Long Beach, CA 90806
Mr. Art Jones, Project Manager
Mr. Antonio Ambriz, Resident Project Representative
Mr. Fabian Chavez, Resident Project Representative

2 SOIL BARRIER CONSTRUCTION

SCS observed Chiquita's placement of approximately 108,000 cubic yards of clean general fill to form the vertical soil barrier on the interim waste slope. SCS installed staking to verify the 5 feet depth of soil placement. The side slopes were graded with one foot of soil and then stakes were placed in a 40 by 40-foot offset. Soil placement occurred by pushing soil up the side slopes and grading until the top of the stakes were completely covered with soil. Clean general fill was retrieved from the Landfill's soil stockpile to ensure there was no waste contained within the soil. The stockpile consisted of a silty sand with 62 to 66% passing a #200 sieve. The same stockpile was used for the cell construction of the Cell 8 expansion. The properties of the soil stockpile and the results of the geotechnical CQA observations and testing during grading for the Cell 8 expansion are included in Appendix B. The properties of the soil stockpile were prepared by Geo-Logic Associates. The geotechnical report for Cell 8B expansion was prepared by R. T. Franklin & Associates.

The record drawings for this project were prepared by SCS and are included in Appendix A, which includes:

- A drawing providing an aerial image of the site location;
- A drawing demonstrating the site layout, including the layout of the landfill cells and the location of the vertical soil barrier; and
- A cross section of the base liner, May and April 2024 topography, location of each intersecting module and cell, and the vertical soil barrier with labels.

SCS began the preparation and staking of the slope receiving the soil barrier on May 17, 2024. The soil liner was staked and placed over the course of 15 days between May 17 and September 26, 2024, as described in Section 2.1 and illustrated in the construction photographs provided in Appendix B.

2.1 TIMELINE ACTIVITIES

May 17, 2024: Graded with 1 foot of soil cover on the south interim waste slope. Staked the area with 40 by 40-foot offset stakes on the south.

May 21, 2024: Placed clean general fill to a total depth of 5 feet on the south interim waste slope. Five feet depth of fill was verified by the placement to the top of the stakes.

May 29, 2024: Placed general fill to a depth of 5 feet of remaining area that was staked on May 17, 2024. Five feet depth of fill was verified by the placement to the top of the stakes.

May 31, 2024: Placed general fill to a depth of 5 feet on the remaining south interim waste slope. Five feet depth of fill was verified by the placement to the top of the stakes.

June 11, 2024: Graded with 1 foot of soil cover on the southwest interim waste slope. Staked the area with 40 by 40-foot offset stakes. Placed general clean fill to a total depth of 5 feet. Five feet depth of fill was verified by the placement to the top of the stakes.

June 12, 2024: Graded with 1 foot of soil cover on the remaining southwest interim waste slope. Staked the area with 40 by 40-foot offset stakes. Placed of general clean fill to a total depth of 5 feet. Five feet depth of fill was verified by the placement to the top of the stakes.

July 16, 2024: Graded with 1 foot of soil cover on the northeast interim waste slope. Staked the area with 40 by 40-foot offset stakes. Placed clean general fill to a total depth of 5 feet. Five feet depth of fill was verified by the placement to the top of the stakes.

July 17, 2024: Placed clean general fill to a total depth of 5 feet on the remaining northeast interim waste slope. Five feet depth of fill was verified by the placement to the top of the stakes.

July 26, 2024: Graded with 1 foot of soil cover on the interim waste slope. Staked the area with 40 by 40-foot offset stakes. Placed clean general fill to a total depth of 5 feet. Five feet depth of fill was verified by the placement to the top of the stakes.

September 5, 2024: Graded with 1 foot of soil cover on the interim waste slope. Staked the area with 40 by 40-foot offset stakes.

September 12, 2024: Placed clean general fill to a total depth of 5 feet in the area that was graded on September 5, 2024. Five feet depth of fill was verified by the placement to the top of the stakes.

September 26, 2024: Graded with 1 foot of soil cover on the interim waste slope. Staked the area with 40 by 40-foot offset stakes. Placed clean general fill to a total depth of 5 feet. Five feet depth of fill was verified by the placement to the top of the stakes.

3 TESTING PROCEDURE

SCS verified that the vertical soil barrier was at least five feet in depth by staking a 40 by 40-foot grid. Each of the stakes were five feet in height. Chiquita placed clean general fill to the top of each of the stakes to ensure a 5 feet depth of fill. SCS observed and verified that the clean general fill was placed to the top of each stake.

4 CONSTRUCTION DOCUMENTATION

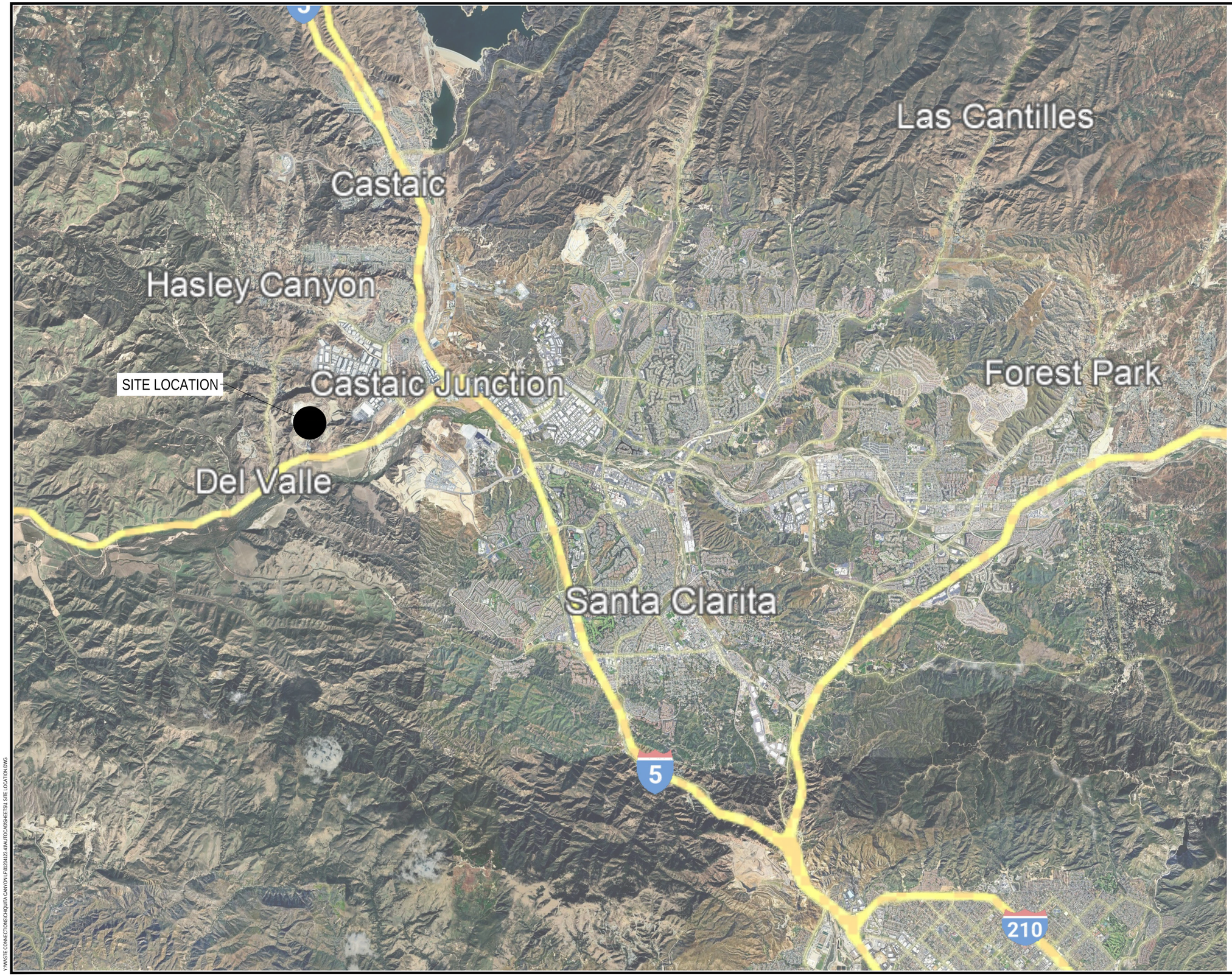
The CQA Officer's designee observed and recorded daily construction activities. Photographs were taken showing the general construction progress of the project. All photographs were taken during normal daylight hours. The dates of the photographs are shown in each photo caption, along with the physical position/direction of the photographer and a description of the activities being performed. The construction photographs are provided in Appendix C.

5 GENERAL COMMENTS

The observations and notes presented in this report are based upon data obtained from the field, observations made during construction activities, and from any other information discussed in this report. SCS has prepared this report for the exclusive use of our client. The report is meant for specific application to the project discussed and has been prepared in accordance with generally accepted environmental and geotechnical engineering practices. No warranties, express or implied, are intended or made.

Appendix A

Record Drawings



4000' 0 4000' 8000'
SCALE FEET

NOTES:
1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH AND DATED JANUARY 2025.

REV.	DATE	CK. BY
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△	-	-
△	-	-
△	-	-
△	-	-

SHEET TITLE
SITE LOCATION

PROJECT TITLE
CHIQUITA CANYON LANDFILL
CELL 6 SOIL BARRIER CQA

CLIENT
CHIQUITA CANYON
29201 HENRY MAYO DR
CASTAIC, CA 91384

SCS ENGINEERS
3900 KILROY AIRPORT WAY SUITE 300
LONG BEACH, CA 90806
(562) 426-9544 FAX. (562) 427-0805

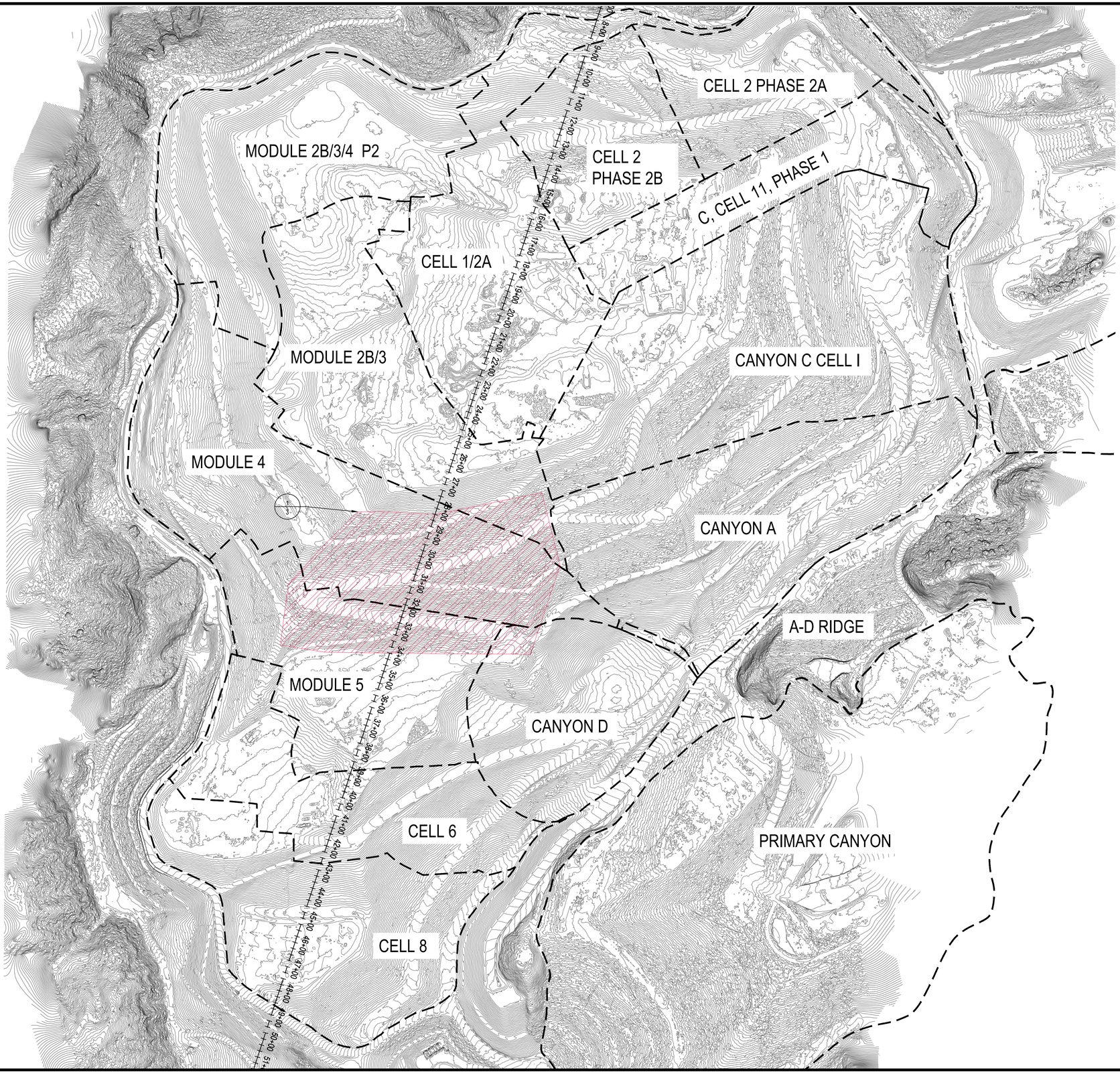
PROJ. NO.: 01204123.41
DSN. BY:
DWN. BY: GJC
CHK. BY: WCH
PROJ. MGR: WCH

CADD FILE:
1 SITE LOCATION.DWG

DATE:
4/25/25

DRAWING NO.
1

Y:\WASTE CONNECTIONS\CHIQUITA CANYON LF\01204123.41\AUTOCAD\SHEETS\1 SITE LOCATION.DWG



200 0 200 400
SCALE FEET

LEGEND

SOIL BARRIER AREA

NOTES:
1. EXISTING TOPOGRAPHIC SURVEY INFORMATION WAS PROVIDED BY TETRA TECH AERIAL PHOTOGRAPHY DATED MAY 15, 2024.

REV.	DATE	CK. BY
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SHEET TITLE
SITE LAYOUT

PROJECT TITLE
CHIQUITA CANYON LANDFILL
CELL 6 SOIL BARRIER CQA

CLIENT
CHIQUITA CANYON
29201 HENRY MAYO DR
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(562) 426-9544 FAX. (562) 427-0805

PROJ. NO. 01204123.41
DSN. BY:
DWN. BY: GJC
CHK. BY: WCH
PROJ. MGR. WCH

CADD FILE:
2 SITE LAYOUT.DWG

DATE:
11/24/25

DRAWING NO.
2

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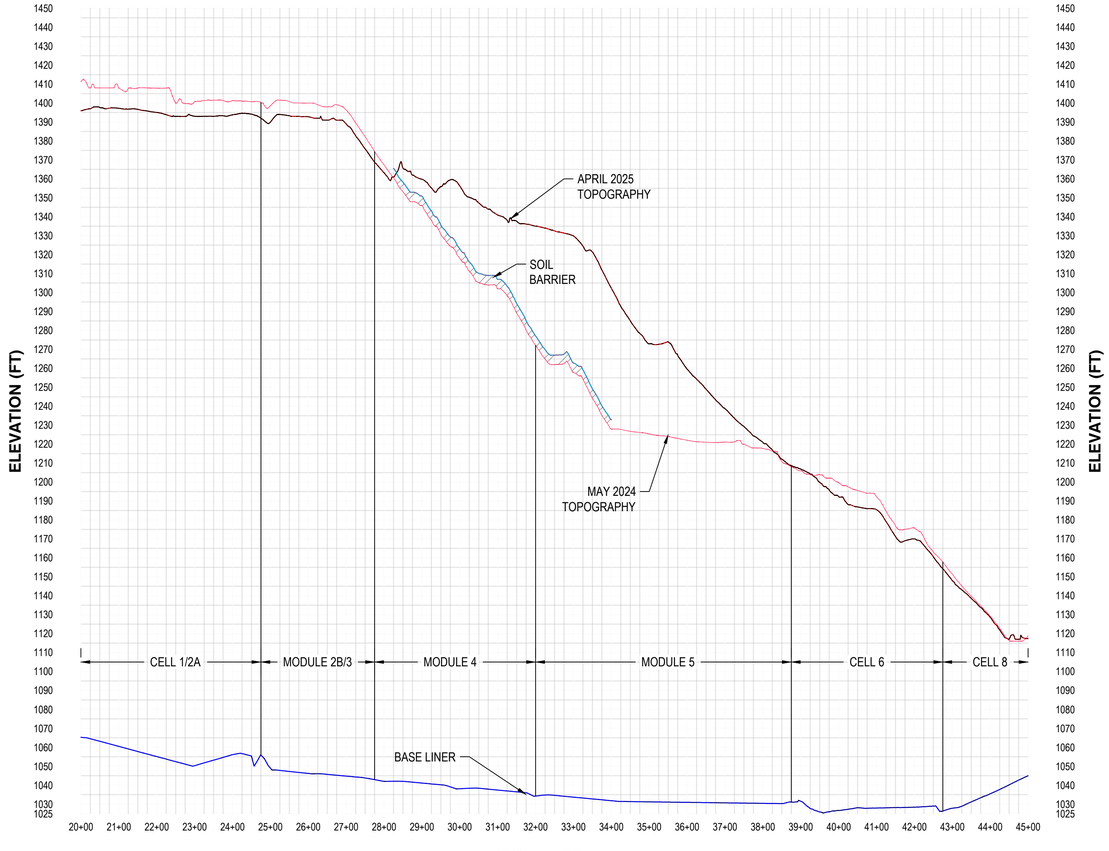
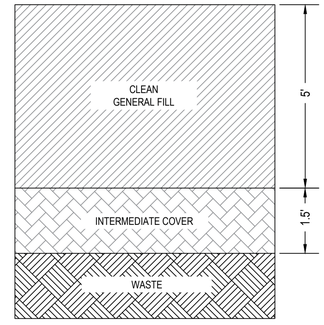
CROSS SECTION



PROFILE SCALE:
HORIZ: 1"=200'
VERT: 1"=40'



NOTE:

1. INTERMEDIATE COVER ASSUMED TO BE A DEPTH OF 18-INCHES.
2. SOIL BARRIER FILLED WITH GENERAL CLEAN FILL FROM SOIL STOCKPILE. STOCKPILE SOIL CONSISTS OF SILTY SAND WITH 1.4% PASSING A #200 SIEVE.

1 SOIL BARRIER
NOT TO SCALE

REV.	DATE		CK BY
0	-	-	-
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-

SHEET TITLE
DETAILS

PROJECT TITLE
CHIQUITA CANYON LANDFILL
CELL 6 SOIL BARRIER CQA

CLIENT
CHIQUITA CANYON
29201 HENRY MAYO DR
CASTAIC, CA 91384

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

PROJ. NO.	DWN. BY:	PROJ. MGR.
01204123.41	GJC	WICH
DSN. BY:	CHK. BY:	
WICH	WICH	

CADD FILE:
3 DETAILS.DWG

DATE:
11/24/25

DRAWING NO.
3

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Appendix B

Soil Properties

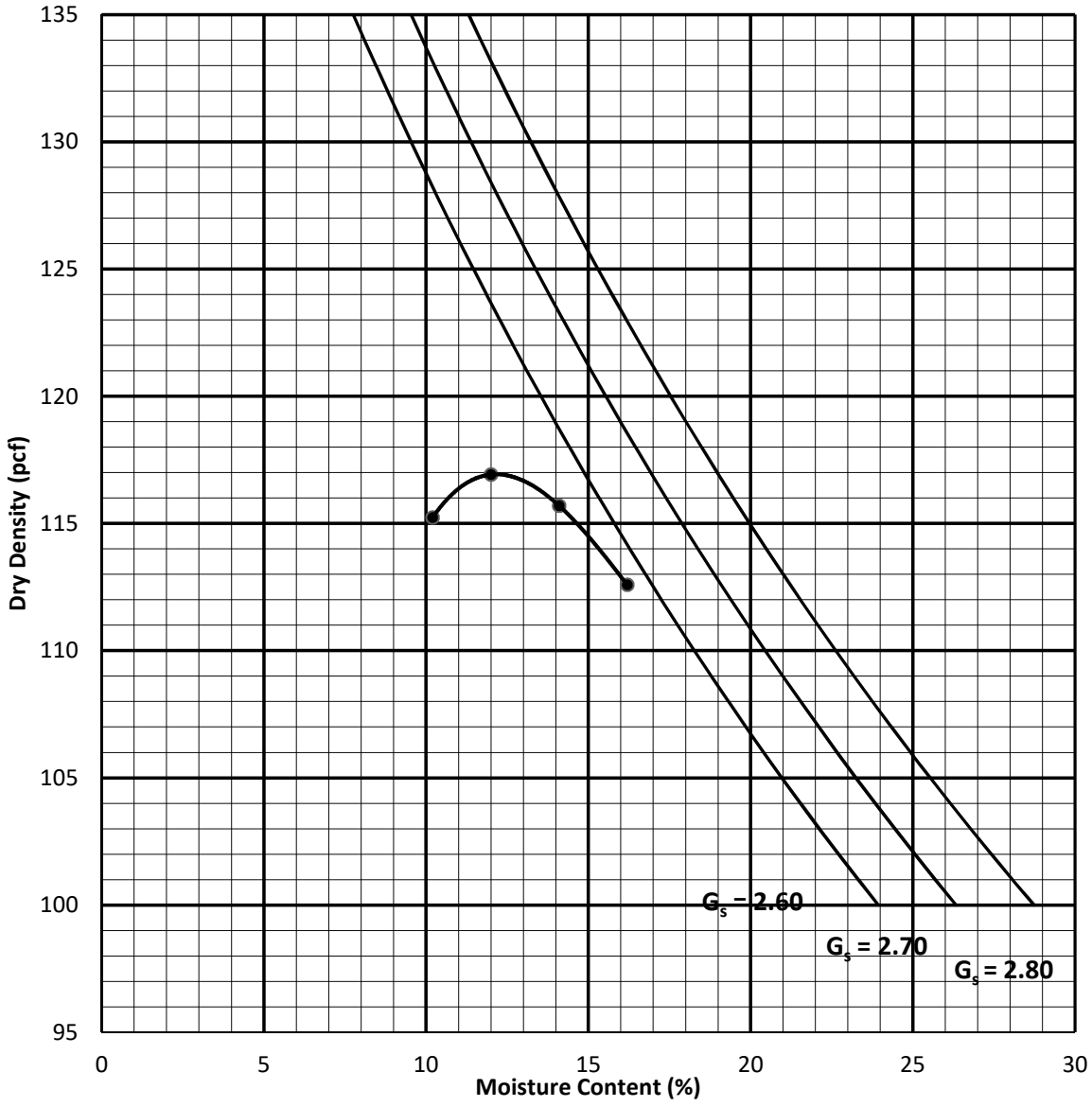
B-1 PROCTOR RESULTS

COMPACTION TEST REPORT

Project: Chiquita Canyon LF - Cell 8 **Job No.** SO21.1156
Sample: LPC-001 **Date:** 6/16/2022
Description: Brown, Silty Clay **By:** LD

ASTM D1557	Method A	Volume (cf): 0.03333		# Blows: 25	# Layers: 5
Specimen		**A**	**B**	**C**	**D**
Wet Weight (grs)		1996	1980	1920	1978
Wet Density (pcf)		132.0	131.0	127.0	130.8
Moisture Content (%)		14.1	12.0	10.2	16.2
Dry Density (pcf)		115.7	116.9	115.2	112.6

Max. Dry Density : 117.0 pcf
Opt. Water Content: 12.0 %

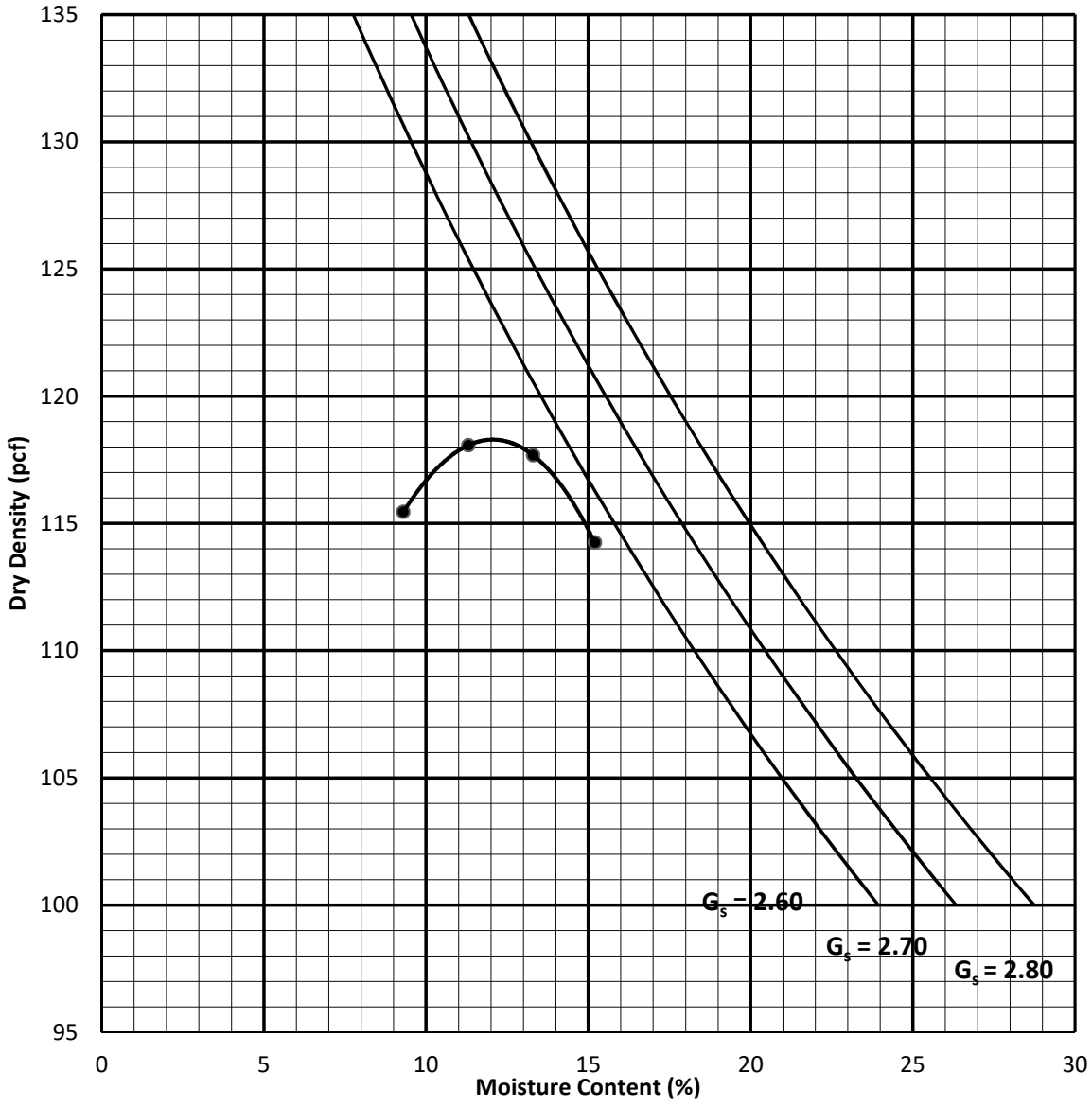


COMPACTION TEST REPORT

Project: Chiquita Canyon LF - Cell 8 **Job No.** SO21.1156
Sample: LPC-002 **Date:** 6/16/2022
Description: Brown, Silty Clay **By:** LD

ASTM D1557	Method A	Volume (cf): 0.03333		# Blows: 25	# Layers: 5
Specimen		**A**	**B**	**C**	**D**
Wet Weight (grs)		2016	1987	1908	1990
Wet Density (pcf)		133.3	131.4	126.2	131.6
Moisture Content (%)		13.3	11.3	9.3	15.2
Dry Density (pcf)		117.7	118.1	115.5	114.2

Max. Dry Density : 118.0 pcf
Opt. Water Content: 12.0 %

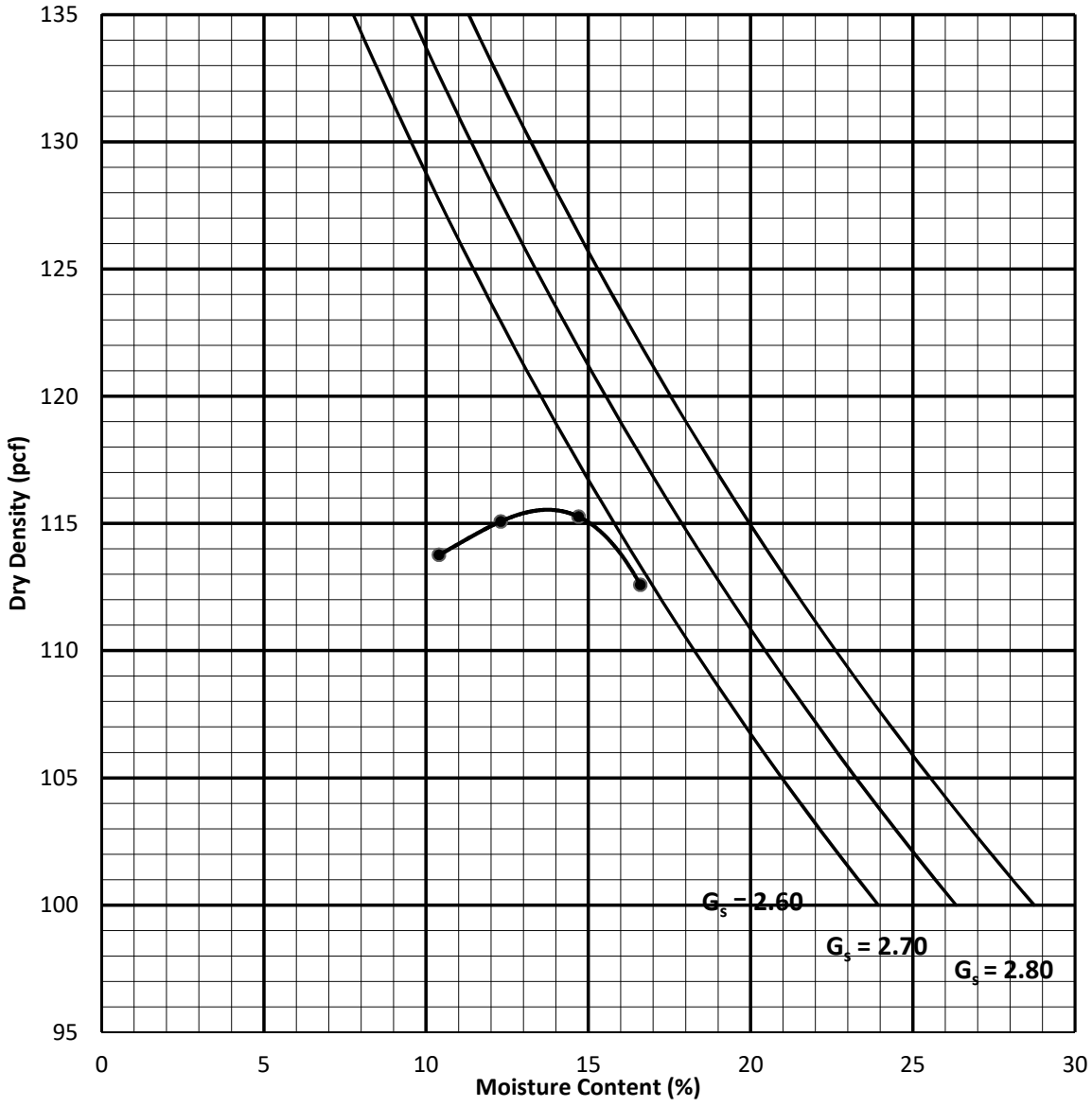


COMPACTION TEST REPORT

Project: Chiquita Canyon LF - Cell 8 **Job No.** SO21.1156
Sample: LPC-003 **Date:** 6/16/2022
Description: Brown, Silty Clay **By:** LD

ASTM D1557	Method A	Volume (cf): 0.03333		# Blows: 25	# Layers: 5
Specimen		**A**	**B**	**C**	**D**
Wet Weight (grs)		1985	1999	1954	1899
Wet Density (pcf)		131.3	132.2	129.2	125.6
Moisture Content (%)		16.6	14.7	12.3	10.4
Dry Density (pcf)		112.6	115.3	115.1	113.8

Max. Dry Density : 116.5 pcf
Opt. Water Content: 14.0 %

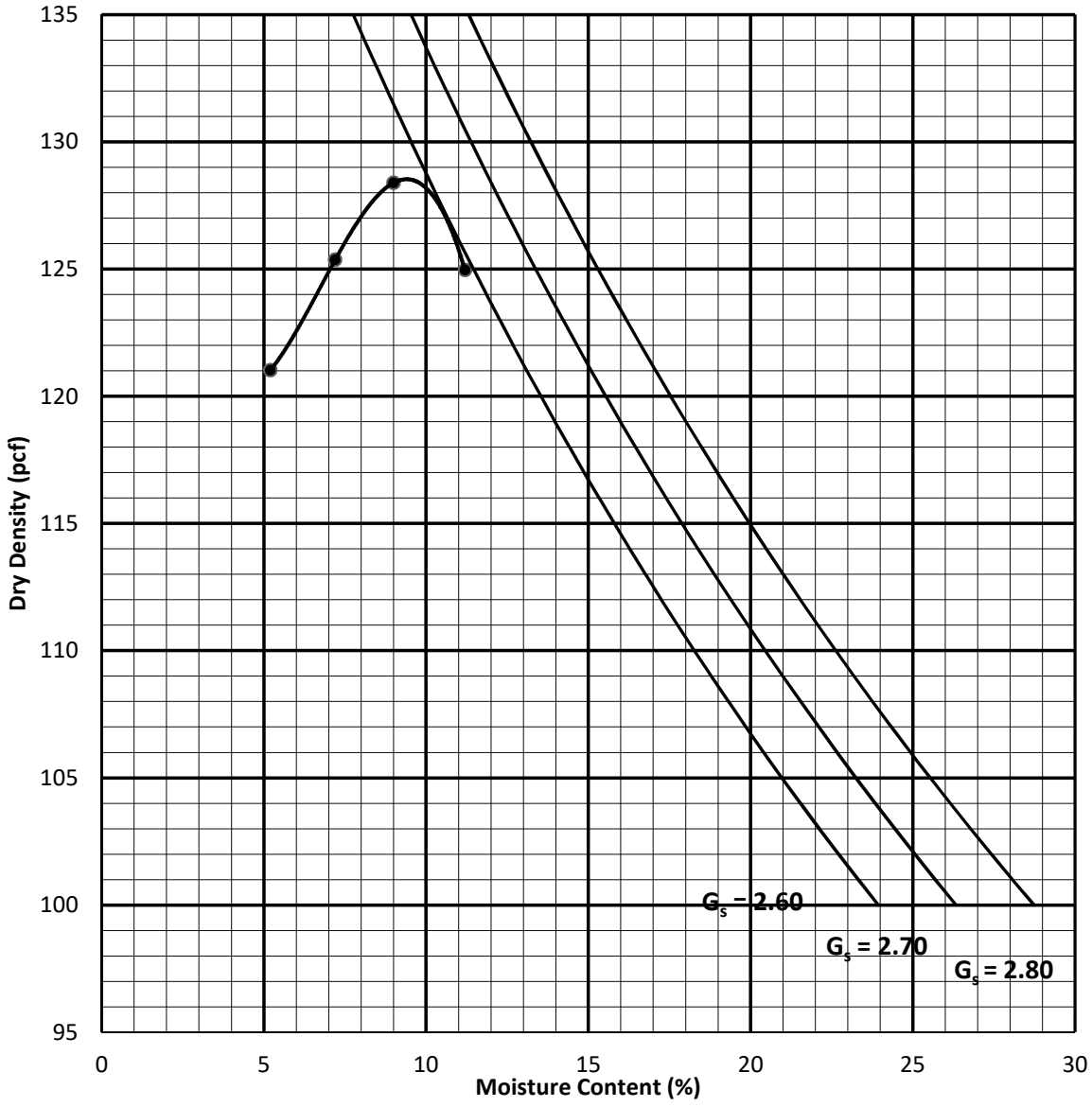


COMPACTION TEST REPORT

Project: Chiquita Canyon LF - Cell 8 **Job No.** SO21.1156
Sample: ATB-001 **Date:** 7/7/2022
Description: Brown, Clayey Sand **By:** LD

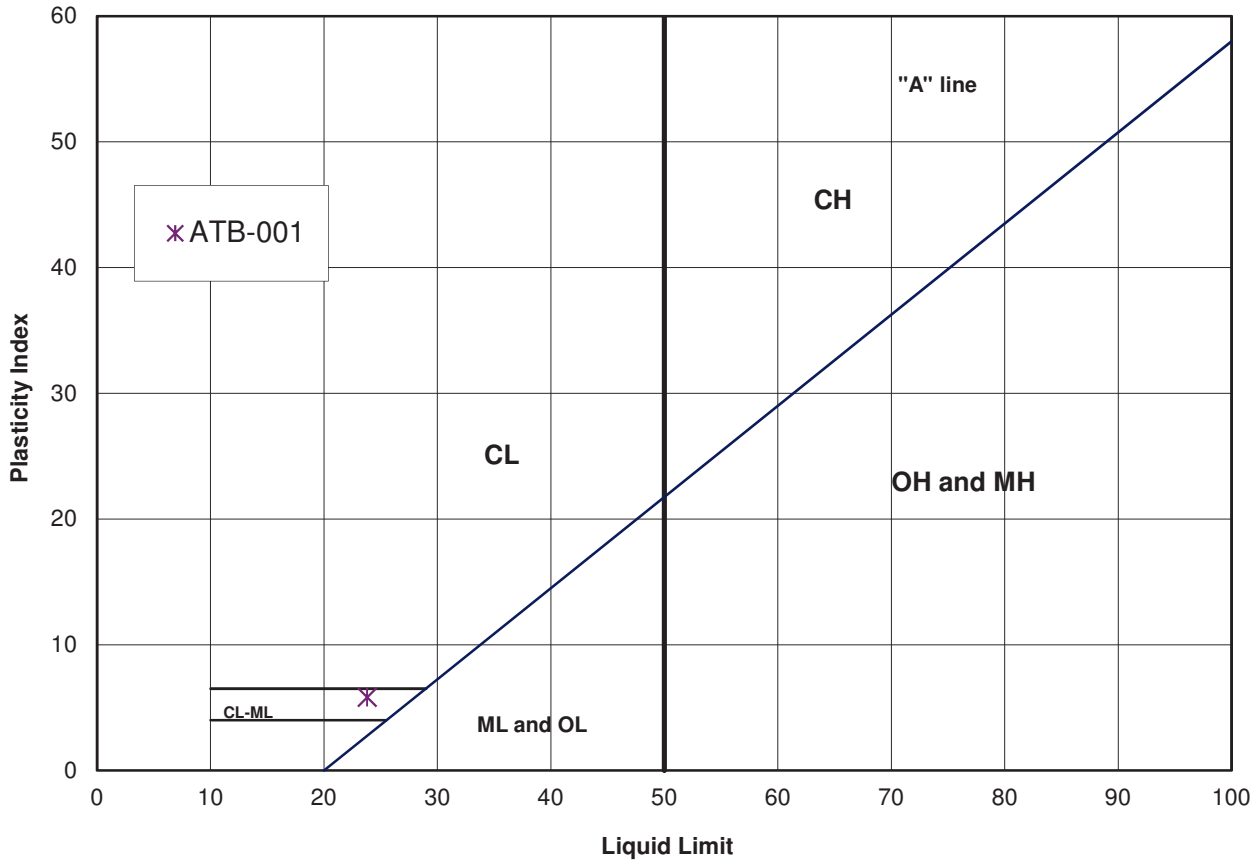
ASTM D1557	Method A	Volume (cf): 0.03333		# Blows: 25	# Layers: 5
Specimen		**A**	**B**	**C**	**D**
Wet Weight (grs)		2116	2101	2032	1925
Wet Density (pcf)		139.9	139.0	134.4	127.3
Moisture Content (%)		9.0	11.2	7.2	5.2
Dry Density (pcf)		128.4	125.0	125.4	121.0

Max. Dry Density : 128.5 pcf
Opt. Water Content: 9.0 %



B-2 ATTERDERG LIMIT RESULTS

PLASTICITY INDEX _ ASTM D4318

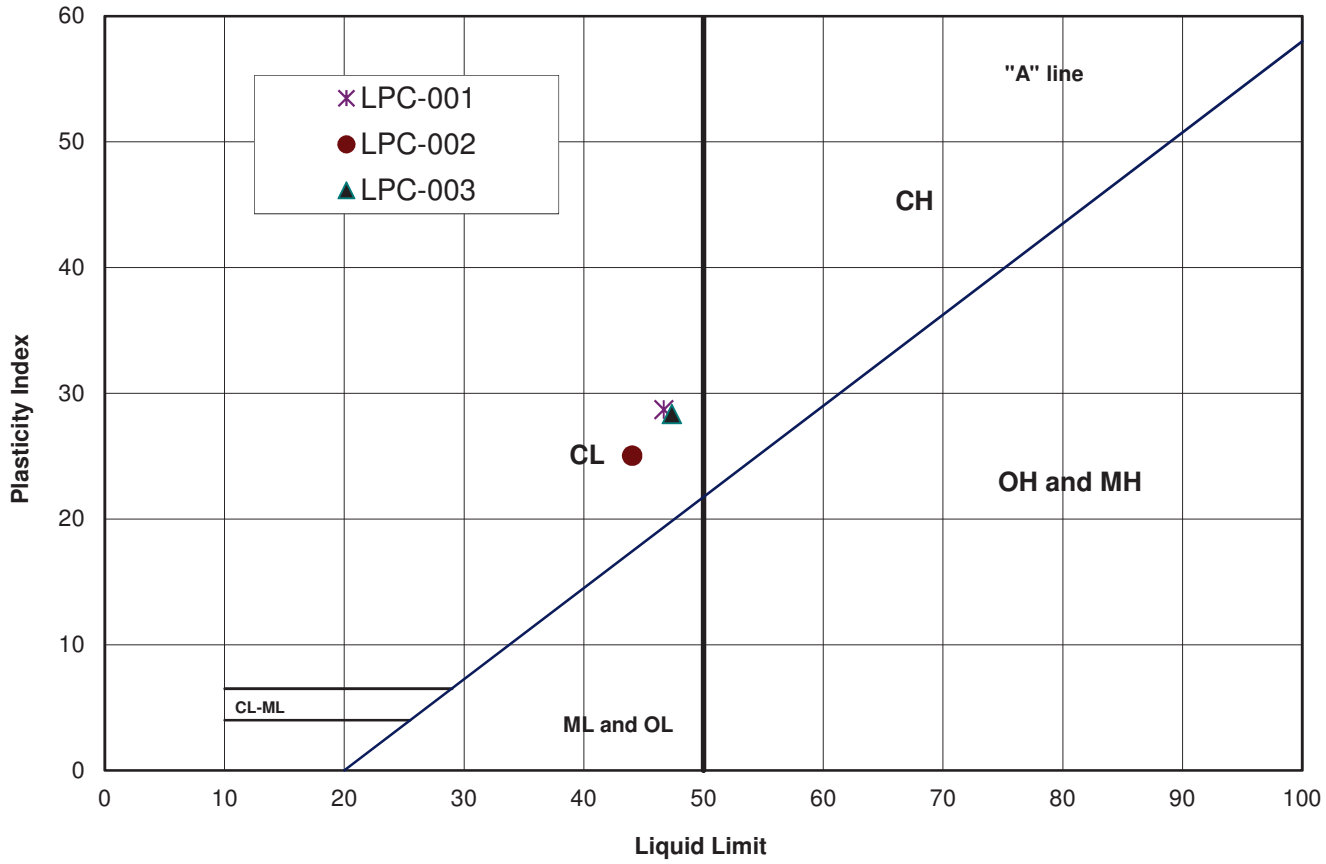


Sample	Depth	LL	PL	PI	USCS	Material Description
ATB-001		24	18	6	CL-ML	

Job Name: Chiquita Canyon LF Date: 7/10/22

Job No.: SO21.1156.00

PLASTICITY INDEX _ ASTM D4318



Sample	Depth	LL	PL	PI	USCS	Material Description
LPC-001		47	18	29	CL	
LPC-002		44	19	25	CL	
LPC-003		47	19	28	CL	

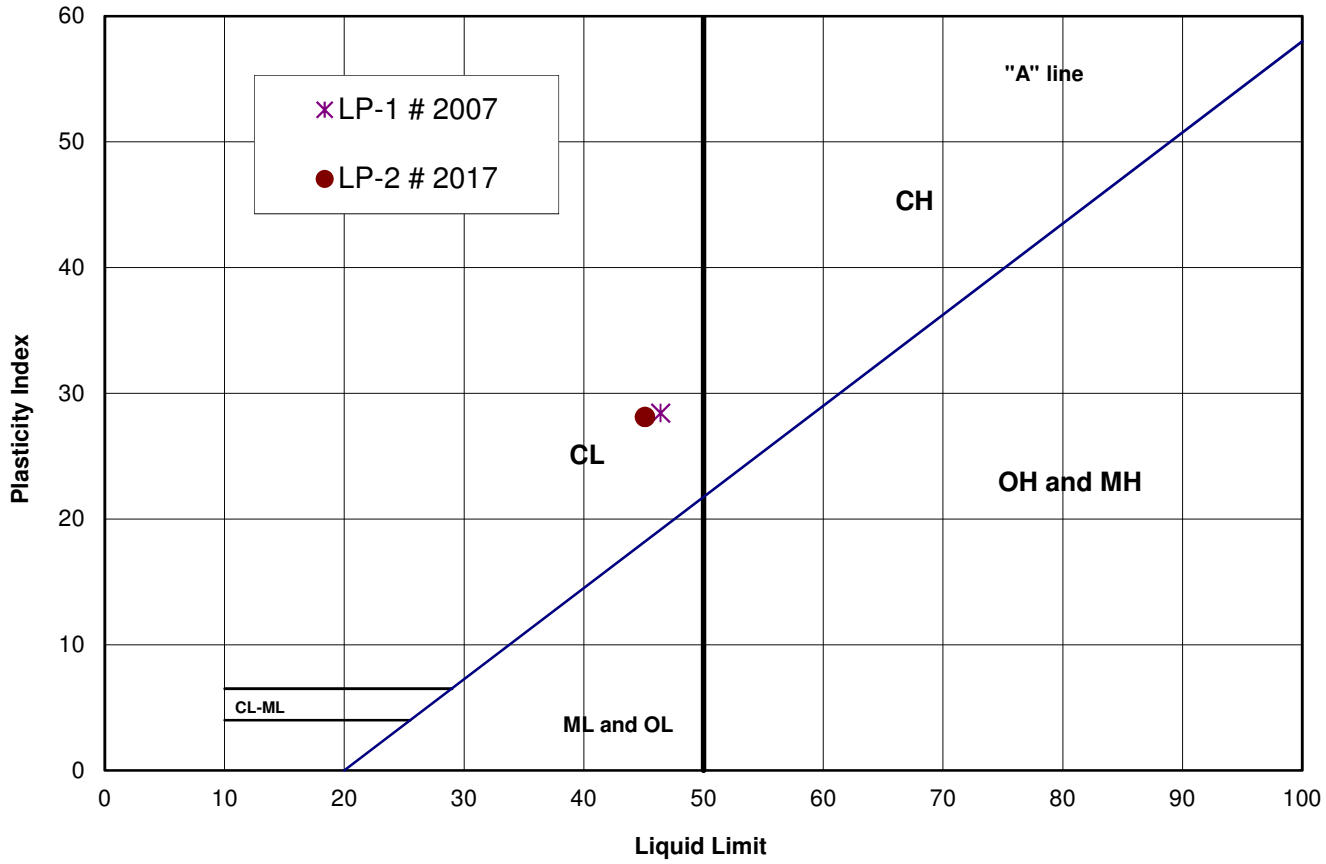
Job Name: Chiquita LF

Date: 6/23/22

Job No.: SO21.1156.00

Geo-Logic ASSOCIATES

PLASTICITY INDEX _ ASTM D4318



Sample	Depth	LL	PL	PI	USCS	Material Description
LP-1 # 2007		46	18	28	CL	
LP-2 # 2017		45	17	28	CL	

Job Name: Chiquita LF

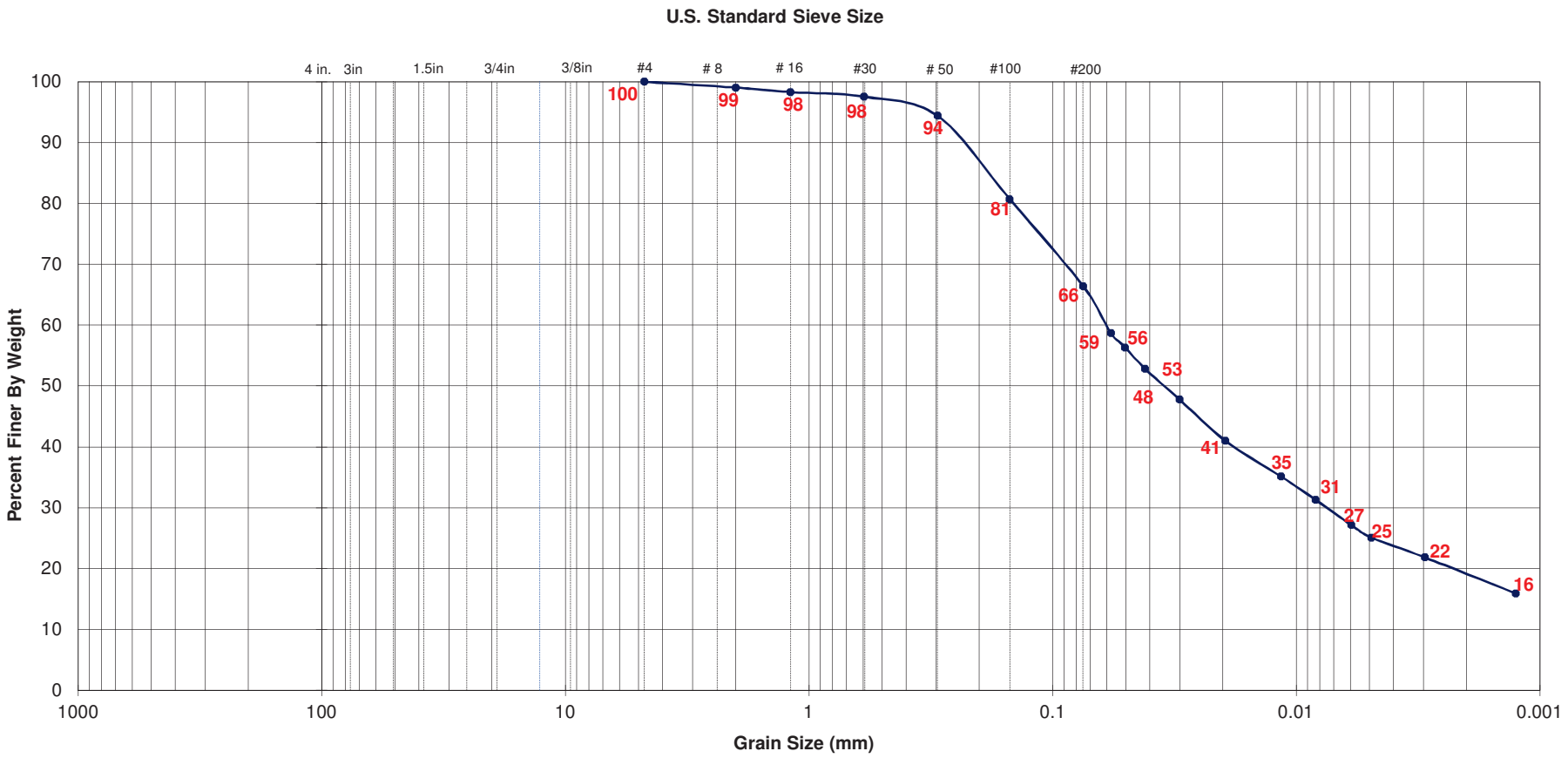
Date: 8/8/22

Job No.: SO21.1156.00

Geo-Logic ASSOCIATES

B-3 PARTICLE SIZE ANALYSIS

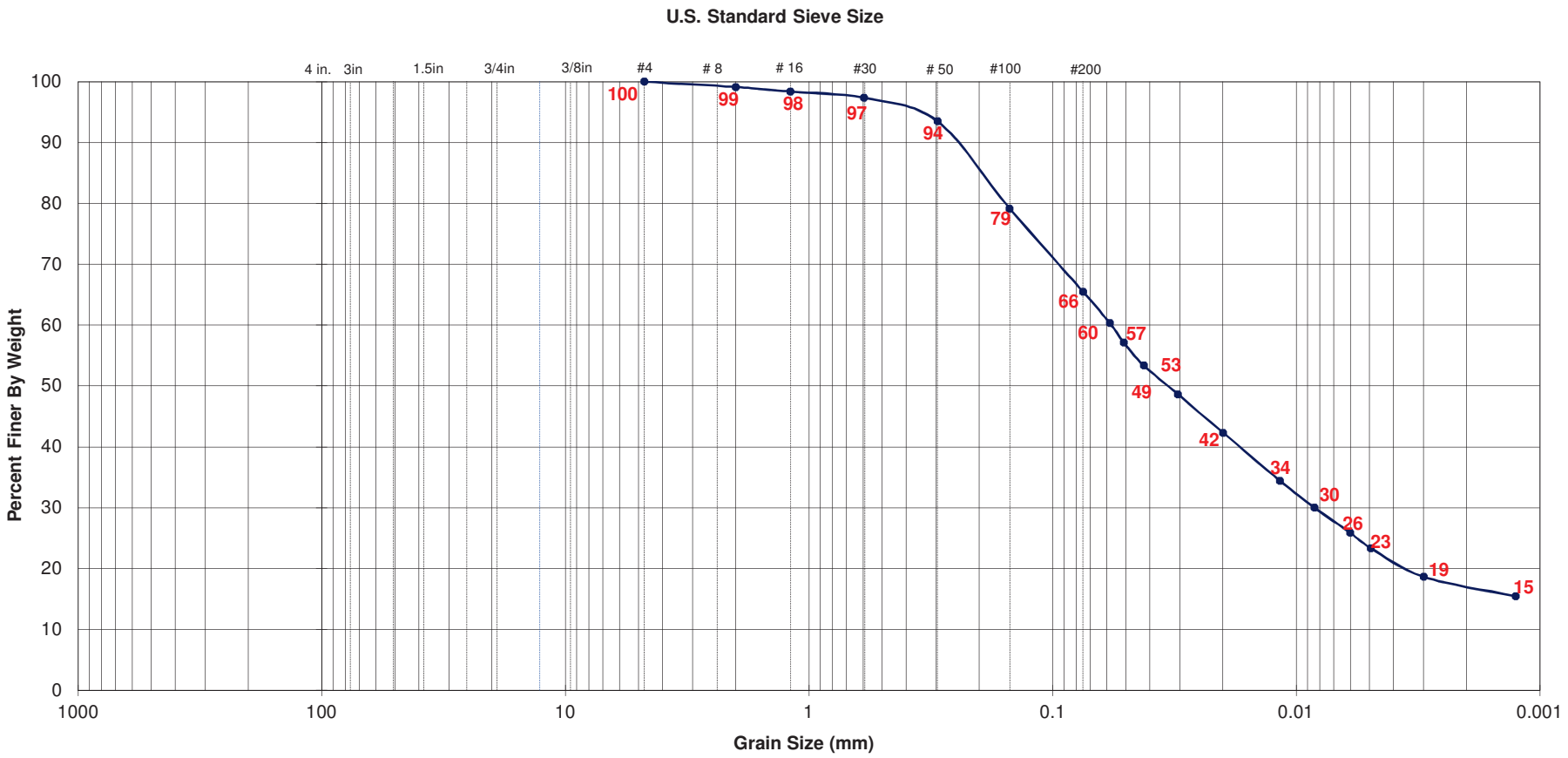
Date: 6/23/22



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeabilty, k (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
LPC-003						47	19	28	CL	

Geo-Logic ASSOCIATES

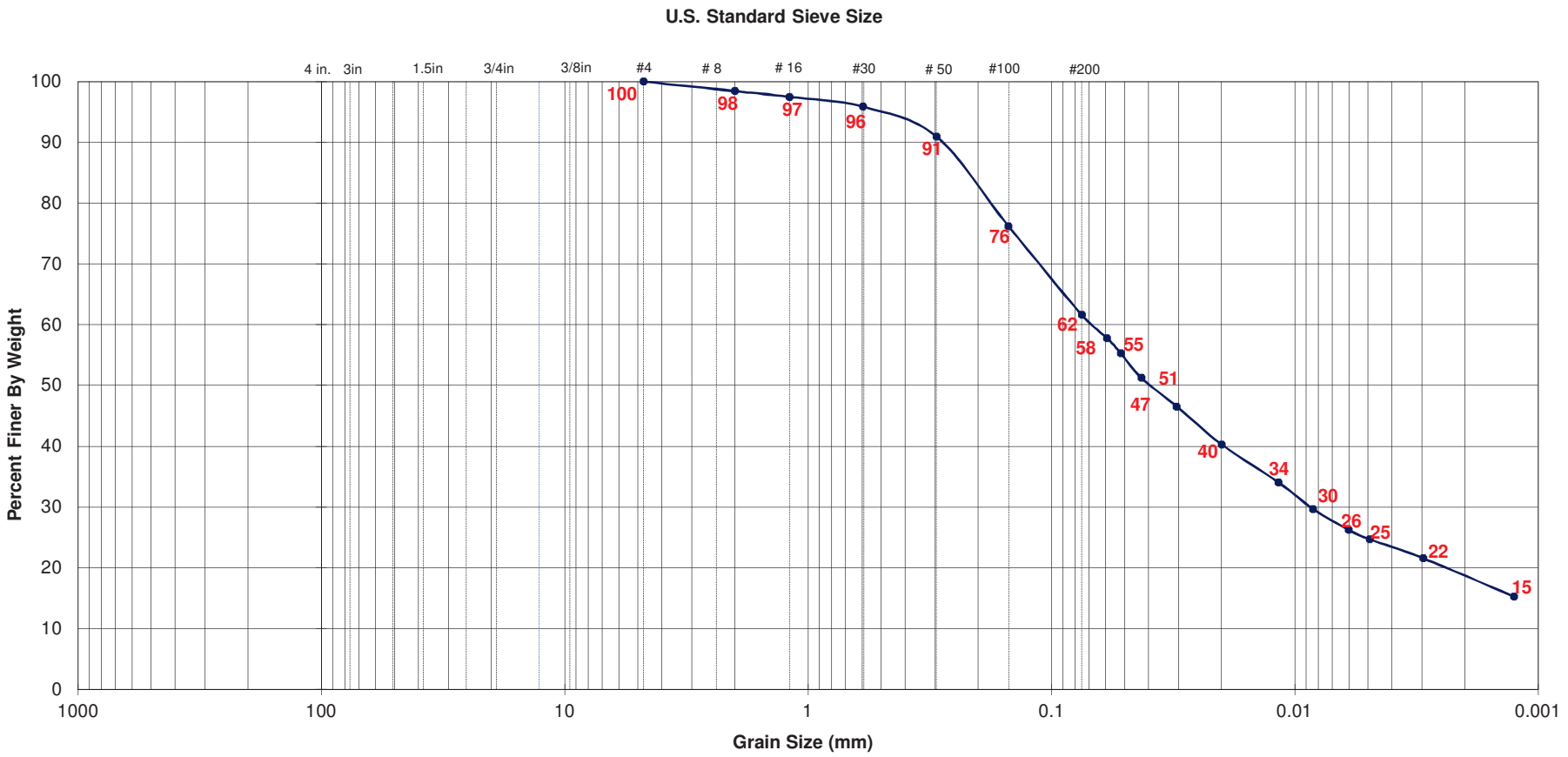
Date: 6/23/22



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeabilty, k (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
LPC-001						47	18	29	CL	

Geo-Logic ASSOCIATES

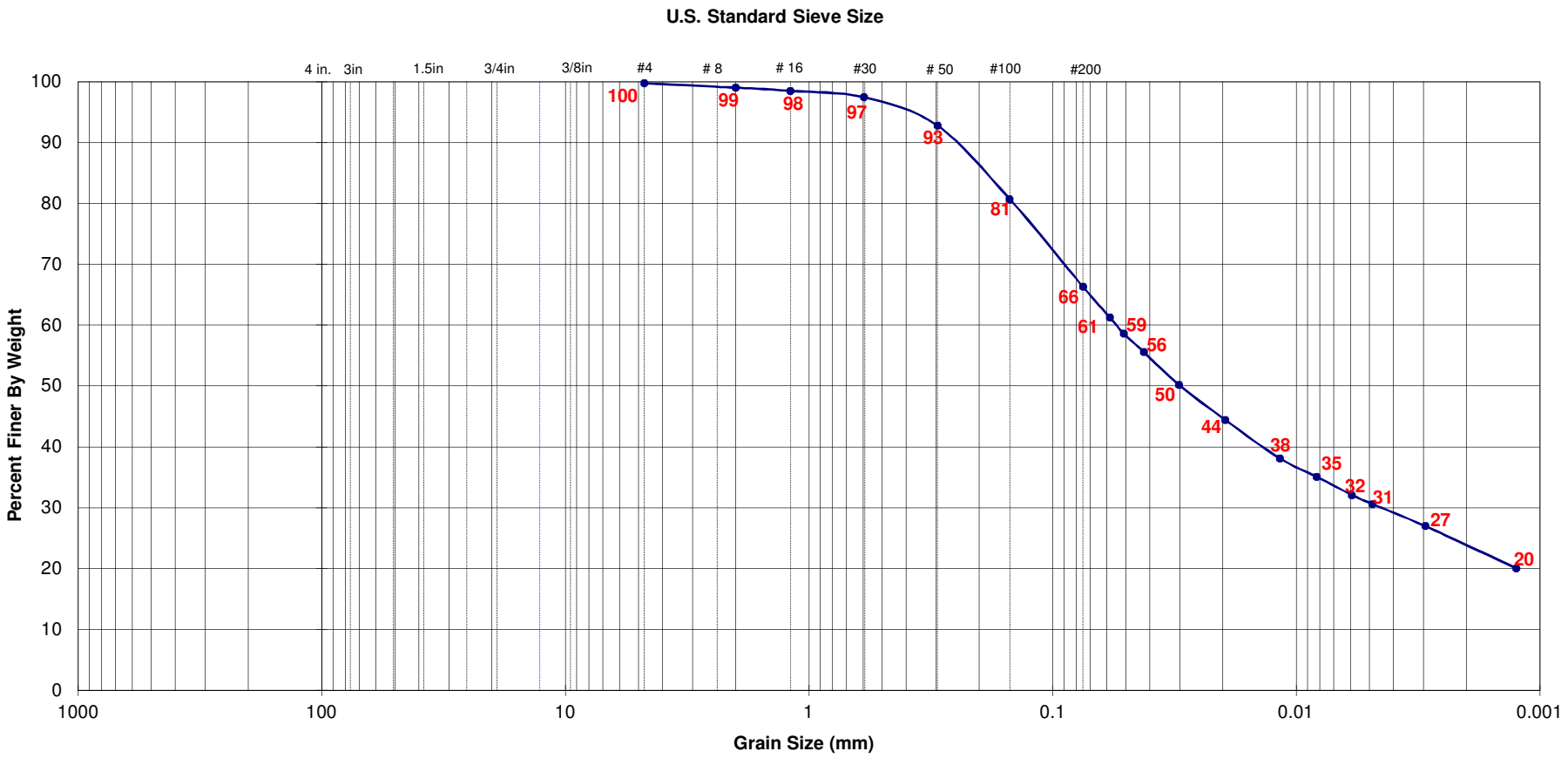
Date: 6/23/22



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeabilty, k (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
LPC-002						44	19	25	CL	

Geo-Logic ASSOCIATES

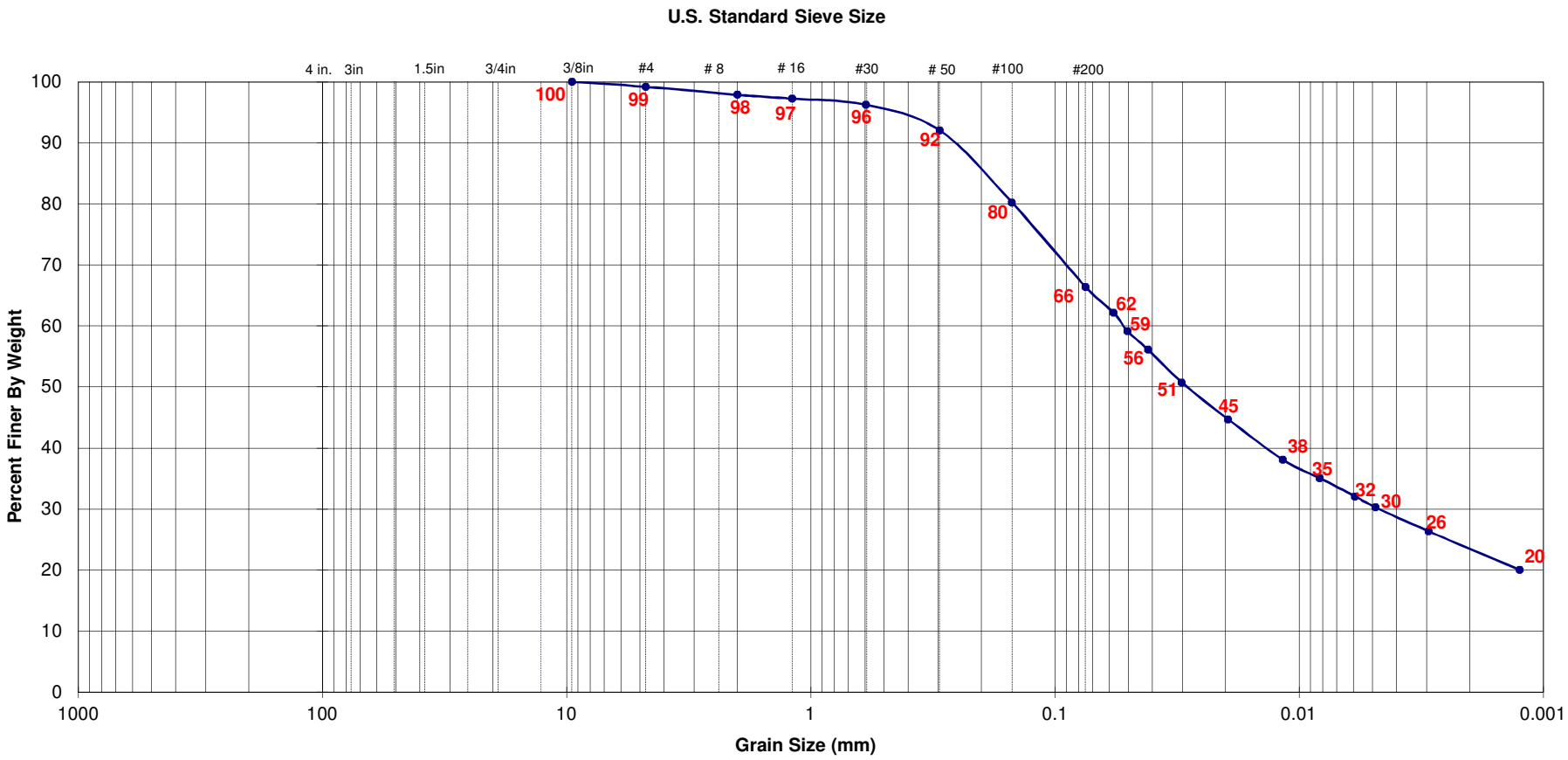
Date: 8/8/22



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeabilty, k (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
LP-2 # 2017						45	17	28	CL	

Geo-Logic ASSOCIATES

Date: 8/8/22



Boring / Sample No.	Initial Dry Density (pcf)	Initial Moist. (%)	Test Dry Density (pcf)	Test Moist. (%)	Permeabilty, k (cm/sec)	LL	PL	PI	Unified Soil Class.	Description
LP-1 # 2007						46	18	28	CL	

Geo-Logic ASSOCIATES

B-4 HYDRAULIC CONDUCTIVITY TEST RESULTS

HYDRAULIC CONDUCTIVITY - ASTM D5084 - METHOD C

Job Name: Chiquita Canyon LF Job No.: SO21.1156.00 Location: LPC-001 By:LD

Sample Type: ☐ Remolded @ 93% Max Density

Soil Type: Silty Clay

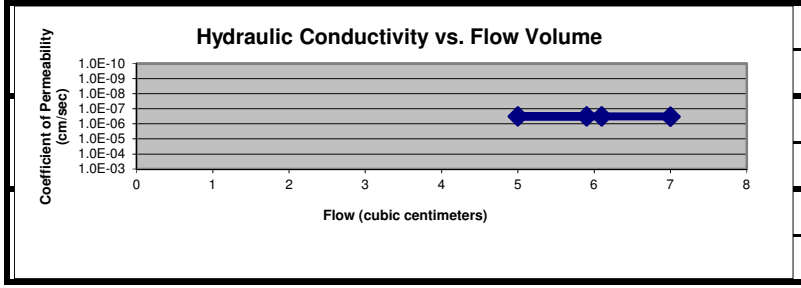
Permeant Liquid: De-aired water

Ini. Height (in.) :	1.500	***Final***	
Ini. Diam. (in.) :	2.41	Height (in.) :	1.500
Wet + Tare (grams):	222.8	Diam. (in.) :	2.421
Tare (grams) :	0	Wet Weight (gr.):	235.1
Water Content (%) :	14.0	Water Content (%):	20.3
Dry Density (pcf):	108.9	Dry Density (pcf):	107.9
Headwater Tube Area:	0.874 cm^2	Tailwater Tube Area:	0.874 cm^2
Hydraulic gradient:	5.5		

Temperature: 20 °C Viscosity Correction (R_T): 1.00

Cell Pressure	Back P.	Pore P.	***Saturation***	Cell Burette	Sample Burette
10	7			-2.5	7.7
20	17			-1.1	3.7
30	27			-4	1.8
40	37			-0.3	0.7
50	47			0.2	0.5
Assumed Specific Gravity =			2.65	% Saturation:	100.0
77	47			5.7	-4

Cell Pressure (psi)	Back Pressure (Top)	Back Pressure (Bottom)	Pressure Difference (psi)	Top Burette (cc)	Bottom Burette (cc)	Date&Time Start/Stop	h (cm) h_0/h_1	Q (cc) Top/Bott.	Test Time, t (sec)	Coefficient of Permeability, k (cm/sec)	Remarks (L/A)
77	48	46	2	0	24	6/25 12:56:00	27.48	5.9		3.1E-07	3.81
				5.9	18.1	6/25 17:06:00	13.969	5.9	15000		29.68429021
77	48	46	2	0	24	6/25 17:10:00	27.48	5		3.2E-07	3.81
				5	19	6/25 20:35:00	16.03	5	12300		29.68429021
77	48	46	2	0	24	6/26 10:00:00	27.48	6.1		3.2E-07	3.81
				6.1	17.9	6/26 14:11:00	13.511	6.1	15060		29.68429021
77	48	46	2	0	24	6/26 14:15:00	27.48	7		3.3E-07	3.81
				7	17	6/26 19:00:00	11.45	7	17100		29.68429021
											Eq'n per 10.2.2, Note 17:
										3.2E-07 (Average)	$k = \frac{aL}{2At} ln \frac{h_o}{h_i}$



Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY - ASTM D5084 - METHOD C

Job Name: Chiquita Canyon LF Job No.: SO21.1156.00 Location: LPC-002 By:LD

Sample Type: ☐ Remolded @ 93% Max Density

Soil Type: Silty Clay

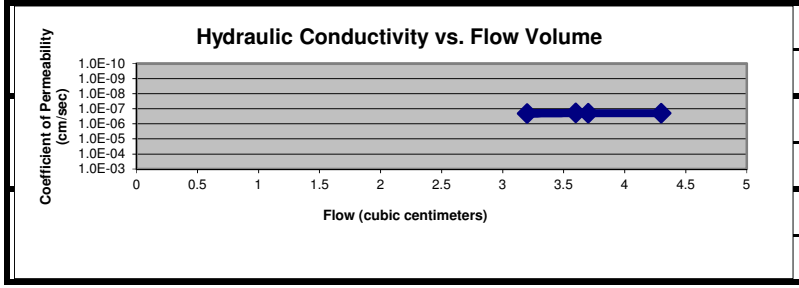
Permeant Liquid: De-aired water

Ini. Height (in.) :	1.500	***Final***	
Ini. Diam. (in.) :	2.41	Height (in.) :	1.498
Wet + Tare (grams):	224.8	Diam. (in.) :	2.417
Tare (grams) :	0	Wet Weight (gr.):	235.3
Water Content (%) :	14.0	Water Content (%):	19.3
Dry Density (pcf):	109.8	Dry Density (pcf):	109.4
Headwater Tube Area:	0.874 cm^2	Tailwater Tube Area:	0.874 cm^2
Hydraulic gradient:	6.2		

Temperature: 20 °C Viscosity Correction (R_T): 1.00

Cell Pressure	Back P.	Pore P.	***Saturation***	Cell Burette	Sample Burette
10	7			-3	8.4
20	17			-0.1	2.3
30	27			-0.1	1.8
40	37			-0.3	0.7
50	47			0	0.7
Assumed Specific Gravity =			2.65	% Saturation:	100.0
77	47			5.5	-2

Cell Pressure (psi)	Back Pressure (Top)	Back Pressure (Bottom)	Pressure Difference (psi)	Top Burette (cc)	Bottom Burette (cc)	Date&Time Start/Stop	h (cm) h_0/h_1	Q (cc) Top/Bott.	Test Time, t (sec)	Coefficient of Permeability, k (cm/sec)	Remarks (L/A)
77	48	46	2	0	24	6/25 12:56:00	27.48	3.6		1.9E-07	3.80492
				3.6	20.4	6/25 17:06:00	19.236	3.6	15000		29.58628189
77	48	46	2	0	24	6/25 17:10:00	27.48	3.2		2.0E-07	3.80492
				3.2	20.8	6/25 20:35:00	20.152	3.2	12300		29.58628189
77	48	46	2	0	24	6/26 10:00:00	27.48	3.7		1.9E-07	3.80492
				3.7	20.3	6/26 14:11:00	19.007	3.7	15060		29.58628189
77	48	46	2	0	24	6/26 14:15:00	27.48	4.3		2.0E-07	3.80492
				4.3	19.7	6/26 19:00:00	17.633	4.3	17100		29.58628189



2.0E-07 (Average)

Eq'n per 10.2.2, Note 17:

$$k = \frac{aL}{2At} \ln \frac{h_o}{h_i}$$

Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY - ASTM D5084 - METHOD C

Job Name: Chiquita Canyon LF Job No.: SO21.1156.00 Location: LPC-003 By:LD

Sample Type: ☐ Remolded @ 93% Max Density

Soil Type: Silty Clay

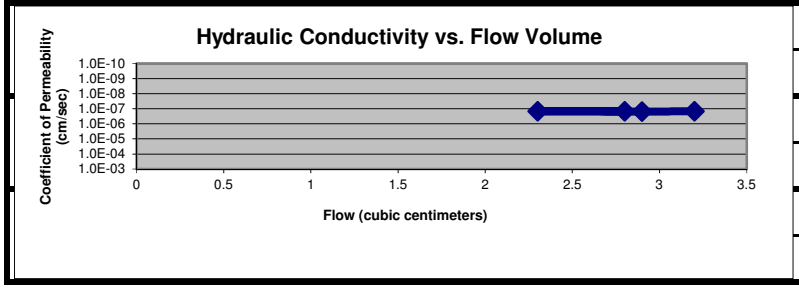
Permeant Liquid: De-aired water

Ini. Height (in.) :	1.500	***Final***	
Ini. Diam. (in.) :	2.41	Height (in.) :	1.513
Wet + Tare (grams):	225.8	Diam. (in.) :	2.423
Tare (grams) :	0	Wet Weight (gr.):	235.4
Water Content (%) :	16.0	Water Content (%):	20.9
Dry Density (pcf):	108.4	Dry Density (pcf):	106.3
Headwater Tube Area:	0.874 cm^2	Tailwater Tube Area:	0.874 cm^2
Hydraulic gradient:	6.4		

Temperature: 20 °C Viscosity Correction (R_T): 1.00

Cell Pressure	Back P.	Pore P.	***Saturation***	Cell Burette	Sample Burette
10	7			-3	7.2
20	17			-0.8	2.7
30	27			-0.2	1.6
40	37			-0.4	0.4
50	47			0.2	0.4
			Assumed Specific Gravity =	2.65	% Saturation: 100.0
77	47			5.6	-4.3

Cell Pressure (psi)	Back Pressure (Top)	Back Pressure (Bottom)	Pressure Difference (psi)	Top Burette (cc)	Bottom Burette (cc)	Date&Time Start/Stop	h (cm) h_0/h_1	Q (cc) Top/Bott.	Test Time, t (sec)	Coefficient of Permeability, k (cm/sec)	Remarks (L/A)
77	48	46	2	0	24	6/25 12:56:00	27.48	2.8		1.5E-07	3.84302
				2.8	21.2	6/25 17:06:00	21.068	2.8	15000		29.73335515
77	48	46	2	0	24	6/25 17:10:00	27.48	2.3		1.5E-07	3.84302
				2.3	21.7	6/25 20:35:00	22.213	2.3	12300		29.73335515
77	48	46	2	0	24	6/26 10:00:00	27.48	2.9		1.5E-07	3.84302
				2.9	21.1	6/26 14:11:00	20.839	2.9	15060		29.73335515
77	48	46	2	0	24	6/26 14:15:00	27.48	3.2		1.5E-07	3.84302
				3.2	20.8	6/26 19:00:00	20.152	3.2	17100		29.73335515



1.5E-07
(Average)

Eq'n per 10.2.2, Note 17:

$$k = \frac{aL}{2At} \ln \frac{h_o}{h_i}$$

Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY - ASTM D5084 - METHOD C

Job Name: Chiquita Canyon LF Job No.: SO21.1156.00 Location: LP-1 # 2007 By:LD

Sample Type: ☐ Undisturbed

Soil Type: Silty Clay

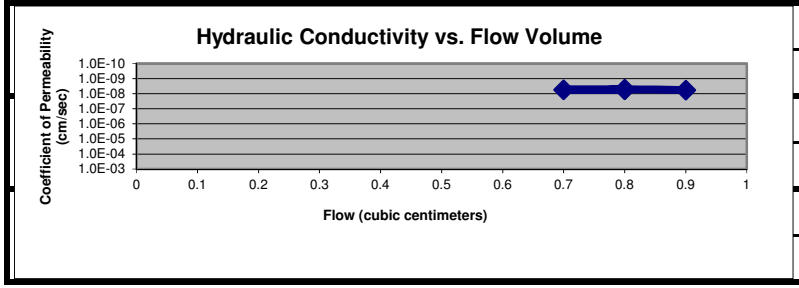
Permeant Liquid: De-aired water

Ini. Height (in.) :	2.984	***Final***	
Ini. Diam. (in.) :	2.861	Height (in.) :	2.955
Wet + Tare (grams):	658.6	Diam. (in.) :	2.851
Tare (grams) :	0	Wet Weight (gr.):	666.7
Water Content (%) :	15.6	Water Content (%):	17.0
Dry Density (pcf):	113.2	Dry Density (pcf):	115.1
Headwater Tube Area:	0.874 cm^2	Tailwater Tube Area:	0.874 cm^2
Hydraulic gradient:	3.3		

Temperature: 20 °C Viscosity Correction (R_T): 1.00

Cell Pressure	Back P.	Pore P.	***Saturation***	Cell Burette	Sample Burette
10	7			-3.7	8.5
20	17			-2.2	5.5
30	27			-0.9	1.5
40	37			0.1	0.9
50	47			-0.1	1.1
Assumed Specific Gravity =			2.65	% Saturation:	100.0
87	47			14.2	-12.9

Cell Pressure (psi)	Back Pressure (Top)	Back Pressure (Bottom)	Pressure Difference (psi)	Top Burette (cc)	Bottom Burette (cc)	Date&Time Start/Stop	h (cm) h_0/h_1	Q (cc) Top/Bott.	Test Time, t (sec)	Coefficient of Permeability, k (cm/sec)	Remarks (L/A)
87	48	46	4	0	24	8/4 10:57:00	27.48	0.9		5.7E-09	7.5057
				0.9	23.1	8/5 12:50:00	25.419	0.9	93180		41.16532273
87	48	46	4	0.9	23.1	8/5 12:50:00	25.419	0.8		5.1E-09	7.5057
				1.7	22.3	8/6 14:37:00	23.587	0.8	92820		41.16532273
87	48	46	4	1.7	22.3	8/6 14:37:00	23.587	0.7		5.4E-09	7.5057
				2.4	21.5	8/7 13:37:00	21.8695	0.8	82800		41.16532273
87	48	46	4	2.4	21.5	8/7 13:37:00	21.8695	0.8		5.6E-09	7.5057
				3.2	20.8	8/8 12:00:00	20.152	0.7	80580		41.16532273



5.5E-09 (Average)

Eq'n per 10.2.2, Note 17:

$$k = \frac{aL}{2At} ln \frac{h_o}{h_i}$$

Geo-Logic ASSOCIATES

HYDRAULIC CONDUCTIVITY - ASTM D5084 - METHOD C

Job Name: Chiquita Canyon LF Job No.: SO21.1156.00 Location: LP-2 # 2017 By:LD

Sample Type: ☐ Undisturbed

Soil Type: Silty Clay

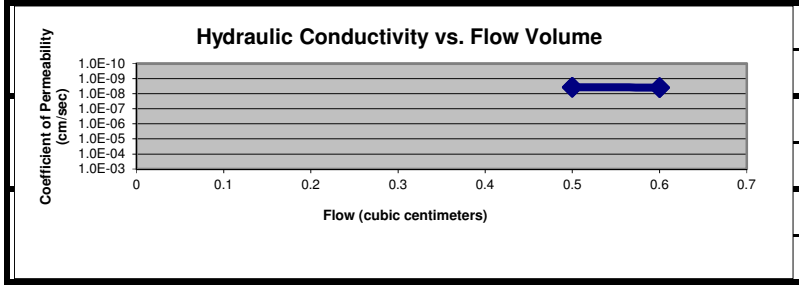
Permeant Liquid: De-aired water

Ini. Height (in.) :	3.020	***Final***	
Ini. Diam. (in.) :	2.861	Height (in.) :	2.976
Wet + Tare (grams):	658.9	Diam. (in.) :	2.832
Tare (grams) :	0	Wet Weight (gr.):	659.0
Water Content (%) :	16.8	Water Content (%):	16.8
Dry Density (pcf):	110.8	Dry Density (pcf):	114.7
Headwater Tube Area:	0.874 cm^2	Tailwater Tube Area:	0.874 cm^2
Hydraulic gradient:	3.4		

Temperature: 20 °C Viscosity Correction (R_T): 1.00

Cell Pressure	Back P.	Pore P.	***Saturation***	Cell Burette	Sample Burette
10	7			-1	3.6
20	17			-1.9	1.3
30	27			-0.6	1
40	37			-0.1	0.7
50	47			-0.2	1
Assumed Specific Gravity =			2.65	% Saturation:	100.0
87	47			12.9	-11.9

Cell Pressure (psi)	Back Pressure (Top)	Back Pressure (Bottom)	Pressure Difference (psi)	Top Burette (cc)	Bottom Burette (cc)	Date&Time Start/Stop	h (cm) h_0/h_1	Q (cc) Top/Bott.	Test Time, t (sec)	Coefficient of Permeability, k (cm/sec)	Remarks (L/A)
87	48	46	4	0	24	8/4 10:57:00	27.48	0.6		3.9E-09	7.55904
				0.6	23.4	8/5 12:50:00	26.106	0.6	93180		40.61847257
87	48	46	4	0.6	23.4	8/5 12:50:00	26.106	0.6		3.9E-09	7.55904
				1.2	22.8	8/6 14:37:00	24.732	0.6	92820		40.61847257
87	48	46	4	1.2	22.8	8/6 14:37:00	24.732	0.5		3.7E-09	7.55904
				1.7	22.3	8/7 13:37:00	23.587	0.5	82800		40.61847257
87	48	46	4	1.7	22.3	8/7 13:37:00	23.587	0.5		3.8E-09	7.55904
				2.2	21.8	8/8 12:00:00	22.442	0.5	80580		40.61847257



3.8E-09 (Average)

Eq'n per 10.2.2, Note 17:

$$k = \frac{aL}{2At} \ln \frac{h_o}{h_i}$$

Geo-Logic ASSOCIATES

Appendix B-5

Geotechnical Report

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

REPORT OF GEOTECHNICAL CQA SERVICES

CHIQUITA CANYON LANDFILL

CELL 8B EXPANSION

29201 HENRY MAYO DRIVE

CASTAIC, CALIFORNIA

Prepared For
Chiquita Canyon Landfill
29201 Henry Mayo Drive
Castaic, California 91384

Prepared By
R. T. Frankian & Associates
26027 Huntington Lane, Unit A
Santa Clarita, California 91355

Job No. 2002-036-202
February 14, 2024

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

February 14, 2024

Chiquita Canyon Landfill
29201 Henry Mayo Drive
Castaic, California 91384

Job No. 2002-036-204

Attention: Mr. Randal Bodnar

Subject: Report of Geotechnical CQA Services
Chiquita Canyon Landfill
Cell 8B Expansion
29201 Henry Mayo Drive
Castaic, California

Ladies/Gentlemen:

We are pleased to submit our "Report of Geotechnical CQA Services, Chiquita Canyon Landfill, Cell 8B Expansion, Castaic, California" for the site. This report summarizes the results of our observation and testing services performed during the grading for the Cell 8B Expansion.

Respectfully submitted,
R. T. FRANKIAN & ASSOCIATES

REGISTERED PROFESSIONAL ENGINEER
ALAN W. RASPLICKA
No. GE 2558
GEOTECHNICAL
STATE OF CALIFORNIA

by: Scott David Rudd
Field Supervisor

by: Alan W. Rasplicka
Principal Geotechnical Engineer

PROFESSIONAL GEOLOGIST
Expires 12/2024
Glenn A. Lauman
No. 1955
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

and: Glenn A. Lauman
Principal Engineering Geologist

SDR/AWR/GAL/jh

PDF Distribution via Email:
– Waste Connections, Inc., Attn: Mr. Steve Cassulo, Mr. Marcus Herzog, Mr. Randall Bodner
– Geo-Logic Associates, Attn: Mr. Robert Johnson
– Tetra Tech, Attn: Mr. Caleb Moore, Ms. Julie Hauenstein

Chiquita Canyon Landfill
February 14, 2024
2002-036-204

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Chiquita Canyon Landfill
February 14, 2024
2002-036-204

REPORT OF GEOTECHNICAL 8B CQA SERVICES

CHIQUITA CANYON LANDFILL

CELL 8B EXPANSION

29201 HENRY MAYO DRIVE

CASTAIC, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of geotechnical Construction Quality Assurance (CQA) observation and testing services provided by R. T. Frankian & Associates (RTF&A) during grading for the Cell 8B Expansion (the cell) at the Chiquita Canyon Landfill (CCL). The work consisted of processing the surface of previously placed engineered fill, excavation of native earth materials, and the placement of engineered compacted fill to achieve composite liner subgrade. The geotechncial CQA activities performed by RTF&A included geologic mapping of removal excavations and observation and testing of earth materials during grading. Observation and testing of the liner systems during construction was performed by Geo-Logic Associates (GLA) which included acceptance of the prepared liner soil subgrade prior to liner installation.

The earthwork for the project was performed by C.A. Rasmussen, Inc. (CAR), grading contractor, and included excavation and placement of compacted earth. Engineering support services and construction management for the project were provided by Tetra Tech, the project landfill engineer. RTF&A provided geotechnical construction quality assurance in accordance with the Cell 8B Grading Plan, dated March 2023, the Cell 8B Liner Construction Plan, dated

March 2023, revision dated December 20, 2023 (Delta 7), the Project Specifictions (Tetra Tech, 2021), and the Cell 8B Grading Plan Review, dated July 8, 2022 (RTF&A, 2022a); the plans and specifications were prepared by Tetra Tech. The construction plans are collectivly referred to as "the project plans" herein.

Survey control to support the grading and construction activities was performed by CAR, with field verification by Vertex Survey, Inc. (Vertex). Survey control generally included the surveying of removal excavations and also included providing engineering stakes and point information indicating line and grade during the work activities. Engineering geologic services, observation of site grading, and testing of compacted fill soils were provided by representatives of RTF&A and were dependent on engineering stakes and the point information provided by CAR and Vertex.

2.0 GRADING OPERATIONS

The majority of the area within the Cell 8B liner footprint was previously graded during the development of the Cell 8A expansion. The grading performed at that time generally consisted of the removal of unsuitable alluvial and colluvial materials, existing artificial fill and landslide debris, where encountered, which were replaced with engineered fill to establish a suitable foundation for construction of the Cell 8A liner. At the completion of that grading, the footprint of the Cell 8B liner was entirely underlain by engineered fill. The results of the Cell 8A liner grading are contained within our "Report of Geotechnical CQA Services, Chiquita Canyon Landfill, Cell 8A Expansion," dated November 16, 2022 (RTF&A 2022b). The grading performed for Cell 8B under the scope of this report included the removal and/or processing of the upper surface of the previously placed engineered fill, and the placement of additional engineered fill to establish a suitable foundation for construction of the Cell 8B liner.

3.0 GEOLOGY

Geologic observation and mapping were performed during the site grading to observe, document, and when necessary provide recommendations to address unsuitable or adverse geologic conditions encountered during grading. The areas of removal were observed by the Project Engineering Geologist and/or Project Staff Geologist to confirm that suitable subgrade conditions were achieved prior to engineered fill placement.

3.1 REGIONAL GEOLOGY

Chiquita Canyon Landfill is located at the eastern end of the Ventura basin within the Transverse Ranges geomorphic province of California. The Ventura basin consists of a narrow, elongate sedimentary trough extending from the Santa Barbara Channel on the west to the San Gabriel fault on the east. The axis of the trough trends east-west, reflecting the overall east-west trend of the Transverse Ranges, and generally coincides with the Santa Clara River Valley and Santa Barbara Channel. The Ventura basin has been an area of subsidence and sediment accumulation since the beginning of the Tertiary period, with the present trough-like form developing near the beginning of the Miocene epoch (Winterer and Durham, 1962).

The structure of the basin is defined as a highly folded "synclinorium" formed by north-south compressional forces (Kew, 1924) and containing a maximum 50,000± feet of marine and nonmarine Tertiary through Quaternary age sediments (Bailey and Jahns, 1954). Two main periods of general deformation of the Ventura basin are indicated by the regional geologic structure: one in middle to late Miocene (represented by deposition of the Modelo Formation) and the other during the Pleistocene epoch, after deposition of the Plio-Pleistocene Saugus Formation (Kew, 1924; Winterer and Durham, 1962; Yeats et al., 1994). The flanks of the Ventura basin synclinorium are broken by a series of large reverse/thrust faults including the Santa Susana and Oak Ridge faults on the southern flank, and the Red Mountain and San Cayetano faults on the northern flank (Bailey and Jahns, 1954; Yeats et al., 1994). The San Gabriel fault, the dominant

geologic feature in the Santa Clarita Valley, forms the eastern Ventura basin boundary, and separates the Ventura basin from the structurally similar Soledad basin.

Sedimentary rock units comprising the eastern Ventura basin include approximately 2,000 feet of undifferentiated middle to late Eocene age rocks; 1,000± feet of the middle Miocene age Topanga Formation; 5,000± feet of the late Miocene age Modelo Formation; 4,000± feet of the late Miocene to early Pliocene age Towsley Formation; 5,000± feet of the Pliocene age Pico Formation; and 7,000± feet of the Plio-Pleistocene Saugus Formation (Winterer and Durham, 1962). The undifferentiated Eocene units and the Topanga, Modelo, Towsley, and Pico Formations are composed of marine sediments; the Saugus Formation is composed of interfingering shallow-water marine, brackish water, and nonmarine units (Kew, 1924; Winterer and Durham, 1962). These Tertiary period rocks rest unconformably on pre-Cretaceous age metamorphic and igneous basement rocks of the San Gabriel Mountains.

Within the Santa Clarita Valley, the primary sedimentary rock formations are the Pico and Saugus Formations. The Pico Formation outcrops along the northern flanks of the Santa Susana Mountains and in the Chiquita Canyon-Val Verde area. The Saugus Formation overlies the Pico Formation and comprises most of the hills of the valley between Newhall and Castaic. These two formations have been deformed into a series of closely spaced anticlines and synclines whose moderately to steeply dipping flanks are broken by the Holser fault and cut off diagonally by the San Gabriel fault (Bailey and Jahns, 1954). Other geologic materials exposed within the valley include Pleistocene fanglomerate deposits of the Pacoima Formation (Oakeshott, 1958), exposed in the southern portion of the valley, sporadic remnant terrace deposits of Pleistocene age, and Holocene alluvium mantling the valley floor.

The project site is situated on the northerly limb of the Ventura basin "synclinorium" and located within a region of high seismic activity. Faults in the area that are currently considered to be active by the California Geological Survey (CGS) include the San Gabriel Fault (~ 3.5 miles northeast), San Cayetano Fault (~5 miles west), the northern extent of the Northridge Blind Thrust Fault (~1.8 miles south) responsible for the 1994 Northridge Earthquake, the San Fernando Fault

segment of the Sierra Madre Fault Zone responsible for the 1971 San Fernando Earthquake, and the San Andreas Fault (~20 miles northeast).

Faults in the area that are currently considered potentially active by the CGS include the Holser, Del Valle, Oak Ridge faults, and the Santa Susana section of the Sierra Madre Fault Zone.

The Holser fault is a regional structure and may branch from the active San Gabriel fault (Winterer and Durham, 1962). Data compiled from oil company well logs indicate that the Holser fault is a south-dipping reverse fault with approximately 2,200 feet of dip-slip separation within the area of the Castaic Junction oil field (Stitt, 1986). Studies completed by Allen E. Seward Engineering Geology (Seward, 1986 and 1993) examined the Holser fault for Holocene activity in the Hasley Industrial Park, approximately one mile northeast of the project site. Seward (1986) concluded that while deformation of the fault has clearly affected Quaternary sediments of the Saugus Formation, no offset has occurred in the overlying Holocene sediments.

The Del Valle fault trends eastward from the Los Angeles-Ventura County Line for nearly two miles, turning southward before crossing San Martinez Grande Canyon near its confluence with the Santa Clara River. According to Winterer and Durham (1962), the eastward-trending segment of the Del Valle fault consists of a south-dipping reverse fault; the southward-trending segment is considered a tear (strike-slip) fault. The age of the fault is estimated to be late Quaternary (Jennings and Bryant, 2010). Based on published mapping of Dibblee (1993) the southerly terminus of the Del Valle fault lies just northwest of State Route 126, approximately 1¼ miles southwest of the project site.

3.2 LOCAL GEOLOGY

Cell 8B is located in the southwestern portion of CCL. It is bounded on the north by existing Cell 6, on the east by the existing Primary Canyon cell and Canyon D cell, on the south by the partially developed main canyon, and on the west by Cell 8A. The location of Cell 8B is shown on the attached As-Built Geotechnical Map (Figure 1).

Field exploration was previously conducted within the project site to develop and refine understanding of the geologic surface and subsurface conditions within the Cell 8B footprint.

RTF&A previously conducted subsurface exploration within the project site for our South Main Canyon Geotechnical Investigation in 2009 (RTF&A, 2009), for the 2010 Master Plan Revision (MPR) Geotechnical Investigation (RTF&A, 2012a), in 2014 for the Cell 6 investigation (RTF&A, 2014a), and in 2018 for the County regulatory response (RTF&A, 2018f), Additionally, Geologic Associates (GLA) conducted subsurface investigations within and adjacent to the project site in 2005 (GLA, 2005 and 2005b).

3.2.1 GEOLOGIC UNITS

The soil and bedrock materials encountered within the project site consist of certified engineered fill, artificial fill, alluvium, colluvium, landslide debris, and bedrock of the Saugus Formation. The various geologic units are depicted on the As-Built Geotechnical Map (Figure 1). A description of each unit is presented as follows:

Certified Engineered Fill (cef): Compacted certified engineered fill consists mainly of material derived from the Saugus Formation, colluvium, and local alluvial drainages generally consisting of silt and sand mixtures.

Artificial Fill (af): Artificial fill materials were generated as a result of past landfill operations for the site and were gererally located in the areas of the existing landfill access road along the eastern side of Cell 8B. The artificial fill materials mainly consist of silt and sand mixtures.

Artificial Fill: Refuse (afr): Refuse fill materials were previously placed within existing working cells located to the west, north and east of Cell 8B during landfill operations.

Alluvium: These Holocene age materials consist of sand and silty sand with scattered gravel and cobbles derived from local bedrock exposures. The alluvium increases in density with depth and locally has been considered appropriate to support engineered fill.

Colluvium: Colluvial deposits mantle the natural slopes on the project site. These materials typically consist of loose sand/silt mixtures with scattered cobbles and boulders. Colluvium was not delineated on the Geotechnical Map but is present on natural slopes outside of the liner footprint.

Landslide Debris (Qls): A total of two previously mapped landslides, designated as Qls-E and Qls-F, were removed from the Cell 8B liner footprint during the previous grading for the Cell 8A liner. All slide debris within the limits of Cell 8B was entirely removed. Upper portions of the two landslides remain on the graded slopes east of Cell 8B. Materials designated as landslide debris ranged from loose sand and silt derived from colluvium and weathered rock from Saugus Formation sandstone and siltstone.

Saugus Formation (QTs): The Plio-Pleistocene age Saugus Formation underlies the project site. These deposits typically consist of poorly to moderately well bedded, light gray to brownish gray, very fine- to coarse-grained sandstone, silty sandstone, and pebbly sandstone with greenish gray siltstone. Sandstone units range from thinly laminated to thick, hard, cliff forming beds. The siltstone units are typically massive.

3.2.2 GEOLOGIC STRUCTURE

The general geologic structure of the site is controlled by two, broad easterly-plunging folds. Those folds include an anticline whose axis strikes south of Cell 8B, while a syncline's axis stirkes to the north. Mapping during Cell 8A grading identified two flexural folds between the broad folds, both plunging eastward and dying out toward Cell 8B with little to no expression of the folds being exhibited in outcrops east of Cell 8B. Bedding observed in the Saugus Formation within and surrounding Cell 8B typically strikes northwest, dipping from 18 to 26 degrees east.

3.3 PRE-GRADED GEOLOGIC CONDITIONS

The site is located on the north side of a north-south trending ridge in what originally was a natural drainage on the eastern portion of Cell 8A. Engineered fill materials, placed during Cell 8A construction extended into the eastern portions of Cell 8B. As previously mentioned, two mapped landslides, designated as Qls-E and Qls-F, were partially located within the limits of the Cell 8B liner footprint prior to the grading that was performed for the Cell 8A liner. All landslide debris was removed within the limits of grading during Cell 8A's construction. During Cell 8B

grading and construction the remnants of any landslide debris within Cell 8B was removed. However, and as previously discussed, portions of the two landslides remain in the natural slope areas east of the cell.

3.4 AS-BUILT GEOLOGIC CONDITIONS

The grading for Cell 8B has resulted in west-facing graded slopes that descend to the boundary of the Cell 8A liner. The slope attains a maximum height of approxiately 50-feet within the liner footprint. As-graded slope topography is indicated on the attached As-Built Geotechnical Map (Figure 1).

The Project Engineering Geologist and/or Project Staff Geologist undertook geologic mapping during project grading. Bedding observed in the Saugus Formation strikes northwest and generally dips 20 to 30 degrees toward the northeast.

The as-built geologic units and geologic structural elements are indicated on the attached As-Built Geotechnical Map (Figure 1). The graded slopes within the limits of the liner expose recently certified engineered fill placed under the scope of this report. The Cell 8B development included the grading of the liner subgrade. The map reflects as-built geologic conditions prior to construction of the low permeable material on the floor of the cell.

4.0 GRADING

RTF&A performed observation and testing of the earth materials placed as part of the site grading in general accordance with the with the Cell 8B Grading Plan Review, dated July 8, 2022 (RTF&A, 2022a), the Project Specifications (Tetra, 2021), and the project plans. Prior to the placement of fill materials, unsuitable materials present within the liner footprint were removed to expose previously placed competent engineered fill.

4.1 GRADING REMOVALS

The Project Specifications (Tetra, 2021) stipulate that unsuitable material removal include; alluvial deposits (Qal), landslide debris (Qls), and undocumented fill soils (af), within the footprint of the proposed cell liner. Those unsuitable earth materials were to be removed and replaced as certified engineered fill. The previous grading performed during the development of the Cell 8A consisted of the removal of existing artificial fill and landslide debris, as well as unsuitable alluvial materials, where encountered. The removals performed within the Cell 8B liner footprint included the removal and/or processing of the upper surface of the previously placed fill to expose competent engineered fill.

The areas of removal and excavation were observed by the Project Engineering Geologist and/or Project Staff Geologist to confirm that suitable subgrade conditions were achieved prior to engineered fill placement. Significant organic material (vegetation) and deleterious debris present on the site at the time of excavation were removed. The exposed bottom was processed by scarifing to a depth of about 6 to 12 inches, watering to approximately optimum moisture content or air-drying, wherever required, thoroughly mixing in place, and then compacting.

4.2 ENGINEERED FILL PLACEMENT

On-site soils were used to construct the compacted fill and primarily consisted of silty sand and sandy silt derived from removals that were performed for the site. A brief description and a classification of each soil type are presented in the attached Compaction Test Data (Table 2). The method of compaction was to spread the fill soil in horizontal lifts not greater than 8 inches in uncompacted thickness. Each lift was then adjusted to near the optimum moisture content of the soil and compacted. Fill soils were required to be compacted to attain at least 90 percent of the maximum dry density of the soil as determined by American Society for Testing and Materials (ASTM) Maximum Density Test Method D1557 in accordance with the Project Specifications (Tetra, 2021). Fill soils placed at depths greater than 40 feet below proposed finish grade were required to be compacted to a minimum of 93 percent of the maximum dry density of the soil in

accordance with the project plans. Where observed, the placement of the fill was found to be consistent with these recommendations.

The field densities obtained in each of the tests performed were found to be equal to or in excess of the required compaction for the maximum dry density of the soil. In any areas where tests yielded results less than the required compaction standard, the fill was reworked until acceptable results were obtained.

4.3 GRADING OBSERVATION AND TESTING

The limits of compacted fill placed under the scope of this report have been indicated on the attached As-Built Geotechnical Map (Figure 1). The relative compaction of the engineered fill placed within the liner area was evaluated by field and laboratory testing and field observations completed throughout the course of construction. Fill materials within those areas were placed and compacted under the observation of our field representatives. Field density tests were performed at frequent intervals to determine the degree of compaction attained in accordance with the project plans. At least one field density determination was made for each 1,000 cubic yards of fill placed. With the exception of the final series of tests, each field density test was taken at a depth of about 6 to 12 inches below the then-existing working surface of the fill.

The Sand Cone Method (ASTM Test D1556) and the Nuclear Density Test Method (ASTM Test D6938) were utilized for the field density determinations. Field density tests were taken at the approximate locations shown on the As-Built Geotechnical Map (Figure 1). The test results are shown on the attached Field Density Test Results (Table 1). This tabulation includes an estimate of the elevation and coordinates at which each test was performed.

The fill material was placed by Caterpillar 651 earthmovers or a Caterpillar D-8 dozer and were then moistened, as required, by a water pull. After placement, the soil was thoroughly mixed and then compacted in place by either a Caterpillar 834 rubber-tired compactor, a Caterpillar D-8 or by wheel-rolling with loaded earthmovers.

Subrains were installed during the previous grading performed during the development of the Cell 8A expansion. No new subdrains were installed during the grading performed during the scope of this report.

5.0 LABORATORY TESTING

Laboratory testing was performed on samples of onsite soils that were used during grading. The laboratory testing included maximum dry density determinations, gradation analysis, expansion index tests and direct shear tests. The samples were obtained in accordance with the Project Specifications (Tetra, 2021) and/or the project plans and were performed using ASTM test methods.

Maximum Density Determinations: Maximum dry density determinations were performed for soils placed during grading at the site. The maximum dry density and optimum moisture contents were determined in our laboratory in accordance with ASTM Test Method D1557. The results of the tests are shown in the attached tabulation entitled “Laboratory Compaction Test Data” (Table 2). The optimum moisture contents are presented in percent of dry weight and the maximum dry densities are in pounds per cubic foot (pcf). The double-letter soil classifications that follow the soil descriptions in accordance with the Uniform Soil Classification System and ASTM Standard Practice D2488.

Gradation Analysis: Grain size distributions were determined for bulk samples of soils placed as compacted fill during grading. The gradation was determined in accordance with ASTM Test Method D6913, the current ASTM test method. The results of the tests are indicated on the attached Gradation Test Results (Table 3).

Direct Shear Tests: Direct Shear tests were performed for bulk samples of soils placed as compacted fill during grading. The shear tests were performed in accordance with ASTM Test Method D3080. The bulk samples were remolded in the laboratory to at least 90 percent of the maximum dry density of the soil prior to testing. The results of the tests are presented in the attached Summary of Shear Test Data (Figures 2.1 through 2.2).

Expansion Index Tests: Expansion Index tests were performed on bulk samples of compacted fill soils placed near prepared liner soil subgrade and were performed in accordance with ASTM Test Method D4829. The test results indicate that the fill soils within the areas of prepared soil subgrade can be classified as having a very low potential for expansion. The results of the tests are presented in that attached tabulation entitled "Laboratory Expansion Index Test Data" (Table 4).

6.0 PROJECT DOCUMENTATION

Written daily Field Reports detailing construction activities for each day were prepared by geotechnical CQA technicians for project management purposes. Copies of the Field Reports prepared during the course of grading were provided to the owner. Progress Coordination Meetings were conducted by the Landfill Designer and Construction Manager, Tetra Tech, on a weekly basis throughout the grading period. Documentation related to these Coordination Meetings was prepared by the Tetra Tech as part of the project documentation.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Geotechncial CQA observation and testing services were provided by RTF&A during grading performed under the scope of this report for the cell. The geotechnical activities performed included geologic mapping of excavation and the observation and testing of earth materials placed during grading. Liner system CQA during construction was performed by Geo-Logic Associates (GLA) and included inspection of prepared liner soil subgrades and observation and testing geosynthetic liner materials.

7.1 GRADING AND ENGINEERED FILL

Laboratory and field testing was performed in general accordance with the minimum frequency identified in the Project Specifications (Tetra, 2021) and the project plans. Field density tests were accepted only where the tests indicated that the required compaction standard had been

obtained. Fill soils placed within the liner footprint were required to be compacted to attain at least 90 percent of the maximum dry density of the soil as determined in accordance with ASTM Maximum Density Test Method D1557. Fill soils placed at depths greater than 40 feet below proposed finish grade were required to be compacted to a minimum of 93 percent of the maximum dry density of the soil. Any areas where tests were not acceptable were reworked by the grading contractor until acceptable test results were obtained.

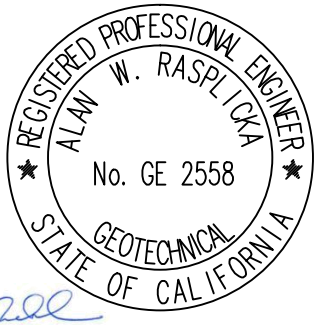
Based on our observations and tests, it is concluded that the subgrade was properly prepared, as required, prior to engineered fill construction. Based on the observations and tests completed during engineered fill placement, it is our opinion that accepted construction practices and testing procedures were followed and that observed fills were placed and compacted in general conformance with the project specifications and the project plans. The results of the geotechncial Construction Quality Assurance (CQA) undertaken indicate that the minimum project requirements for earthworks construction have been satisfied.

7.2 LIMITATIONS

This report has been prepared in accordancee with generally accepted geotechnical practices in this area at this time and makes no other warranties, either express or implied, as to the professional advice or data included in it. This report is based on the project as described and the data obtained in the field and the laboratory, or from referenced documents. This report has not been prepared for use by parties or projects other than those named or described herein.

-oOo-

Should you have any questions regarding this report, please do not hesitate to call our office.

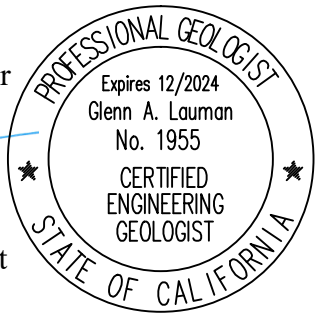


Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Scott David Rudd
Field Supervisor

and: Alan W. Rasplicka
Principal Geotechnical Engineer



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Principal Engineering Geologist

SDR/AWR/GAL/jh

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– Geo-Logic Associates, Attn: Mr. Robert Johnson
– Tetra Tech, Attn: Mr. Caleb Moore, Ms. Julie Hauenstein

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As-Built Geotechnical Map

Prepared For:

Chiquita Canyon Landfill

Cell 8B Expansion
29201 Henry Mayo Drive
Castaic, California

Scale:	Drawn By:	Checked By:
As-Shown	JH	SDR
Date: 2/14/2024	Figure 1	2002-036-204

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RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

SCALE: 1"=20'

50 25 0 50

SCALE: 1"=50'

EXPLANATION

- cef — Certified Engineered Fill
- af/afr — Artificial Fill/ Refuse
- Qls — Landslide Debris
- QTs — Saugus Formation
- — — Geologic Contacts Dashed Where Approximate
- 21 / 18 — Strike and Dip
- Strike and Dip - Concealed

APPROXIMATE LIMITS OF SLOPE REPAIR

APPROXIMATE LIMITS OF SLOPE REPAIR

APPROXIMATE LOCATION AND NUMBER OF FIELD DENSITY TEST

STORM DRAIN TO BE COMPLETED

APPROXIMATE LIMITS OF SLOPE REPAIR

af/afr

cef

Qls F

Qls E

QTs

18

21

26

DESCRIPTION: SUBGRADE AS-BUILT AND EXISTING LINER

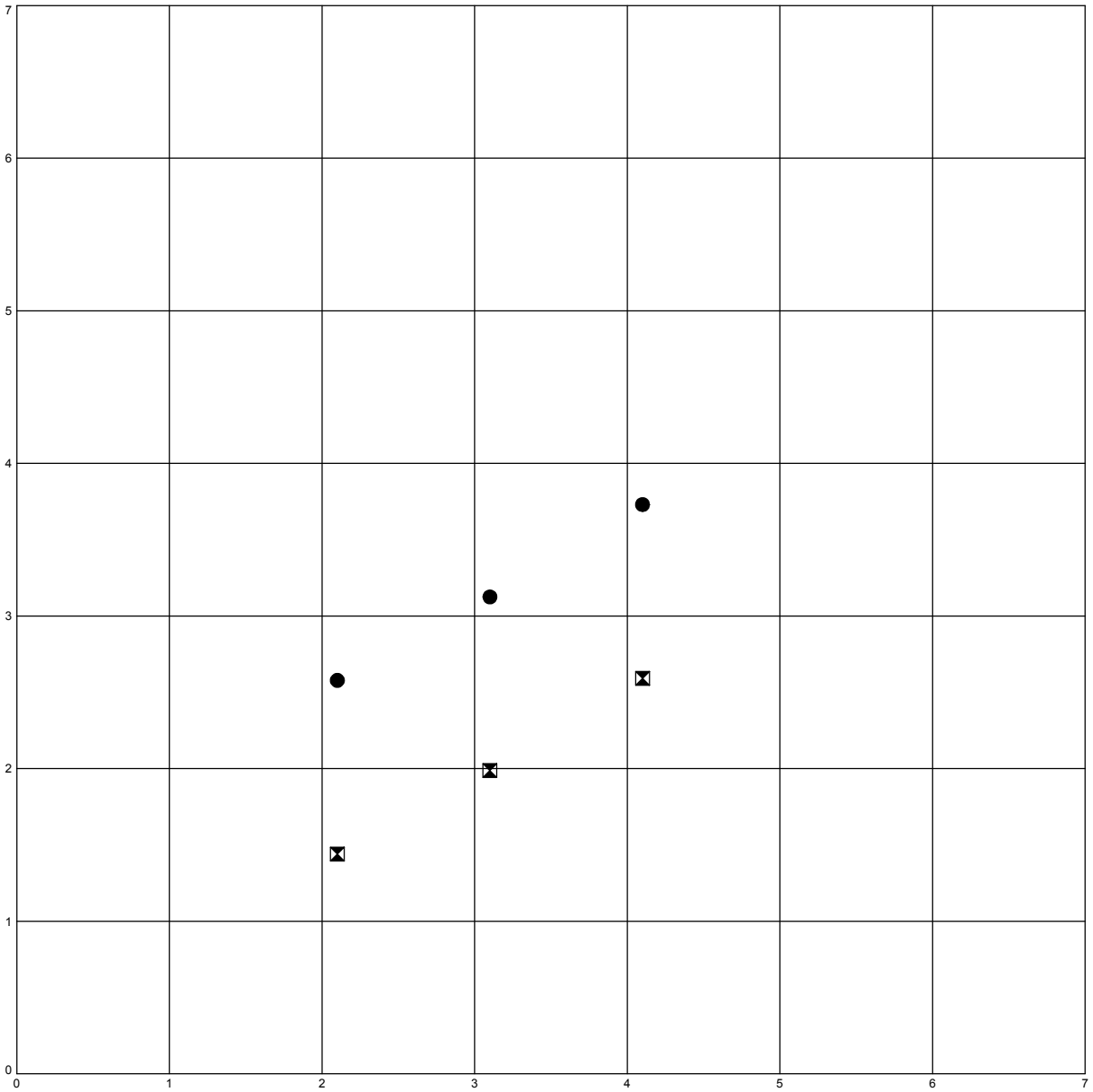
PROJECT: CLF CELL 8B
PREPARED BY: SR
TEXT FILE: 2024-01-30 SUBGRADE AS-BUILT.CSV

Vertex Survey, Inc.
28348 Constellation Road, Suite 800
Santa Clarita, CA 91355
Tel: 661-254-1928 Fax: 661-254-1929

VERTEX SURVEY INC.

SHEET 1 OF 1

SAVE DATE: 1/30/2024 ~ PLOT DATE: 1/30/2024 ~ FILE NAME: Z:\Projects\Chiquita Landfill\Cell 8B\Out\Cell 8B Expansion As-Built\2024-01-30 Subgrade As-Built.dwg



Specimen Identification		Classification
●	**S-21 PEAK**	SILTY SAND (SM): fine to medium with occasional coarse, medium brown
⊠	**S-21 SSR**	Remolded to 120.0 pcf @ 12.5% (Compacted Fill Soils)

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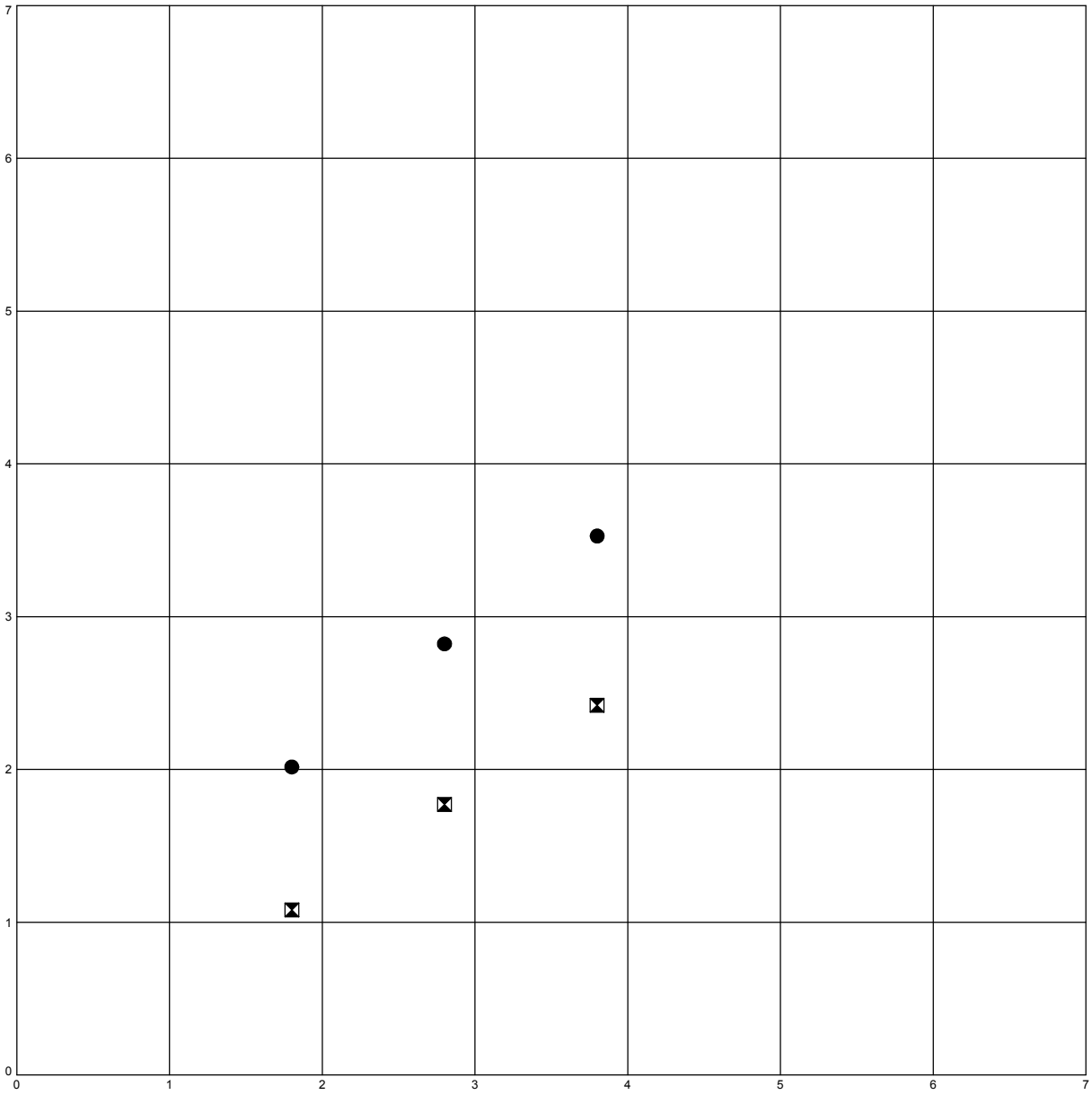
DIRECT SHEAR TEST

JOB NUMBER: 2002-036-204

Figure 2.1



Specimen Identification		Classification				
●	**S-24 PEAK**	SILTY SAND (SM): fine to medium, medium brown				
⊠	**S-24 SSR**	Remolded to 118.4 pcf @ 11.0% (Compacted Fill Soils)				

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DIRECT SHEAR TEST

JOB NUMBER: 2002-036-204

Figure 2.2

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
216	11/28/23	1978900	6366567	Fill Area Bottom	1044	118.2	12.2	131.0	90		Nuclear
217	11/28/23	1978970	6366635	Fill Area Bottom	1054	123.5	9.1	131.0	94		Nuclear
218	11/28/23	1978915	6366635	Fill Area Bottom	1050	124.4	8.7	131.0	95		Nuclear
221	11/28/23	1978445	6366485	Fill Area	1014	121.5	12.4	131.0	93		Nuclear
228	11/29/23	1978445	6366414	Fill Area	1018	119.1	9.9	128.0	93		Nuclear
229	11/30/23	1978461	6366517	Fill Area	1018	123.1	8.3	131.0	94		Nuclear
230	11/30/23	1978475	6366445	Fill Area	1020	129.3	14.0	131.0	97		Sand Cone
232	11/30/23	1978548	6366390	Fill Area	1022	123.3	8.2	131.0	93		Nuclear
234	11/30/23	1978440	6366605	Fill Area	1016	123.5	10.6	131.0	94		Nuclear
236	12/01/23	1978510	6366450	Fill Area	1024	120.3	11.4	129.5	93		Nuclear
244	12/02/23	1978460	6366551	Fill Area	1024	119.3	10.2	126.0	95		Nuclear
245	12/02/23	1978490	6366405	Fill Area	1026	119.7	11.4	126.0	95		Sand Cone
246	12/02/23	1978600	6366400	Fill Area	1026	113.9	9.0	126.0	90		Nuclear
250	12/02/23	1978587	6366435	Fill Area	1026	116.0	9.8	126.0	92		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
251	12/02/23	1978490	6366435	Fill Area	1024	121.9	9.6	126.0	97		Nuclear
254	12/04/23	1978485	6366485	Fill Area	1028	120.5	8.0	131.0	92		Nuclear
258	12/05/23	1978620	6366450	Fill Area	1028	123.5	8.9	131.0	94		Nuclear
259	12/05/23	1978525	6366502	Fill Area	1028	122.8	10.2	131.0	94		Nuclear
260	12/05/23	1978445	6366450	Fill Area	1030	125.9	8.2	131.0	96		Sand Cone
261	12/05/23	1978481	6366498	Fill Area	1030	122.7	9.0	131.0	94		Nuclear
262	12/05/23	1978685	6366405	Fill Area	1032	119.2	9.9	131.0	91		Nuclear
264	12/05/23	1978680	6366480	Fill Area	1032	127.9	9.3	131.0	98		Nuclear
265	12/05/23	1978585	6366485	Fill Area	1031	123.5	9.8	131.0	94		Nuclear
269	12/06/23	1978475	6366520	Fill Area	1030	123.1	11.9	131.0	94		Nuclear
270	12/06/23	1978706	6366430	Fill Area	1034	127.5	9.8	131.0	97		Sand Cone
271	12/06/23	1978600	6366455	Fill Area	1033	124.3	9.3	131.0	95		Nuclear
275	12/07/23	1978752	6366445	Fill Area	1037	117.8	11.0	131.0	90		Nuclear
276	12/07/23	1978655	6366420	Fill Area	1036	120.7	12.6	131.0	92		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
277	12/07/23	1978562	6366415	Fill Area	1035	119.5	8.9	131.0	91		Nuclear
278	12/07/23	1978470	6366435	Fill Area	1031	118.8	9.2	131.0	91		Nuclear
279F	12/07/23	1978435	6366495	Fill Area	1036	116.7	6.0	131.0	89	279R	Nuclear
279R	12/07/23	1978435	6366495	Fill Area	1036	118.6	9.0	131.0	91		Nuclear
286	12/08/23	1978433	6366493	Fill Area	1036	122.2	10.2	131.0	93		Nuclear
287	12/08/23	1978435	6366478	Fill Area	1036	121.3	11.7	131.0	93		Nuclear
290	12/08/23	1978513	6366442	Fill Area	1038	118.3	12.0	131.0	90		Nuclear
291	12/08/23	1978494	6366444	Fill Area	1038	122.6	9.6	131.0	94		Nuclear
296	12/11/23	1978780	6366463	Fill Area	1043	119.6	10.7	131.0	91		Nuclear
297	12/11/23	1978724	6366463	Fill Area	1045	117.8	12.2	129.5	91		Nuclear
298	12/11/23	1978637	6366430	Fill Area	1043	117.1	10.9	129.5	90		Nuclear
299	12/11/23	1978645	6366457	Fill Area	1045	117.8	9.0	131.0	90		Nuclear
300	12/11/23	1978483	6366480	Fill Area	1043	118.7	8.4	131.0	91		Nuclear
301	12/11/23	1978447	6366560	Fill Area	1045	120.0	9.8	131.0	92		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
304	12/11/23	1978545	6366463	Fill Area	1047	119.0	9.6	131.0	91		Nuclear
305	12/11/23	1978460	6366478	Fill Area	1045	118.0	10.0	131.0	90		Nuclear
306	12/12/23	1978835	6366525	Fill Area	1047	120.5	11.8	131.0	92		Nuclear
307	12/12/23	1978547	6366468	Fill Area	1047	121.9	9.5	131.0	93		Nuclear
308	12/12/23	1978655	6366443	Fill Area	1047	117.3	10.7	129.5	91		Nuclear
309	12/12/23	1978560	6366453	Fill Area	1049	118.7	10.9	131.0	92		Nuclear
310	12/12/23	1978475	6366524	Fill Area	1047	118.5	11.8	131.0	91		Nuclear
311	12/12/23	1978434	6366601	Fill Area	1049	122.0	10.4	131.0	93		Nuclear
312	12/12/23	1978587	6366450	Fill Area	1051	118.9	8.2	128.0	93		Nuclear
313	12/12/23	1978521	6366505	Fill Area	1049	119.2	9.0	131.0	91		Nuclear
314	12/12/23	1978480	6366564	Fill Area	1051	117.8	10.9	131.0	90		Nuclear
316	12/13/24	1978846	6366615	Fill Area	1049	117.9	8.4	131.0	90		Nuclear
317	12/13/24	1978824	6366605	Fill Area	1051	119.8	8.7	131.0	92		Nuclear
318	12/13/24	1978757	6366542	Fill Area	1049	122.9	9.4	131.0	94		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
319	12/13/24	1978735	6366560	Fill Area	1051	120.6	8.2	131.0	92		Nuclear
320	12/13/24	1978656	6366495	Fill Area	1049	120.1	11.8	131.0	92		Nuclear
321	12/13/24	1978637	6366497	Fill Area	1051	121	10.7	131.0	93		Nuclear
323	12/13/24	1978439	6366508	Fill Area	1053	125.6	8.5	131.0	94		Nuclear
324	12/13/24	1978450	6366545	Fill Area	1053	121.2	9.5	131.0	93		Nuclear
325	12/13/24	1978571	6366502	Fill Area	1053	118.3	8.1	131.0	90		Nuclear
326	12/14/23	1978845	6366625	Fill Area	1053	118.8	8.0	131.0	91		Nuclear
327	12/14/23	1978954	6366606	Fill Area	1055	122.4	10.4	131.0	93		Nuclear
328	12/14/23	1978798	6366555	Fill Area	1053	120.9	9.2	131.0	92		Nuclear
329	12/14/23	1978779	6366516	Fill Area	1055	121.7	9.8	131.0	93		Nuclear
330	12/14/23	1978680	6366495	Fill Area	1053	118.3	9.7	131.0	90		Nuclear
331	12/14/23	1978665	6366470	Fill Area	1055	121.6	9.9	131.0	93		Nuclear
332	12/14/23	1978573	6366509	Fill Area	1055	124.3	8.3	131.0	95		Nuclear
333	12/14/23	1978492	6366545	Fill Area	1055	118.9	13.2	131.0	91		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
334	12/15/23	1978716	6366544	Fill Area	1057	121.7	10.9	131.0	93		Nuclear
335	12/15/23	1978626	6366508	Fill Area	1057	120.8	10.0	131.0	92		Nuclear
336	12/15/23	1978554	6366537	Fill Area	1057	120.9	8.8	131.0	92		Nuclear
337	12/15/23	1978730	6366478	Fill Area	1059	122.3	10.5	131.0	93		Sand Cone
338	12/15/23	1978771	6366496	Fill Area	1061	118.9	8.5	131.0	91		Nuclear
339	12/15/23	1978454	6366604	Fill Area	1059	118.4	8.8	131.0	90		Nuclear
341	12/15/23	1978477	6366493	Fill Area	1059	123.3	8.9	131.0	94		Nuclear
342	12/15/23	1978850	6366626	Fill Area	1057	123.0	8.8	131.0	94		Nuclear
343	12/15/23	1978815	6366599	Fill Area	1059	125.4	8.0	131.0	96		Nuclear
344	12/16/23	1978589	6366470	Fill Area	1059	118.7	12.2	131.0	91		Sand Cone
345	12/16/23	1978510	6366510	Fill Area	1061	120.6	9.5	131.0	92		Nuclear
346	12/16/23	1978470	6366559	Fill Area	1063	120.6	8.3	131.0	92		Nuclear
347	12/16/23	1978903	6366583	Fill Area	1059	123.3	9.4	131.0	94		Nuclear
348	12/16/23	1978855	6366541	Fill Area	1057	123.2	10.5	131.0	94		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
349	12/18/23	1979015	6366664	Fill Area	1064	119.9	8.0	131.0	92		Nuclear
350	12/18/23	1978995	6366640	Fill Area	1062	120.4	8.8	131.0	92		Nuclear
351	12/18/23	1978911	6366617	Fill Area	1061	119.2	9.6	131.0	91		Nuclear
352	12/18/23	1978867	6366583	Fill Area	1063	124.4	11.3	131.0	95		Nuclear
353	12/18/23	1978804	6366546	Fill Area	1061	119.3	8.5	131.0	91		Nuclear
354	12/18/23	1978755	6366541	Fill Area	1063	118.9	9.0	131.0	91		Nuclear
355	12/18/23	1978669	6366513	Fill Area	1061	121.5	10.3	131.0	93		Nuclear
356	12/28/23	1978444	6366593	Fill Area	1065	125.3	9.6	131.0	95		Nuclear
357	12/28/23	1978448	6366549	Fill Area	1067	125.1	9.6	131.0	95		Nuclear
358	12/28/23	1978480	6366599	Fill Area	1065	117.9	11.6	131.0	90		Nuclear
359	12/28/23	1978465	6366573	Fill Area	1067	121.4	11.4	131.0	93		Nuclear
360	12/29/23	1979085	6366682	Fill Area	1056	119.5	11.4	131.0	91		Nuclear
361	12/29/23	1979084	6366687	Fill Area	1058	120.9	8.7	131.0	92		Nuclear
362	12/29/23	1979082	6366692	Fill Area	1060	119.9	11.2	131.0	92		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
363	01/08/24	1978965	6366590	Erosion Repair	1052	127.1	10.9	131.0	97		Sand Cone
364	01/08/24	1978960	6366599	Erosion Repair	1054	119.1	11.3	131.0	91		Nuclear
365	01/08/24	1978959	6366604	Erosion Repair	1056	118.8	12.7	131.0	91		Nuclear
366	01/08/24	1978956	6366609	Erosion Repair	1058	118.4	10.6	131.0	90		Nuclear
367	01/08/24	1978945	6366601	Erosion Repair	1060	120.1	12.7	131.0	92		Nuclear
368	01/08/24	1979040	6366729	Fill Area	1066	121.5	9.4	131.0	93		Nuclear
369	01/08/24	1978957	6366675	Fill Area	1062	118.2	9.3	131.0	90		Nuclear
370	01/08/24	1978881	6366632	Fill Area	1062	119.8	10.3	131.0	92		Nuclear
371	01/08/24	1978579	6366532	Fill Area	1063	122.4	9.7	131.0	94		Nuclear
372	01/08/24	1978580	6366492	Fill Area	1063	119.2	9.4	131.0	91		Nuclear
373	01/08/24	1979038	6366675	Fill Area	1068	123.1	10.6	131.0	94		Nuclear
374	01/08/24	1978952	6366638	Fill Area	1063	123.7	8.5	131.0	95		Nuclear
375	01/08/24	1978864	6366569	Fill Area	1063	126.2	9.2	131.0	96		Sand Cone
376	01/09/24	1979023	6366705	Fill Area	1070	118.5	10.4	131.0	91		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
377	01/09/24	1978930	6366652	Fill Area	1065	120.0	8.5	131.0	92		Nuclear
378	01/09/24	1978916	6366676	Fill Area	1067	121	10.8	131.0	93		Nuclear
379	01/09/24	1979005	6366750	Fill Area	1072	127.0	11.2	131.0	97		Sand Cone
380	01/09/24	1978830	6366646	Fill Area	1065	122.6	10.2	131.0	94		Nuclear
381	01/09/24	1978850	6366610	Fill Area	1067	123.8	9.3	131.0	95		Nuclear
382	01/09/24	1978771	6366605	Fill Area	1065	123.1	9.9	131.0	94		Nuclear
383	01/09/24	1978633	6366493	Fill Area	1065	123.3	9.0	129.0	94		Nuclear
384	01/09/24	1978637	6366529	Fill Area	1067	120.6	10.6	129.0	94		Nuclear
385	01/10/24	1979111	6366763	Fill Area	1072	121.3	11.5	131.0	93		Nuclear
386	01/10/24	1979043	6366731	Fill Area	1074	120.0	8.7	131.0	92		Nuclear
387	01/10/24	1978968	6366721	Fill Area	1069	120.3	8.5	131.0	92		Nuclear
388	01/10/24	1978966	6366676	Fill Area	1071	122.5	8.7	131.0	94		Nuclear
389	01/10/24	1979050	6366752	Fill Area	1076	119.9	9.0	131.0	92		Nuclear
390	01/10/24	1978965	6366694	Fill Area	1073	118.1	14.0	131.0	90		Sand Cone

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
391	01/10/24	1978756	6366566	Fill Area	1077	122.2	9.4	131.0	93		Nuclear
392	01/11/24	1979066	6366780	Head Wall Removal	1080	122.5	9.1	131.0	94		Nuclear
393	01/11/24	1979066	6366780	Head Wall Removal	1082	122.7	9.3	131.0	94		Nuclear
394	01/11/24	1979012	6366749	Fill Area	1078	121.8	8.3	131.0	93		Nuclear
395	01/11/24	1979015	6366713	Fill Area	1080	118.8	10.6	131.0	91		Nuclear
396	01/11/24	1978847	6366621	Fill Area	1069	119.3	8.6	131.0	91		Nuclear
397	01/11/24	1978840	6366649	Fill Area	1071	122.2	8.8	131.0	93		Nuclear
398	01/12/24	1978872	6366652	Fill Area	1089	120.7	9.9	131.0	92		Nuclear
399	01/12/24	1979093	6366820	Fill Area	1088	121.9	12.3	131.0	93		Nuclear
400	01/12/24	1979050	6366733	Fill Area	1078	120.1	11.0	131.0	92		Nuclear
401	01/12/24	1978960	6366668	Fill Area	1077	121.7	12.1	131.0	93		Nuclear
402	01/13/24	1978992	6366728	Fill Area	1078	119.2	13.0	131.0	91		Nuclear
403	01/13/24	1979045	6366780	Fill Area	1085	121.0	12.3	131.0	93		Nuclear
404	01/13/24	1978904	6366668	Fill Area	1078	121.4	11.6	131.0	93		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
405	01/13/24	1978958	6366740	Fill Area	1080	120.2	10.4	131.0	92		Nuclear
409	01/16/24	1978757	6366557	Fill Area	1077	122.0	11.5	131.0	93		Nuclear
410	01/16/24	1978796	6366647	Fill Area	1079	120.3	8.5	131.0	92		Nuclear
411	01/16/24	1978826	6366618	Fill Area	1081	121.9	10.5	131.0	93		Nuclear
412	01/16/24	1978855	6366664	Fill Area	1083	123.3	10.2	131.0	94		Nuclear
413	01/16/24	1978886	6366697	Fill Area	1085	124.1	12.1	131.0	95		Nuclear
414	01/16/24	1978916	6366720	Fill Area	1087	124.8	9.5	131.0	95		Nuclear
415	01/16/24	1978948	6366705	Fill Area	1089	117.7	8.6	131.0	91		Nuclear
416	01/17/24	1978976	6366718	Fill Area	1091	121.7	8.9	131.0	93		Nuclear
417	01/17/24	1979003	6366740	Fill Area	1093	118.6	11.2	131.0	91		Nuclear
418	01/17/24	1979037	6366773	Fill Area	1095	120.7	10.7	131.0	92		Nuclear
419	01/17/24	1979074	6366790	Fill Area	1097	126.3	8.8	131.0	96		Nuclear
420	01/17/24	1979107	6366799	Fill Area	1099	122.8	10.6	131.0	94		Nuclear
424	01/19/24	1979047	6366674	Erosion Repair	1060	116.7	13.0	129.0	91		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
425	01/19/24	1979035	6366695	Erosion Repair	1074	117.6	12.9	129.0	91		Nuclear
426	01/19/24	1979025	6366711	Erosion Repair	1088	116.4	12.2	129.0	90		Nuclear
427	01/19/24	1978963	6366608	Erosion Repair	1056	122.0	11.5	129.0	95		Nuclear
428	01/19/24	1978953	6366629	Erosion Repair	1068	118.1	13.1	129.0	92		Nuclear
429	01/19/24	1978942	6366650	Erosion Repair	1080	122.2	13.3	129.0	95		Nuclear
430	01/19/24	1978529	6366391	Erosion Repair	1028	117.3	12.1	129.0	91		Nuclear
431	01/19/24	1978531	6366434	Erosion Repair	1040	117.8	13.0	129.0	91		Nuclear
432	01/19/24	1978528	6366478	Erosion Repair	1058	118.4	11.9	129.0	92		Nuclear
454	01/31/24	1979073	6366766	Liner Anchor Trench	1098	117.0	8.7	131.0	91		Nuclear
455	01/31/24	1978996	6366708	Liner Anchor Trench	1093	117.2	9.1	131.0	91		Nuclear
456	01/31/24	1978912	6366648	Liner Anchor Trench	1087	119.0	9.6	131.0	92		Nuclear
457	01/31/24	1978838	6366586	Liner Anchor Trench	1083	117.6	8.2	131.0	91		Nuclear
458	01/31/24	1978758	6366528	Liner Anchor Trench	1077	116.1	8.5	131.0	90		Nuclear
459	01/31/24	1978668	6366490	Liner Anchor Trench	1073	116.5	9.4	129.0	90		Nuclear

TABLE 1
FIELD DENSITY TEST RESULTS

Test No.	Test Date	Northing Coor.	Easting Coor.	Description	Test Elev. (ft)	Field Dry Density (pcf)	Moisture Content (%)	Maximum Dry Density (pcf)	Compaction Results	Retest No.	Type of Test
460	01/31/24	1978542	6366486	Liner Anchor Trench	1066	116.3	10.1	129.0	90		Nuclear

TABLE 2
LABORATORY COMPACTION TEST DATA

Material Description	Laboratory Maximum Dry Density (pcf)	Laboratory Optimum Moisture Content (%)
SILTY SAND (SM): Fine to Medium with Occasional Coarse, Silty, Medium Brown	129.5	9.0
SILTY SAND (SM): Medium to Coarse, Occasional Gravel to 3/4", Silty, Grayish Brown	126.0	10.0
SILTY SAND (SM): Fine to Coarse, Occasional Gravel to 1-1/2", Silty, Light Brown	126.0	10.5
SILTY SAND (SM): Fine to Medium, Occasional gravel to 1/4", Silty, Medium Brown	131.0	8.0
SILTY SAND (SM): Fine to Medium, Very Silty, Occasional gravel to 1", Dark Greenish Brown	131.5	7.5
SILTY SAND (SM): Fine to Medium, Silty, Occasional gravel to 1/4", Dark Gray	129.0	9.0
SILTY SAND (SM): Fine to Medium, Occasional Gravel, Silty, Light Gray	128.0	8.5

TABLE 3
COMPACTED FILL SOILS

Sieve Size		Sample S-18 Compacted Fill Soils	Sample S-19 Compacted Fill Soils	Sample S-20 Compacted Fill Soils	Sample S-21 Compacted Fill Soils	Sample S-22 Compacted Fill Soils
Standard	Metric	Percent Passing as Tested				
2 in	50 mm	100.0	100.0	100.0	100.0	100.0
1-1/2 in	37.5 mm	100.0	100.0	100.0	100.0	100.0
1 in	25.0 mm	100.0	100.0	100.0	100.0	100.0
3/4 in	19.0 mm	100.0	100.0	100.0	100.0	100.0
1/2 in	12.5 mm	96.4	100.0	100.0	95.0	94.3
3/8 in	9.5 mm	95.4	96.8	95.4	92.9	88.6
#4	4.75 mm	89.9	92.2	92.3	80.4	73.0
#8	2.36 mm	86.1	88.6	89.0	69.4	60.1
#16	18 mm	80.9	83.6	82.9	57.6	49.3
#30	0.60 mm	71.3	76.8	70.2	43.7	37.1
#40	0.45 mm	64.9	69.1	64.47	36.2	31.0
#50	0.30 mm	59.3	64.6	60.8	27.0	23.3
#100	0.15 mm	47.7	48.7	46.9	9.5	8.5
#200	0.075 mm	36.9	31	35.4	2.6	2.4

TABLE 3
COMPACTED FILL SOILS

Sieve Size		Sample S-23 Compacted Fill Soils	Sample S-24 Compacted Fill Soils	Sample S-25 Compacted Fill Soils	Sample S-26 Compacted Fill Soils	Sample S-27 Compacted Fill Soils
Standard	Metric	Percent Passing as Tested				
2 in	100.0	100.0	100.0	100.0	100.0	100.0
1-1/2 in	100.0	100.0	100.0	100.0	100.0	100.0
1 in	99.5	100.0	100.0	100.0	100.0	96.2
3/4 in	98.0	92.6	94.0	100.0	97.5	94.0
1/2 in	95.3	85.1	89.6	92.0	92.3	86.7
3/8 in	92.7	80.8	85.5	83.9	87.9	82.8
#4	86.4	68.7	68.4	68.1	77.6	70.2
#8	75.4	56.7	55.8	58.2	64.7	58.5
#16	63.0	45.0	43.6	47.7	50.7	47.4
#30	49.2	31.7	30.0	35.2	37.9	36.2
#40	41.8	24.7	23.3	29.3	31.9	30.7
#50	31.5	16.9	15.5	21.6	25.0	24.3
#100	12.7	5.6	4.9	8.3	12.6	12.5
#200	3.8	1.5	1.4	2.2	5.3	5.2

TABLE 3
COMPACTED FILL SOILS

Sieve Size		Sample S-28 Compacted Fill Soils	Sample S-29 Compacted Fill Soils	Sample S-30 Compacted Fill Soils
Standard	Metric	Percent Passing as Tested		
2 in	100.0	100.0	100.0	100.0
1-1/2 in	100.0	86.56	89.4	100.0
1 in	99.5	82.3	89.4	96.0
3/4 in	98.0	78.2	86.6	95.0
1/2 in	95.3	75.4	82.0	90.2
3/8 in	92.7	72.9	77.69	88.3
#4	86.4	65.1	67.3	78.9
#8	75.4	54.3	57.4	65.4
#16	63.0	44.7	46.6	52.1
#30	49.2	34.6	35.7	39.3
#40	41.8	29.4	30.2	33.1
#50	31.5	23.4	23.8	26.2
#100	12.7	12.4	12.0	13.0
#200	3.8	5.7	4.8	5.4

TABLE 4
LABORATORY EXPANSION INDEX TEST RESULTS

Sample No.	Elevation (ft)	Expansion Index
S-22	1640	9
S-25	1670	4

Appendix C

Photo Log

Photo #1

Date: 5/17/2024

Direction (facing): Southwest

Description: Staking for placement of 5 ft soil barrier.

Photo #2

Date: 5/21/2025

Direction (facing): Northeast

Description: 5 ft soil barrier placed to the top of the stakes.

Photo #3

Date: 5/29/2024

Direction (facing): Southwest

Description: Staking for placement of 5 feet soil barrier.

Photo #4

Date: 5/29/2024

Direction (facing): Southwest

Description: In progress placement of soil barrier.

Photo #5

Date: 5/29/2024

Direction (facing): Southeast

Description: In progress placement of soil barrier.

Photo #6

Date: 5/31/2024

Direction (facing): West

Description: Finished grade of soil barrier.

Photo #7

Date: 6/11/2024

Direction (facing): N/A

Description: Staking slope for 5 feet of soil barrier.

Photo #8

Date: 6/11/2024

Direction (facing): Northeast

Description: Staking southwest slope for 5 feet of soil barrier.

Photo #9

Date: 6/12/2024

Direction (facing): Southwest

Description: Finished grade of soil barrier.

Photo #10

Date: 7/16/204

Direction (facing): Northwest

Description: Staking northeast slope for 5 feet of soil barrier.

Photo #11

Date: 7/17/2024

Direction (facing): West

Description: In progress of soil barrier being placed on the northeast slope

Photo #12

Date: 7/26/2024

Direction (facing): West

Description: Staking for placement of soil barrier.

Photo #13

Date: 7/26/2024

Direction (facing): Northwest

Description: Staking for placement of soil barrier.

Photo #14

Date: 7/26/2024

Direction (facing): Southwest

Description: In progress placement of soil barrier. Active waste cell pictured in the background placed over the already in place soil barrier.

Photo #15

Date: 7/26/2024

Direction (facing): Northwest

Description: In progress placement of soil barrier.

Photo #16

Date: 9/5/2024

Direction (facing): South

Description: Staking for soil barrier.

Photo #17

Date: 9/5/2024

Direction (facing): Southeast

Description: Staking for soil barrier.

Photo #18

Date: 9/12/2024

Direction (facing): North

Description: In progress filling of soil barrier.

Photo #19

Date: 9/12/2025

Direction (facing): North

Description: In progress filling of soil barrier.

Photo #20

Date: 9/26/2024

Direction (facing): Northwest

Description: Staking for soil barrier

Photo #21

Date: 9/26/2024

Direction (facing): North

Description: Staking and placement of soil barrier.