NMED Cmnt 20

Radon Barrier Hydraulic Conductivity Test (2019)

SUMMARY OF DANIEL B. STEPHENS & ASSOCIATES REPORT

HYDRAULIC PROPERTIES PACKAGE TESTS ON SAMPLES OF WASTE PILE RADON BARRIER SOILS

MT TAYLOR MINE

Daniel B. Stephens & Associates, Inc.

Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263, ASTM D2216
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity: Falling Head Rising Tail: (Flexible Wall)	ASTM D5084
Hanging Column Method:	ASTM D6836 (modified apparatus)
Pressure Plate Method:	ASTM D6836
Water Potential (Dewpoint Potentiometer) Method:	ASTM D6836
Relative Humidity (Box) Method:	Campbell, G. and G. Gee. 1986. Water Potential: Miscellaneous Methods. Chp. 25, pp. 631-632, in A. Klute (ed.), Methods of Soil Analysis. Part 1. American Society of Agronomy, Madison, WI; Karathanasis & Hajek. 1982. Quantitative Evaluation of Water Adsorption on Soil Clays. SSA Journal 46:1321-1325
Moisture Retention Characteristics & Calculated Unsaturated Hydraulic Conductivity:	ASTM D6836; van Genuchten, M.T. 1980. A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. SSSAJ 44:892-898; van Genuchten, M.T., F.J. Leij, and S.R. Yates. 1991. The RETC code for quantifying the hydraulic functions of unsaturated soils. Robert S. Kerr Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Ada, Oklahoma. EPA/600/2091/065. December 1991
Water Holding Capacity (calc):	ASTM D6836; Stephens, D. B. 1996, pp.11-12, Vadose Zone Hydrology. CRC Press, Inc., Boca Raton, FL

Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis	
			Constant Head	Falling Head
19-104 (1.48 g/cc)	9.2E-06	NA		X
19-105 (1.52 g/cc)	2.8E-06	NA		X
19-110 (1.48 g/cc)	4.7E-06	NA		X
19-114 (1.54 g/cc)	8.3E-07	NA		X

Summary of Sample Preparation/Volume Changes

	Target Remold Parameters[1]	Actual Remold Data			Volume Change Post Saturation[2]			Volume Change Post Drying Curve[3]		
Sample Number	Estimated Compaction (%)	Moisture Content (%, g/g)	Dry Bulk Density (g/cm^3)	% of Target Density (%)	Dry Bulk Density (g/cm^3)	% Volume Change (%)	% of Initial Density (%)	Dry Bulk Density (g/cm^3)	% Volume Change (%)	% of Initial Density (%)
19-104 (1.48 g/cc)	~95%	18.9	1.48	NA	1.43	+4.1%	96%	1.42	+4.8%	95%
19-105 (1.52 g/cc)	~95%	19.8	1.52	NA	1.48	+2.8%	97%	1.46	+3.9%	96%
19-110 (1.48 g/cc)	~95%	21.2	1.48	NA	1.46	+1.4%	99%	1.46	+1.4%	99%
19-114 (1.54 g/cc)	~95%	20.9	1.54	NA	1.51	+1.5%	99%	1.51	+1.5%	99%

[1]Target Remold Parameters: Remold into a testing ring using a moderate compactive effort in order to achieve a density that would approximate 95% of standard proctor compaction testing, based on technician experience and judgement.

[2]Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

[3]Volume Change Post Drying Curve: Volume change measurements were obtained throughout hanging column and pressure plate testing. The 'Volume Change Post Drying Curve' values represent the final sample dimensions after the last pressure plate point.

Notes:

"+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
19-104 (1.48 g/cc)	NA	NA	18.9	28.0	1.48	1.76	47.9
19-105 (1.52 g/cc)	NA	NA	19.8	30.0	1.52	1.82	46.8
19-110 (1.48 g/cc)	NA	NA	21.2	31.4	1.48	1.79	48.1
19-114 (1.54 g/cc)	NA	NA	20.9	32.1	1.54	1.86	46.1

NA = Not analyzed

--- = This sample was not remolded

Summary of Calculated Unsaturated Hydraulic Properties

Sample Number	α (cm^{-1})	N (dimensionless)	θ_r (% vol)	θ_s (% vol)	Oversize Corrected θ_r (% vol)	Oversize Corrected θ_s (% vol)
19-104 (1.48 g/cc)	0.0030	1.1964	0.00	43.57	NA	NA
19-105 (1.52 g/cc)	0.0020	1.1905	0.00	41.34	NA	NA
19-110 (1.48 g/cc)	0.0022	1.1920	0.00	41.61	NA	NA
19-114 (1.54 g/cc)	0.0015	1.2047	0.00	39.06	NA	NA

Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity*)

Sample Number	1/3 Bar Point Volumetric (%, cm^3/cm^3)	15 Bar Point Volumetric (%, cm^3/cm^3)	Water Holding Capacity (%, cm^3/cm^3)	Oversize Corrected 1/3 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected 15 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected Water Holding Capacity (%, cm^3/cm^3)
19-104 (1.48 g/cc)	38.8	20.5	18.3	NA	NA	NA
19-105 (1.52 g/cc)	38.2	21.4	16.8	NA	NA	NA
19-110 (1.48 g/cc)	38.2	21.2	17.0	NA	NA	NA
19-114 (1.54 g/cc)	36.8	20.6	16.2	NA	NA	NA

*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point') which was interpolated from the predicted water retention curve.

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

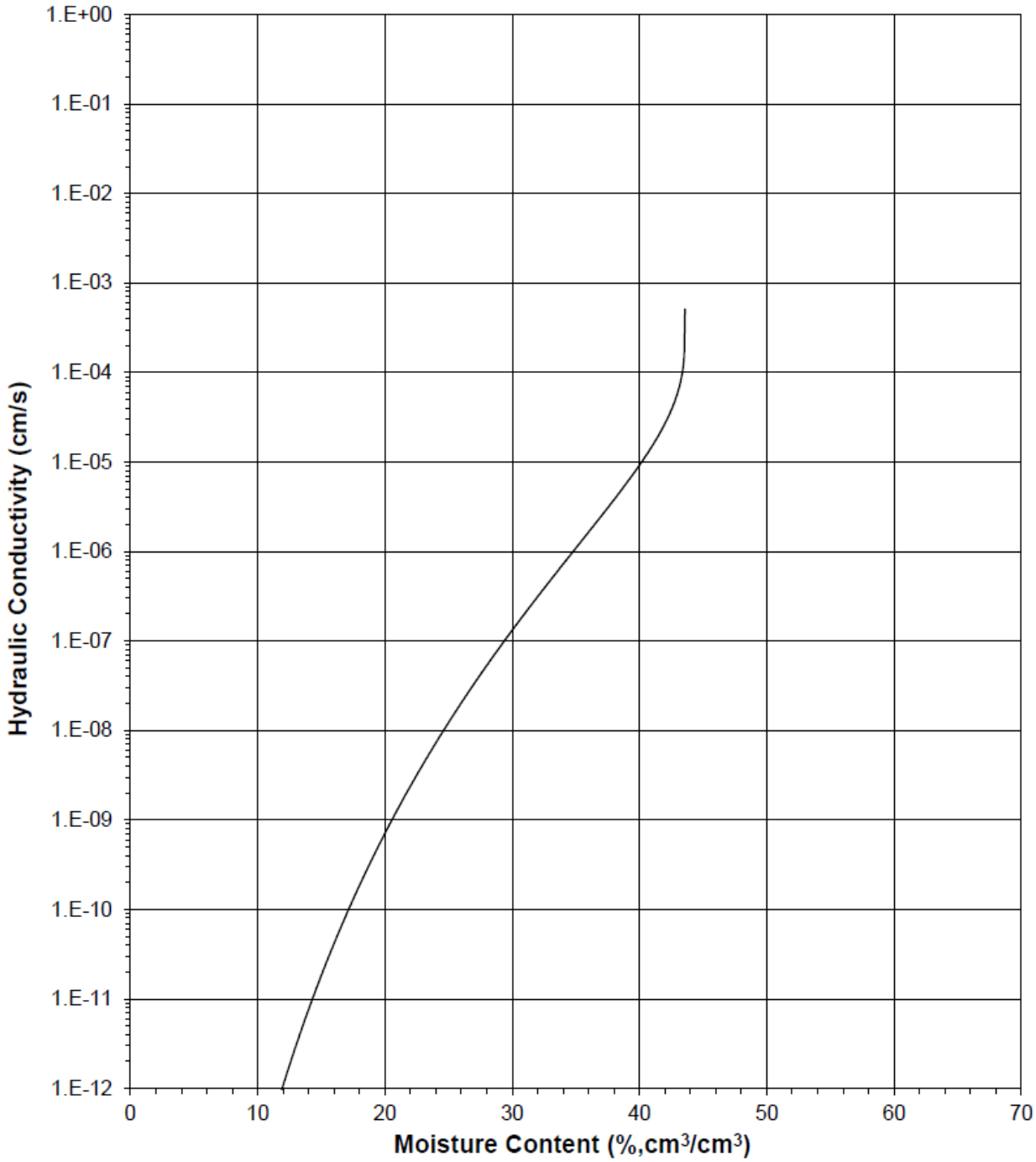
Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
19-104 (1.48 g/cc)	NA	NA	18.9	28.0	1.48	1.76	47.9
19-105 (1.52 g/cc)	NA	NA	19.8	30.0	1.52	1.82	46.8
19-110 (1.48 g/cc)	NA	NA	21.2	31.4	1.48	1.79	48.1
19-114 (1.54 g/cc)	NA	NA	20.9	32.1	1.54	1.86	46.1

NA = Not analyzed

--- = This sample was not remolded

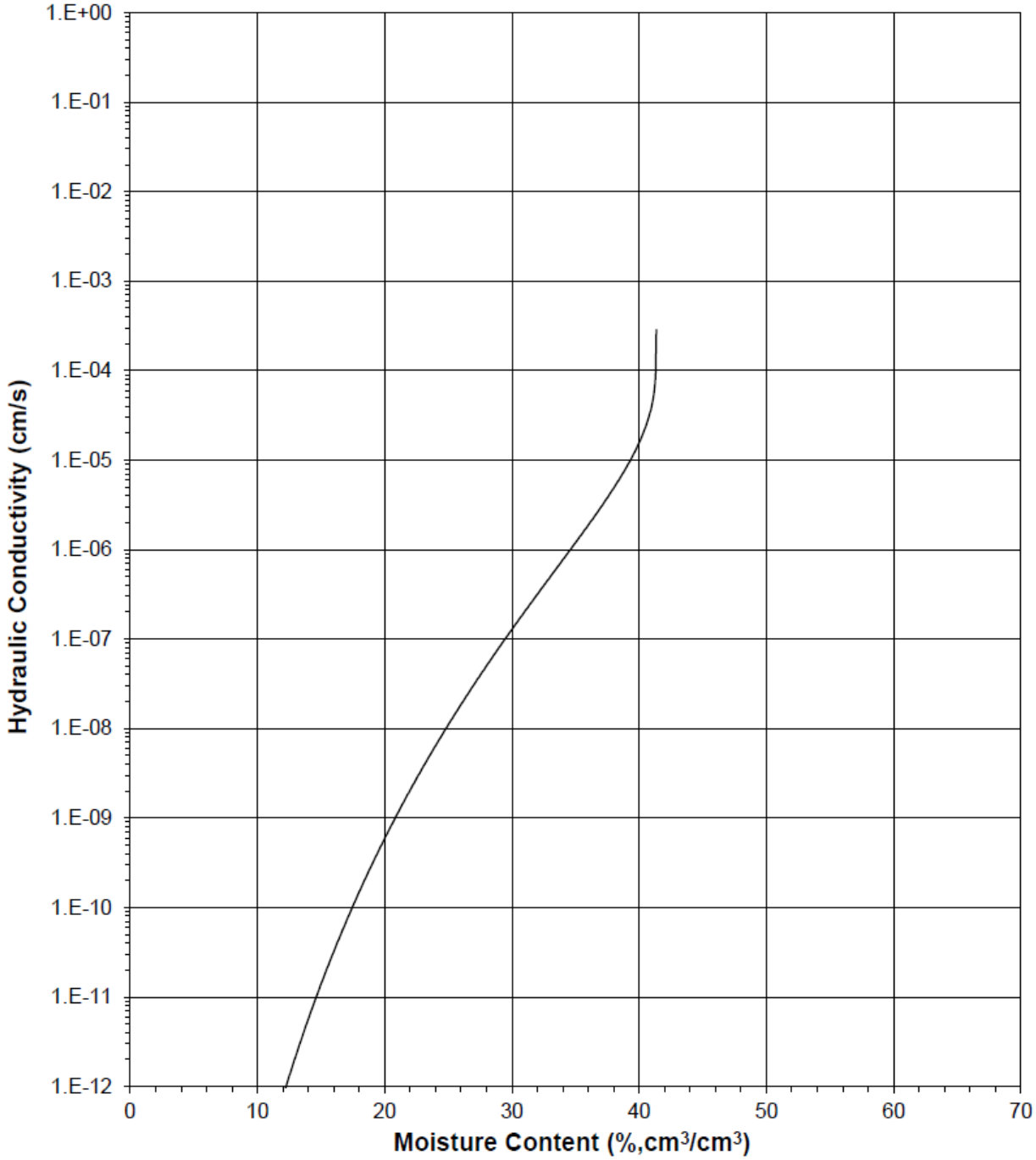
Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: 19-104 (1.48 g/cc)



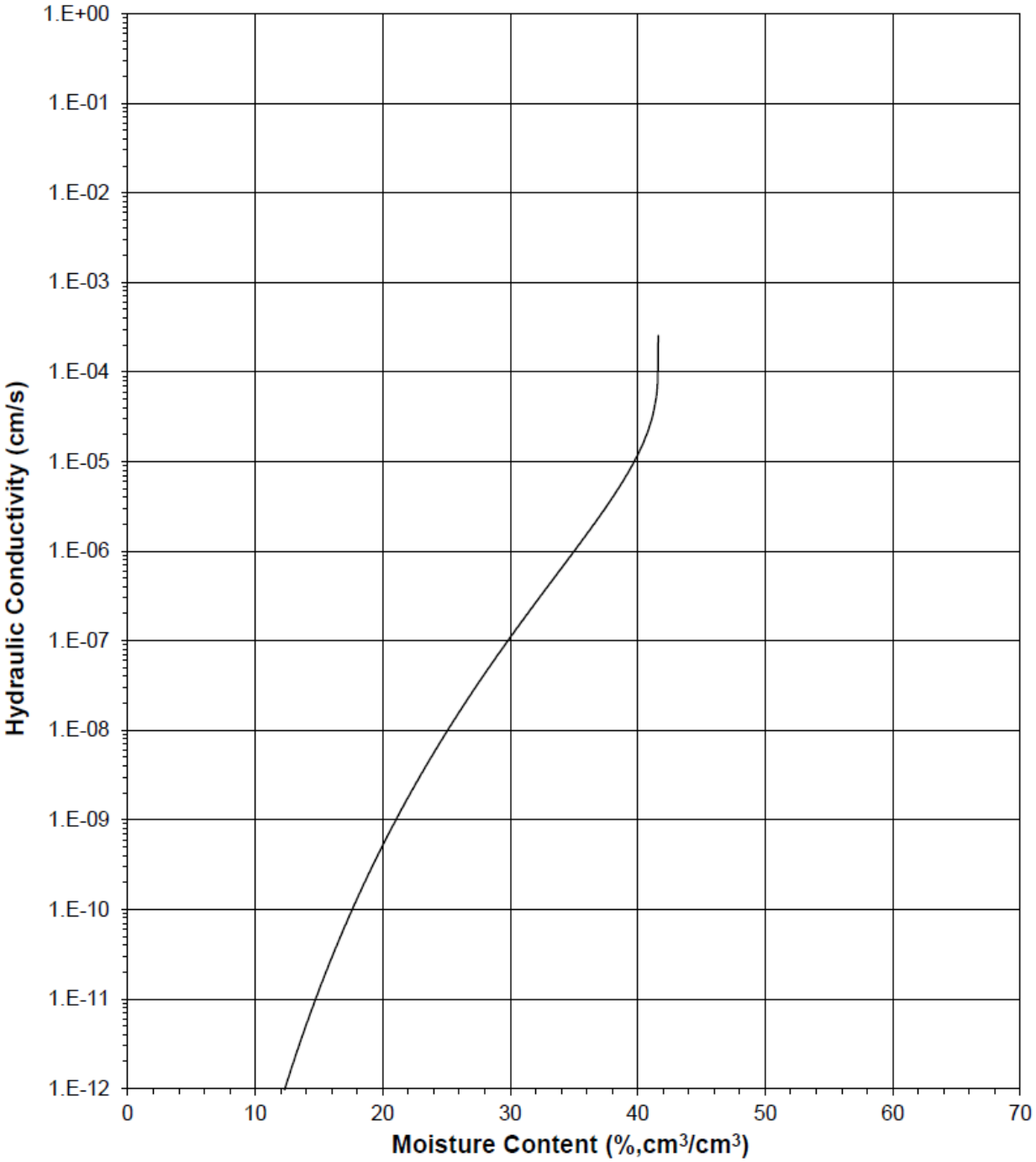
Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: 19-105 (1.52 g/cc)



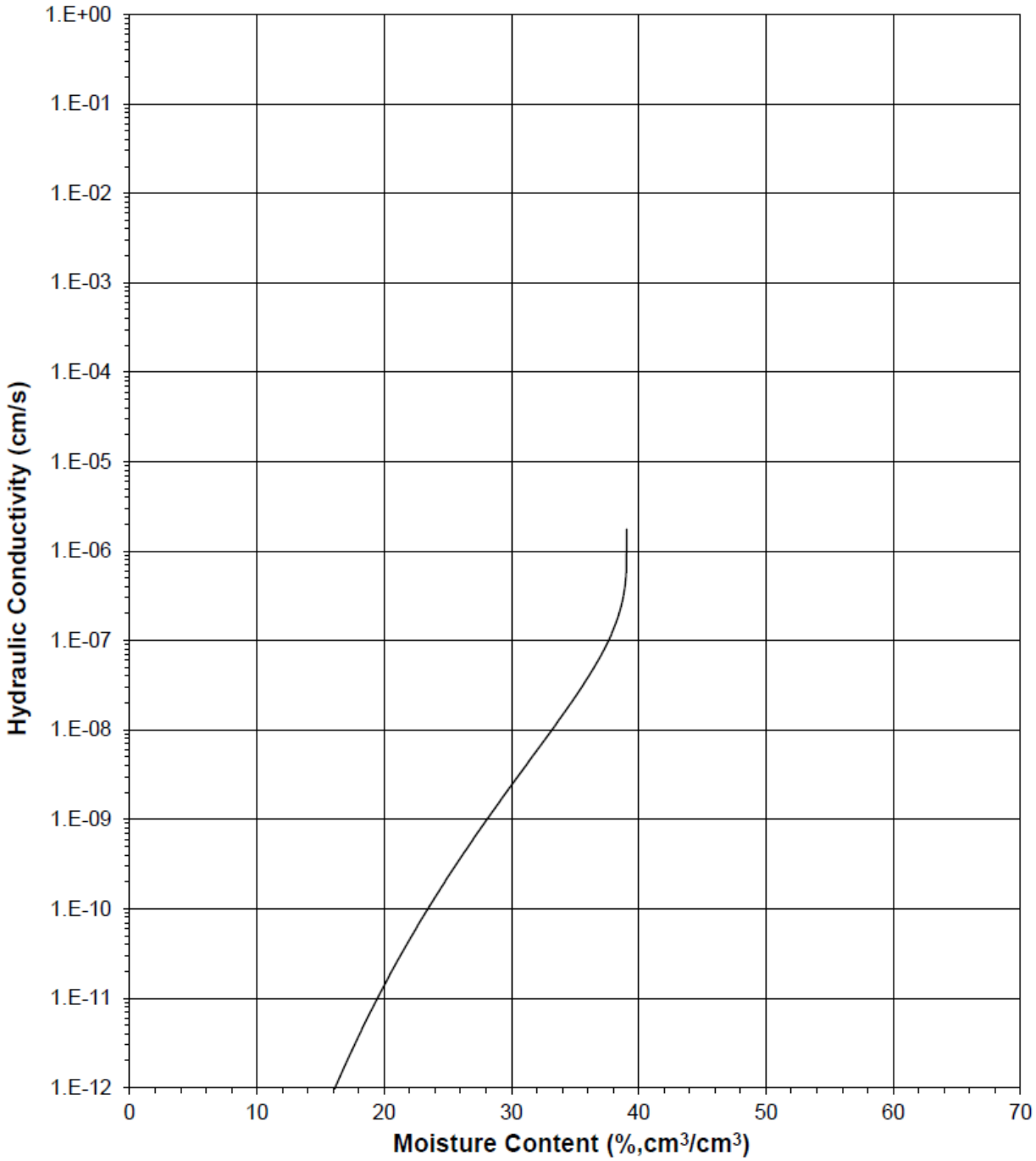
Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: 19-110 (1.48 g/cc)



Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: 19-114 (1.54 g/cc)



Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity*)

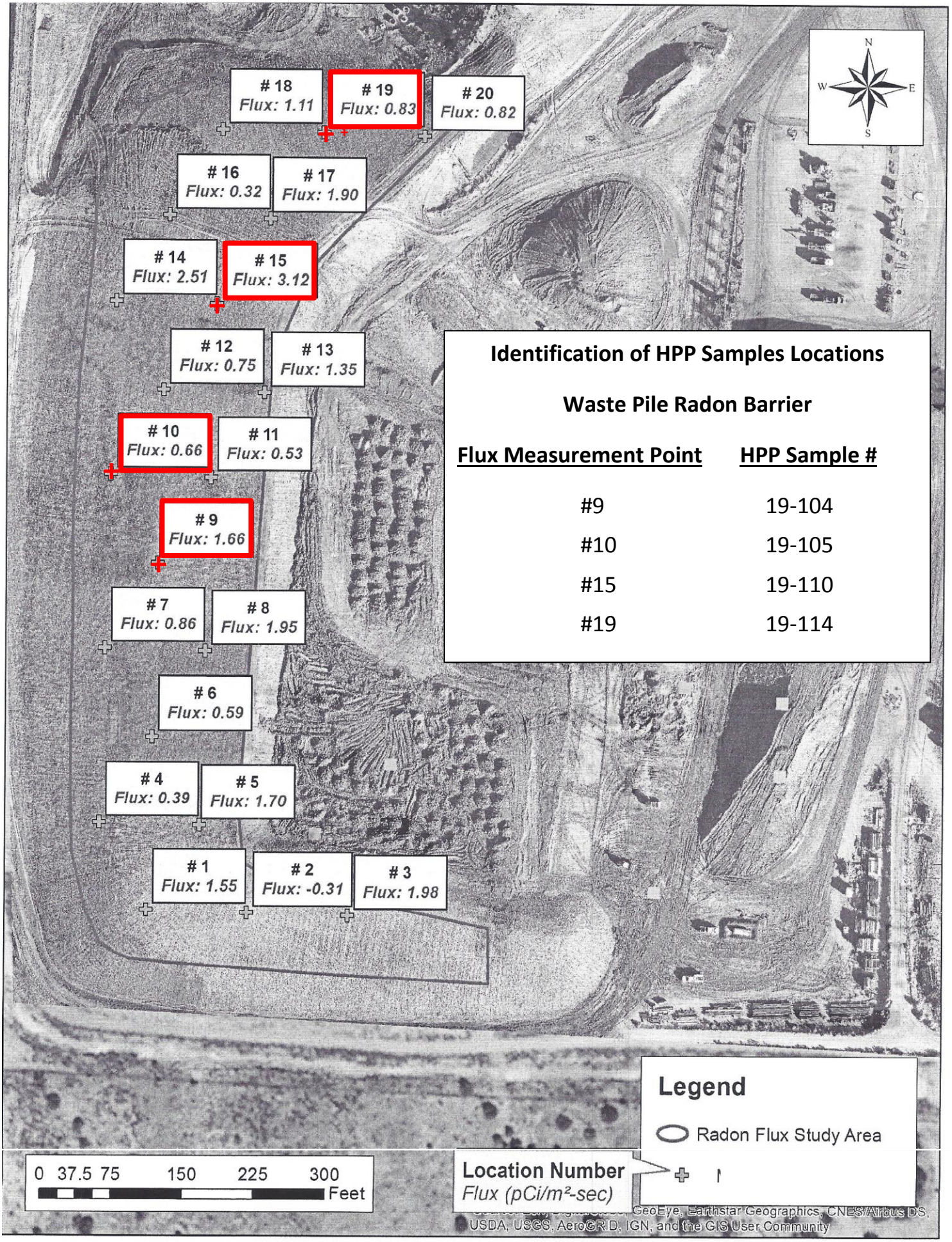
Sample Number	1/3 Bar Point Volumetric (%, cm^3/cm^3)	15 Bar Point Volumetric (%, cm^3/cm^3)	Water Holding Capacity (%, cm^3/cm^3)	Oversize Corrected 1/3 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected 15 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected Water Holding Capacity (%, cm^3/cm^3)
19-104 (1.48 g/cc)	38.8	20.5	18.3	NA	NA	NA
19-105 (1.52 g/cc)	38.2	21.4	16.8	NA	NA	NA
19-110 (1.48 g/cc)	38.2	21.2	17.0	NA	NA	NA
19-114 (1.54 g/cc)	36.8	20.6	16.2	NA	NA	NA

*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point') which was interpolated from the predicted water retention curve.

— = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested


18
Flux: 1.11
19
Flux: 0.83
20
Flux: 0.82
16
Flux: 0.32
17
Flux: 1.90
14
Flux: 2.51
15
Flux: 3.12
12
Flux: 0.75
13
Flux: 1.35
10
Flux: 0.66
11
Flux: 0.53
9
Flux: 1.66
7
Flux: 0.86
8
Flux: 1.95
6
Flux: 0.59
4
Flux: 0.39
5
Flux: 1.70
1
Flux: 1.55
2
Flux: -0.31
3
Flux: 1.98
N
W
E
S
Identification of HPP Samples Locations
Waste Pile Radon Barrier
Flux Measurement Point
HPP Sample #
#9
19-104
#10
19-105
#15
19-110
#19
19-114
Legend
Radon Flux Study Area
Location Number
Flux (pCi/m²-sec)
0 37.5 75 150 225 300
Feet
GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NMED Cmnt 20

Disposal Cell Cover Hydraulic Conductivity Tesing (2021)

Laboratory Report for

Alan Kuhn Associates, LLC

Mt. Taylor Mine, PO# AKA-DBSA 6

January 14, 2021

Daniel B. Stephens & Associates, Inc.

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113

January 14, 2021

Alan Kuhn
Alan Kuhn Associates, LLC
13212 Manitoba Dr. NE
Albuquerque, NM 87111
(505) 350-9188

Re: DBS&A Laboratory Report for the Alan Kuhn Associates, LLC Mt. Taylor Mine, PO# AKA-DBSA 6 Project

Dear Mr. Kuhn:

Enclosed is the report for the Alan Kuhn Associates, LLC Mt. Taylor Mine, PO# AKA-DBSA 6 project samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Alan Kuhn Associates, LLC and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines
Laboratory Manager

Enclosure

Daniel B. Stephens & Associates, Inc.
Soil Testing & Research Laboratory
4400 Alameda Blvd. NE, Suite C
Albuquerque, NM 87113
505-889-7752
FAX 505-889-0258

Summaries

Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties[1]			Saturated Hydraulic Conductivity[2]			Moisture Characteristics[3]								Particle Size[4]			Specific Gravity[5]		Air Perm-eability	Atterberg Limits	Proctor Compaction
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K_{unsat}	DS	WS	H	F	C			
Borrow A (90%)	X	X				X	X	X		X	X		X	X								
Borrow B (90%)	X	X				X	X	X		X	X		X	X								

[1] G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

[2] CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

[3] HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity

[4] DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

[5] F = Fine (<4.75mm), C = Coarse (>4.75mm)

Notes

Sample Receipt:
Two samples, each as loose material in a 5-gallon bucket, were hand-delivered on November 24, 2020. Both samples were received in good order.

Sample Preparation and Testing Notes:
A representative portion of each sample was remolded into a testing ring to target 90% of maximum dry bulk density at optimum moisture content, based on client provided standard proctor compaction test results. The remolded sub-samples were subjected to initial properties analysis, saturation, and the hanging column and pressure chamber portions of the moisture retention testing. Secondary sub-samples were also prepared, using the same target remold parameters. The secondary sub-samples were extruded from the testing rings and were subjected to saturated hydraulic conductivity testing via the flexible wall method. The actual percentage of maximum dry bulk density achieved was added to each sub-sample ID. Separate sub-samples were obtained for the dewpoint potentiometer and relative humidity chamber portions of the moisture retention testing.

Porosity calculations are based on the use of an assumed specific gravity value of 2.65.

Volumetric water contents were adjusted for changes in volume, where applicable. Due to the irregularities formed on the sample surfaces during settling or swelling, volume measurements obtained after the initial reading should be considered estimates.

Summary of Sample Preparation/Volume Changes

	Client Provided Proctor Data		Target Remold Parameters[1]			Actual Remold Data			Volume Change Post Saturation[2]			Volume Change Post Drying Curve[3]		
Sample Number	Opt. Moist. Cont. (%, g/g)	Max. Dry Density (g/cm^3)	Moist. Cont. (%, g/g)	Dry Bulk Density (g/cm^3)	% of Max. Density (%)	Moist. Cont. (%, g/g)	Dry Bulk Density (g/cm^3)	% of Max. Density (%)	Dry Bulk Density (g/cm^3)	% Volume Change (%)	% of Max. Density (%)	Dry Bulk Density (g/cm^3)	% Volume Change (%)	% of Max. Density (%)
Borrow A (90%)	15.7	1.74	15.7	1.56	90%	15.7	1.56	90.1%	1.53	+2.5%	87.9%	1.53	+2.2%	88.1%
Borrow B (90%)	19.9	1.54	19.9	1.38	90%	19.8	1.39	90.2%	1.36	+2.1%	88.3%	1.36	+1.9%	88.5%

[1]Target Remold Parameters: 90% of maximum dry density at optimum moisture content based on client provided standard proctor compaction test results.

[2]Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

[3]Volume Change Post Drying Curve: Volume change measurements were obtained throughout hanging column and pressure plate testing. The 'Volume Change Post Drying Curve' values represent the final sample dimensions after the last pressure plate point.

Notes:

"+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

Sample Number	Moisture Content: As Received Gravimetric (%, g/g)	Moisture Content: As Received Volumetric (%, cm^3/cm^3)	Moisture Content: Remolded Gravimetric (%, g/g)	Moisture Content: Remolded Volumetric (%, cm^3/cm^3)	Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
Borrow A (90%)	NA	NA	15.7	24.6	1.56	1.81	41.0
Borrow B (90%)	NA	NA	19.8	27.5	1.39	1.66	47.6

NA = Not analyzed

--- = This sample was not remolded

Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
Borrow A (90%)	8.7E-05	NA		X
Borrow B (90%)	4.4E-04	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Summary of Moisture Characteristics of the Initial Drainage Curve

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
Borrow A (90%)	0	42.5 ⌗
	17	41.5 ⌗
	60	37.3 ⌗
	128	35.1 ⌗
	337	32.7 ⌗
	14583	17.9 ⌗
	50174	13.1 ⌗
	200697	9.6 ⌗
	846993	6.7 ⌗
Borrow B (90%)	0	48.6 ⌗
	12	44.7 ⌗
	35	41.6 ⌗
	103	38.7 ⌗
	337	35.6 ⌗
	23251	17.1 ⌗
	88621	13.0 ⌗
	401169	9.1 ⌗
	846993	7.3 ⌗

⌗ Volume adjustments are applicable at this matric potential (see data sheet for this sample).

Summary of Calculated Unsaturated Hydraulic Properties

Sample Number	α (cm^{-1})	N (dimensionless)	θ_r (% vol)	θ_s (% vol)	Oversize Corrected θ_r (% vol)	Oversize Corrected θ_s (% vol)
Borrow A (90%)	0.0129	1.1797	0.00	42.04	NA	NA
Borrow B (90%)	0.0172	1.1763	0.00	46.58	NA	NA

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NR = Not requested

NA = Not applicable

Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity*)

Sample Number	1/3 Bar Point Volumetric (%, cm^3/cm^3)	15 Bar Point Volumetric (%, cm^3/cm^3)	Water Holding Capacity (%, cm^3/cm^3)	Oversize Corrected 1/3 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected 15 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected Water Holding Capacity (%, cm^3/cm^3)
Borrow A (90%)	31.4	16.3	15.2	NA	NA	NA
Borrow B (90%)	33.5	17.4	16.1	NA	NA	NA

*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested

Initial Properties

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

Sample Number	Moisture Content: As Received, Gravimetric (%, g/g)	Moisture Content: As Received, Volumetric (%, cm^3/cm^3)	Moisture Content: Remolded, Gravimetric (%, g/g)	Moisture Content: Remolded, Volumetric (%, cm^3/cm^3)	Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
Borrow A (90%)	NA	NA	15.7	24.6	1.56	1.81	41.0
Borrow B (90%)	NA	NA	19.8	27.5	1.39	1.66	47.6

NA = Not analyzed

--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

	As Received	Remolded
Test Date:	NA	1-Dec-20
Field weight of sample* (g)*:*		535.71
Tare weight, ring (g)*:*		133.53
Tare weight, pan/plate (g)*:*		0.00
Tare weight, other (g)*:*		0.00
Dry weight of sample (g)*:*		347.58
Sample volume (cm^3)*:*		222.26
Assumed particle density (g/cm^3)*:*		2.65
Gravimetric Moisture Content (% g/g)*:*		15.7
Volumetric Moisture Content (% vol)*:*		24.6
Dry bulk density (g/cm^3)*:*		1.56
Wet bulk density (g/cm^3)*:*		1.81
Calculated Porosity (% vol)*:*		41.0
Percent Saturation:		59.9

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not applicable
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

	As Received	Remolded
Test Date:	NA	1-Dec-20
Field weight of sample* (g)*:*		516.84
Tare weight, ring (g)*:*		145.06
Tare weight, pan/plate (g)*:*		0.00
Tare weight, other (g)*:*		0.00
Dry weight of sample (g)*:*		310.29
Sample volume (cm^3)*:*		223.61
Assumed particle density (g/cm^3)*:*		2.65
Gravimetric Moisture Content (% g/g)*:*		19.8
Volumetric Moisture Content (% vol)*:*		27.5
Dry bulk density (g/cm^3)*:*		1.39
Wet bulk density (g/cm^3)*:*		1.66
Calculated Porosity (% vol)*:*		47.6
Percent Saturation:		57.7

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not applicable
--- = This sample was not remolded

Saturated Hydraulic Conductivity

Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
Borrow A (90%)	8.7E-05	NA		X
Borrow B (90%)	4.4E-04	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Remolded or Initial Sample Properties	
Initial Mass (g):	402.54
Diameter (cm):	6.112
Length (cm):	7.568
Area (cm^2):	29.34
Volume (cm^3):	222.04
Dry Density (g/cm^3):	1.56
Dry Density (pcf):	97.6
Water Content (%, g/g):	16.0
Water Content (%, vol):	25.0
Void Ratio (e):	0.70
Porosity (%, vol):	41.0
Saturation (%):	60.9

Post Permeation Sample Properties	
Saturated Mass (g):	443.66
Dry Mass (g):	347.08
Diameter (cm):	6.111
Length (cm):	7.578
*Deformation (%)**:*	0.14
Area (cm^2):	29.33
Volume (cm^3):	222.27
Dry Density (g/cm^3):	1.56
Dry Density (pcf):	97.5
Water Content (%, g/g):	27.8
Water Content (%, vol):	43.5
Void Ratio(e):	0.70
Porosity (%, vol):	41.1
Saturation (%):*	105.8

Test and Sample Conditions

Permeant liquid used: Tap Water
Sample Preparation: ☐ In situ sample, extruded
☑ Remolded Sample
Number of Lifts: 3
Split: #4
Percent Coarse Material (%): 0
Particle Density(g/cm^3): 2.65 ☑ Assumed ☐ Measured
Cell pressure (PSI): 81.0
Influent pressure (PSI): 80.0
Effluent pressure (PSI): 80.0
Panel Used: ☑ A ☐ B ☐ C
Reading: ☐ Annulus ☑ Pipette

		Date/Time
B-Value (% saturation) prior to test*:	0.99	12/3/20 958
B-Value (% saturation) post to test:	0.99	12/4/20 913

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

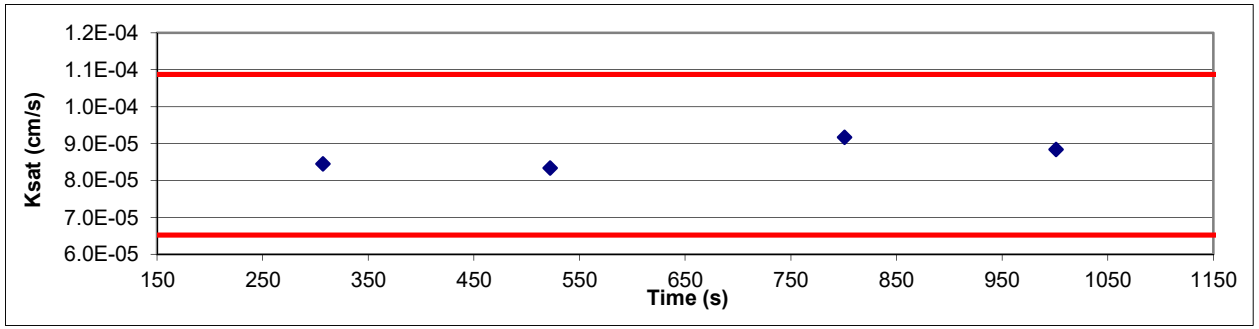
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-20	10:10:00	18.6	10.00	20.00	1.52	0.87	307	1.00	20%	8.16E-05	8.45E-05
03-Dec-20	10:15:07	18.6	11.00	19.00	1.22						
Test # 2:											
03-Dec-20	10:18:22	18.6	11.50	18.50	1.07	0.43	215	1.00	14%	8.05E-05	8.34E-05
03-Dec-20	10:21:57	18.6	12.00	18.00	0.91						
Test # 3:											
04-Dec-20	08:39:00	19.2	10.00	20.00	1.52	0.87	279	1.00	20%	8.98E-05	9.17E-05
04-Dec-20	08:43:39	19.2	11.00	19.00	1.22						
Test # 4:											
04-Dec-20	08:46:30	19.2	11.50	18.50	1.07	0.43	200	1.00	14%	8.65E-05	8.84E-05
04-Dec-20	08:49:50	19.2	12.00	18.00	0.91						

***Average Ksat* (cm/sec):** **8.70E-05**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 6.52E-05

Ksat (+25%) (cm/s): 1.09E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	370.89	*Saturated Mass (g):*	415.26	*Permeant liquid used:*	Tap Water
Diameter (cm):	6.105	*Dry Mass (g):*	308.15	*Sample Preparation:*	☐ In situ sample, extruded
Length (cm):	7.628	*Diameter (cm):*	6.091		☑ Remolded Sample
Area (cm^2):	29.27	*Length (cm):*	7.628	*Number of Lifts:*	3
Volume (cm^3):	223.29	*Deformation (%)**:*	0.00	*Split:*	#4
Dry Density (g/cm^3):	1.38	*Area (cm^2):*	29.14	*Percent Coarse Material (%):*	0
Dry Density (pcf):	86.2	*Volume (cm^3):*	222.26	*Particle Density(g/cm^3):*	2.65 ☑ Assumed ☐ Measured
Water Content (%, g/g):	20.4	*Dry Density (g/cm^3):*	1.39	*Cell pressure (PSI):*	81.0
Water Content (%, vol):	28.1	*Dry Density (pcf):*	86.6	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.92	*Water Content (%, g/g):*	34.8	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	47.9	*Water Content (%, vol):*	48.2	*Panel Used:*	☐ A ☑ B ☐ C
Saturation (%):	58.6	*Void Ratio(e):*	0.91	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	47.7		Date/Time
		Saturation (%):*	101.1	B-Value (% saturation) prior to test*:	0.99 12/3/20 955
				B-Value (% saturation) post to test:	0.99 12/4/20 910

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

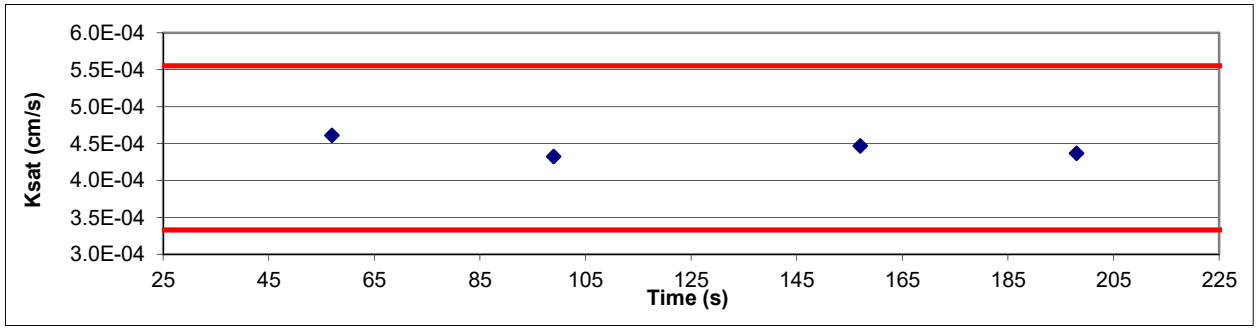
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-20	10:10:00	18.6	10.00	20.00	1.51	0.87	57	1.00	20%	4.45E-04	4.61E-04
03-Dec-20	10:10:57	18.6	11.00	19.00	1.21						
Test # 2:											
03-Dec-20	10:11:35	18.6	11.50	18.50	1.06	0.43	42	1.00	14%	4.17E-04	4.32E-04
03-Dec-20	10:12:17	18.6	12.00	18.00	0.91						
Test # 3:											
04-Dec-20	08:49:00	19.2	10.00	20.00	1.51	0.87	58	1.00	20%	4.38E-04	4.47E-04
04-Dec-20	08:49:58	19.2	11.00	19.00	1.21						
Test # 4:											
04-Dec-20	08:50:34	19.2	11.50	18.50	1.06	0.43	41	1.00	14%	4.28E-04	4.37E-04
04-Dec-20	08:51:15	19.2	12.00	18.00	0.91						

***Average Ksat* (cm/sec):** **4.44E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 3.33E-04

Ksat (+25%) (cm/s): 5.55E-04

Moisture Retention Characteristics

Summary of Moisture Characteristics of the Initial Drainage Curve

Sample Number	Pressure Head (-cm water)	Moisture Content (%, cm^3/cm^3)
Borrow A (90%)	0	42.5 ⌗
	17	41.5 ⌗
	60	37.3 ⌗
	128	35.1 ⌗
	337	32.7 ⌗
	14583	17.9 ⌗
	50174	13.1 ⌗
	200697	9.6 ⌗
	846993	6.7 ⌗
Borrow B (90%)	0	48.6 ⌗
	12	44.7 ⌗
	35	41.6 ⌗
	103	38.7 ⌗
	337	35.6 ⌗
	23251	17.1 ⌗
	88621	13.0 ⌗
	401169	9.1 ⌗
	846993	7.3 ⌗

⌗ Volume adjustments are applicable at this matric potential (see data sheet for this sample).

Summary of Calculated Unsaturated Hydraulic Properties

Sample Number	α (cm^{-1})	N (dimensionless)	θ_r (% vol)	θ_s (% vol)	Oversize Corrected θ_r (% vol)	Oversize Corrected θ_s (% vol)
Borrow A (90%)	0.0129	1.1797	0.00	42.04	NA	NA
Borrow B (90%)	0.0172	1.1763	0.00	46.58	NA	NA

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NR = Not requested

NA = Not applicable

Moisture Retention Data

Hanging Column / Pressure Plate

(Soil-Water Characteristic Curve)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Dry wt. of sample (g): 347.58
Tare wt., ring (g): 133.53
Tare wt., screen & clamp (g): 26.82
Initial sample volume (cm^3): 222.26
Initial dry bulk density (g/cm^3): 1.56
Assumed particle density (g/cm^3): 2.65
Initial calculated total porosity (%): 40.99

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
Hanging column:	3-Dec-20	14:30	604.80	0	42.54	‡‡
	10-Dec-20	11:00	602.21	17.0	41.49	‡‡
	17-Dec-20	13:45	592.60	60.0	37.26	‡‡
	23-Dec-20	14:40	587.63	128.0	35.07	‡‡
Pressure plate:	4-Jan-21	13:00	582.25	337	32.70	‡‡

Volume Adjusted Data [1]

	Matric Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calculated Porosity (%)
Hanging column:	0.0	227.72	+2.46%	1.53	42.40
	17.0	227.25	+2.24%	1.53	42.28
	60.0	227.25	+2.24%	1.53	42.28
	128.0	227.25	+2.24%	1.53	42.28
Pressure plate:	337	227.25	+2.24%	1.53	42.28

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

* Weight including tares

† Assumed density of water is 1.0 g/cm^3

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Technician Notes:

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Moisture Retention Data

Dew Point Potentiometer / Relative Humidity Box

(Soil-Water Characteristic Curve)

Sample Number: Borrow A (90%)

Initial sample bulk density (g/cm^3)*:* 1.56

Fraction of bulk sample used (<2.00mm fraction) (%): 99.00

Dry weight of dew point potentiometer sample* (g)*:* 159.52

Tare weight, jar (g)*:* 111.98

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content † (% vol)	
Dew point potentiometer:	16-Dec-21	12:12	165.13	14583	17.87	‡‡
	14-Dec-20	14:14	163.64	50174	13.12	‡‡
	10-Dec-20	12:00	162.54	200697	9.62	‡‡

Volume Adjusted Data [1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
Dew point potentiometer:	14583	227.25	+2.24%	1.53	42.28
	50174	227.25	+2.24%	1.53	42.28
	200697	227.25	+2.24%	1.53	42.28

Dry weight of relative humidity box sample* (g)*:* 82.29

Tare weight (g)*:* 39.33

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content † (% vol)	
Relative humidity box:	9-Dec-21	14:15	84.18	846993	6.67	‡‡

Volume Adjusted Data [1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
Relative humidity box:	846993	227.25	+2.24%	1.53	42.28

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

* Weight including tares

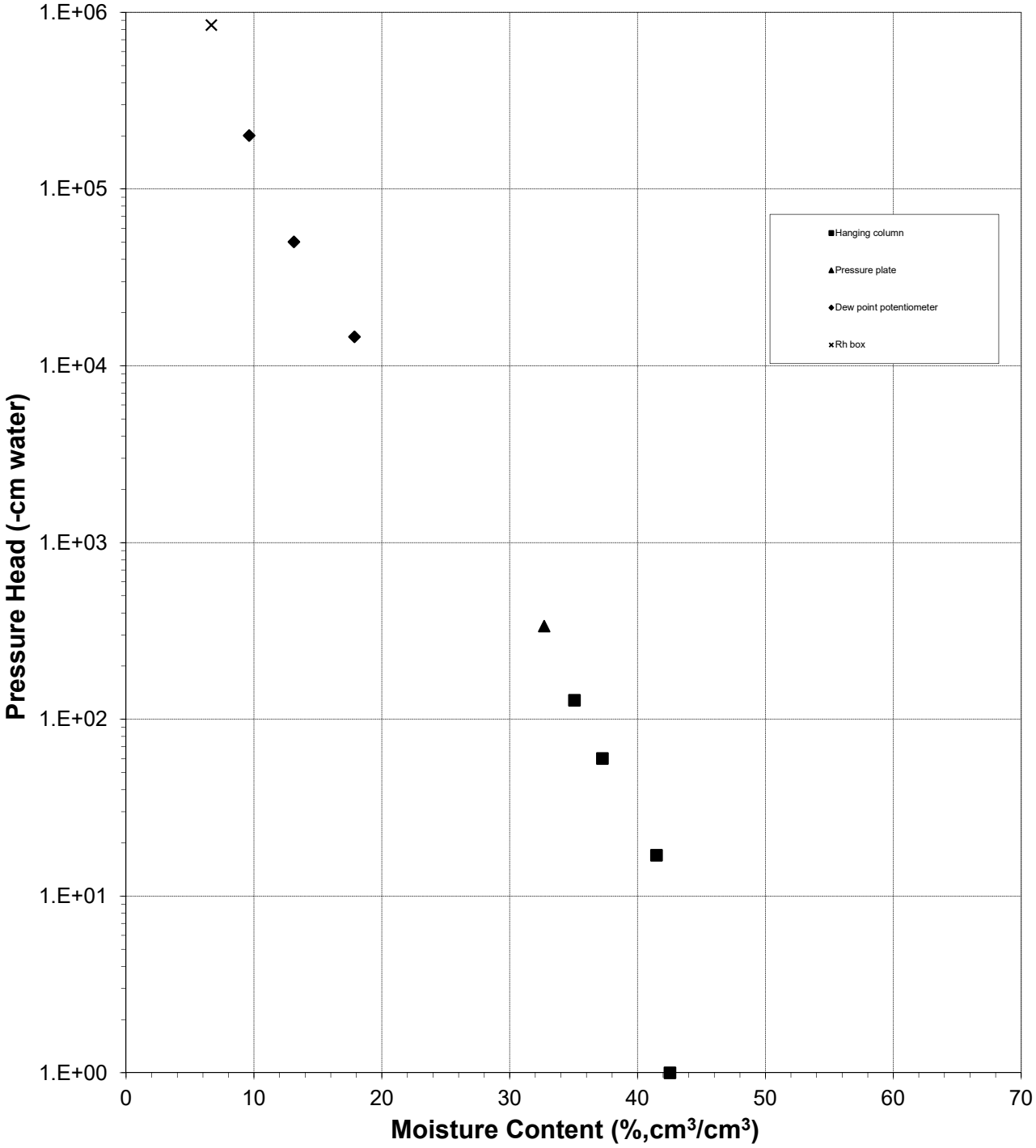
† Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm^3.

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

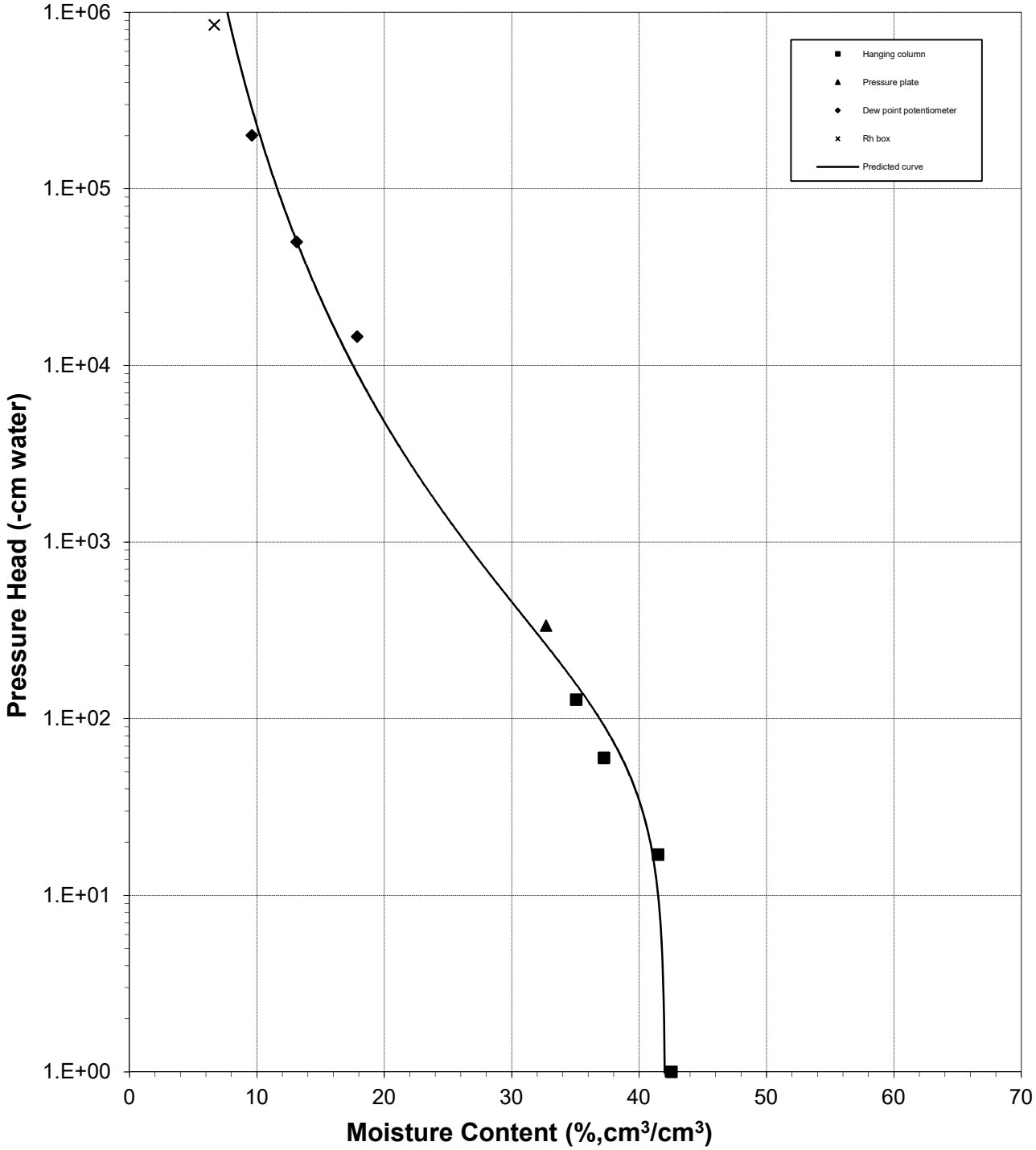
Water Retention Data Points

Sample Number: Borrow A (90%)



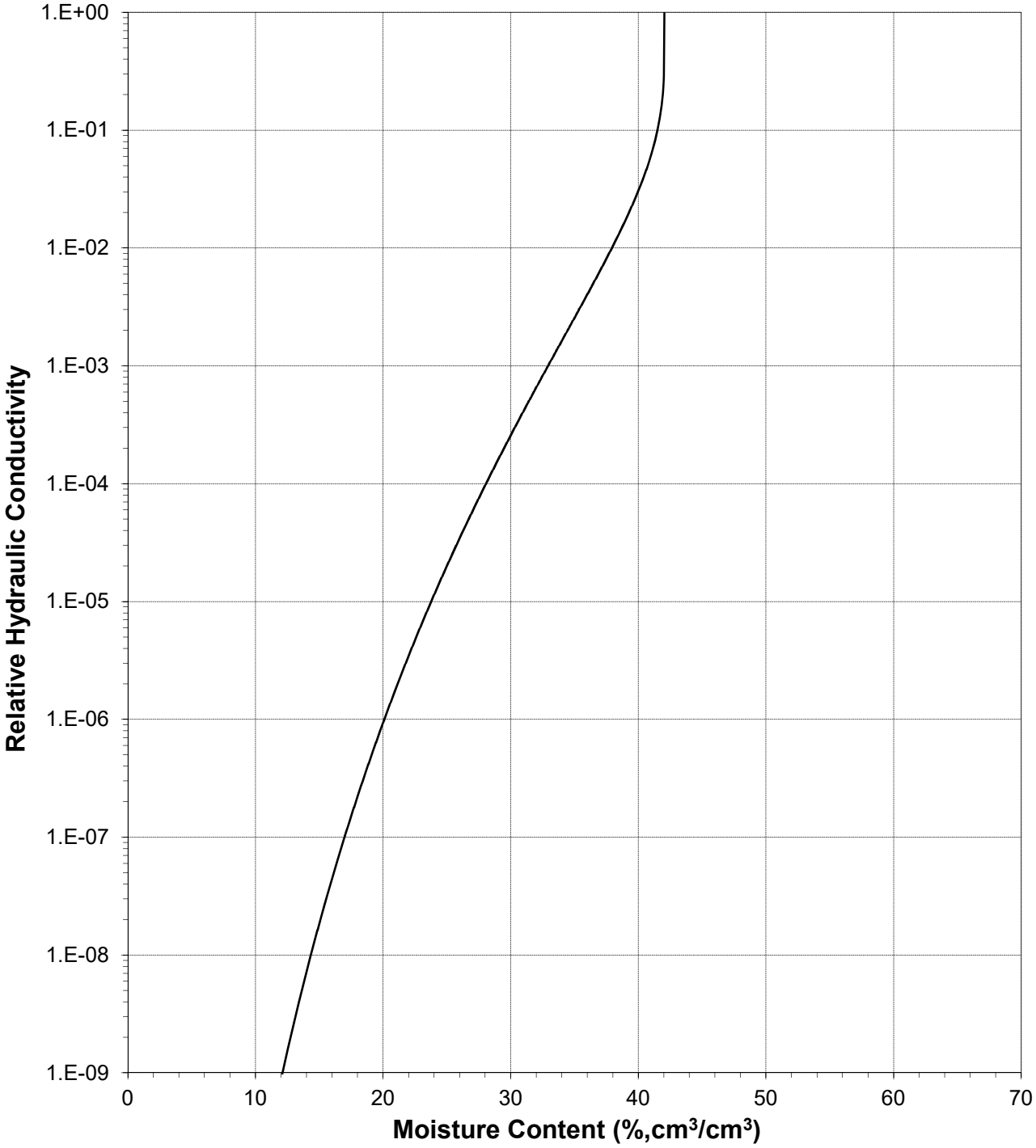
Predicted Water Retention Curve and Data Points

Sample Number: Borrow A (90%)



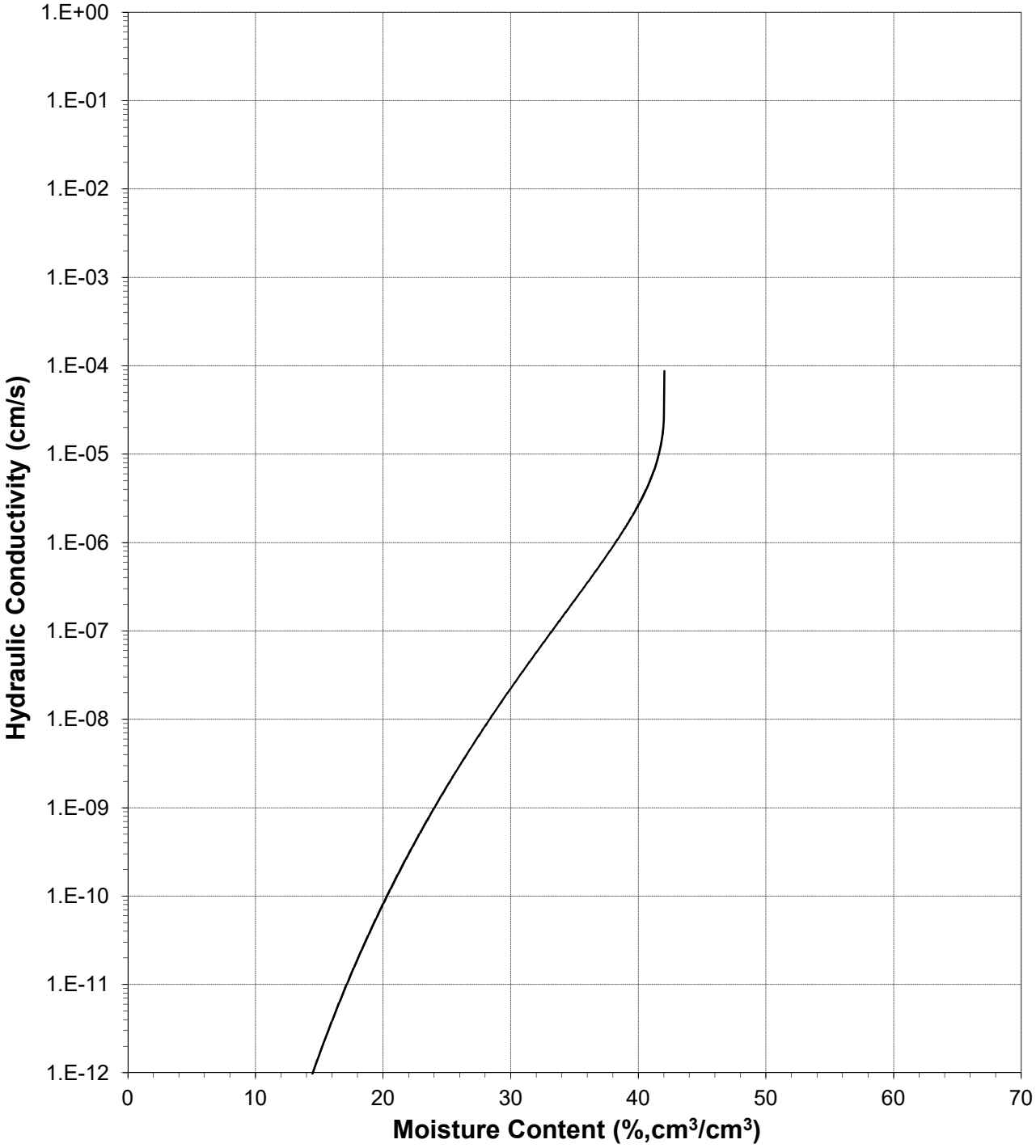
Plot of Relative Hydraulic Conductivity vs Moisture Content

Sample Number: Borrow A (90%)



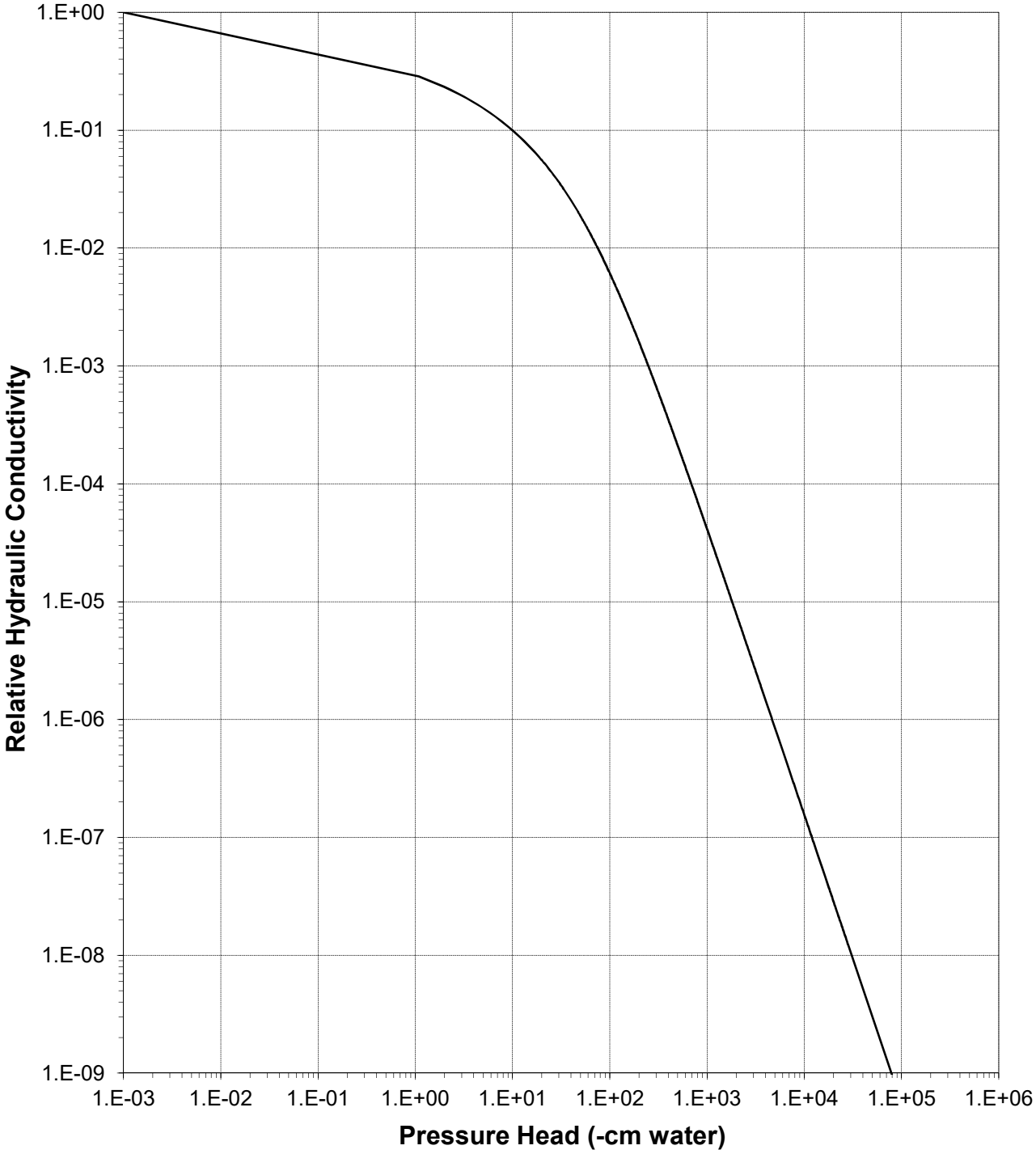
Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: Borrow A (90%)



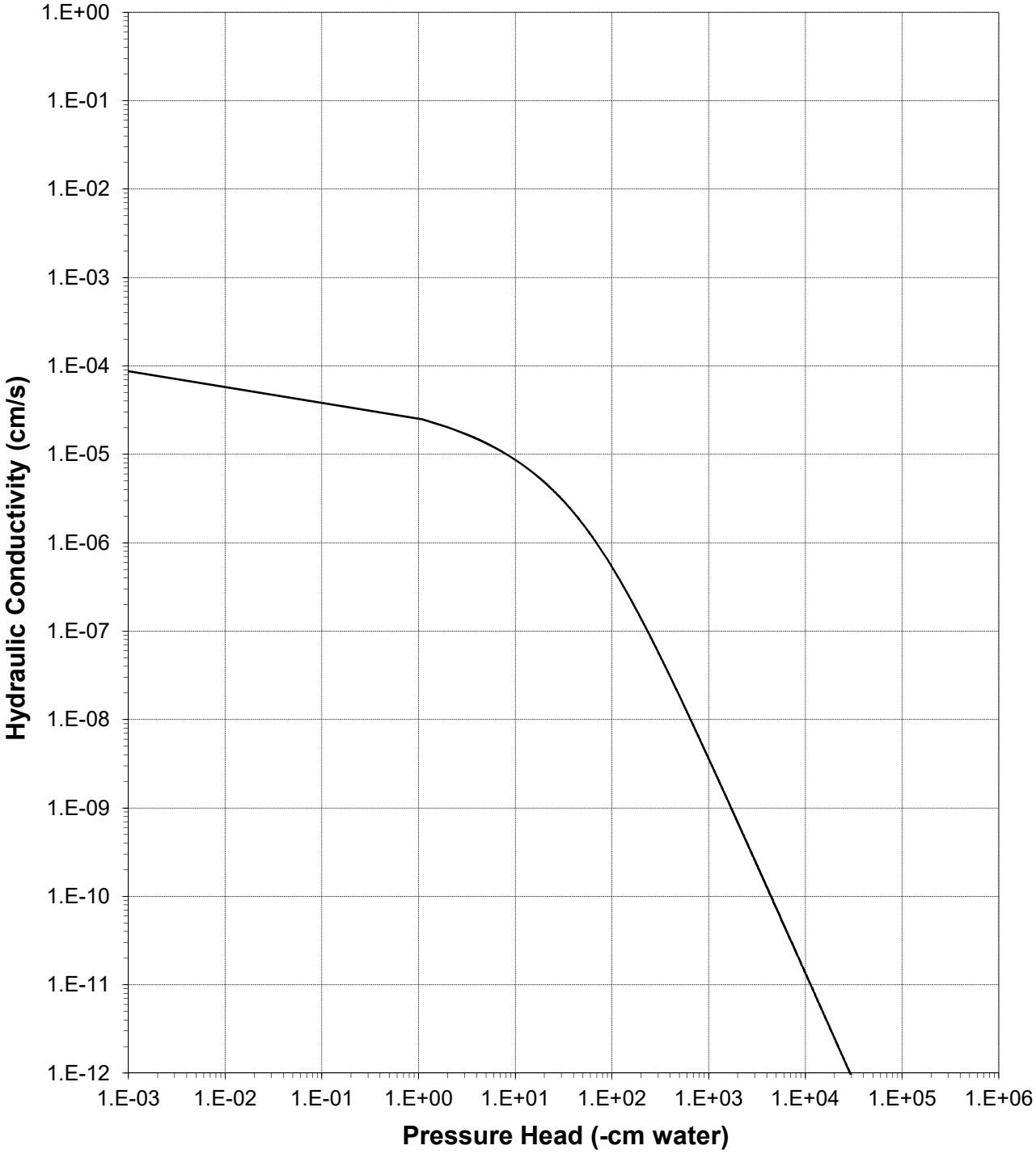
Plot of Relative Hydraulic Conductivity vs Pressure Head

Sample Number: Borrow A (90%)



Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Borrow A (90%)



Moisture Retention Data

Hanging Column / Pressure Plate

(Soil-Water Characteristic Curve)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Dry wt. of sample (g): 310.29
Tare wt., ring (g): 145.06
Tare wt., screen & clamp (g): 24.19
Initial sample volume (cm^3): 223.61
Initial dry bulk density (g/cm^3): 1.39
Assumed particle density (g/cm^3): 2.65
Initial calculated total porosity (%): 47.64

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
Hanging column:	3-Dec-20	14:30	590.48	0	48.57	‡‡
	10-Dec-20	10:50	581.57	12.0	44.75	‡‡
	17-Dec-20	13:40	574.38	35.0	41.62	‡‡
	23-Dec-20	14:40	567.83	103.0	38.74	‡‡
Pressure plate:	4-Jan-21	13:00	560.64	337	35.59	‡‡

Volume Adjusted Data [1]

	Matric Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calculated Porosity (%)
Hanging column:	0.0	228.42	+2.15%	1.36	48.74
	12.0	228.01	+1.97%	1.36	48.65
	35.0	227.89	+1.91%	1.36	48.62
	103.0	227.89	+1.91%	1.36	48.62
Pressure plate:	337	227.89	+1.91%	1.36	48.62

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent each of the volume change measurements obtained after saturated hydraulic conductivity testing and throughout hanging column/pressure plate testing. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

* Weight including tares

† Assumed density of water is 1.0 g/cm^3

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Technician Notes:

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Moisture Retention Data

Dew Point Potentiometer / Relative Humidity Box

(Soil-Water Characteristic Curve)

Sample Number: Borrow B (90%)

Initial sample bulk density (g/cm^3)*:* 1.39

Fraction of bulk sample used (<2.00mm fraction) (%): 99.00

Dry weight of dew point potentiometer sample* (g)*:* 166.36

Tare weight, jar (g)*:* 119.32

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content † (% vol)	
Dew point potentiometer:	16-Dec-21	13:10	172.33	23251	17.11	‡‡
	14-Dec-20	14:17	170.88	88621	12.95	‡‡
	10-Dec-20	12:06	169.54	401169	9.11	‡‡

Volume Adjusted Data [1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
Dew point potentiometer:	23251	227.89	+1.91%	1.36	48.62
	88621	227.89	+1.91%	1.36	48.62
	401169	227.89	+1.91%	1.36	48.62

Dry weight of relative humidity box sample* (g)*:* 95.20

Tare weight (g)*:* 47.61

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content † (% vol)	
Relative humidity box:	9-Dec-21	14:15	97.76	846993	7.26	‡‡

Volume Adjusted Data [1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
Relative humidity box:	846993	227.89	+1.91%	1.36	48.62

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

* Weight including tares

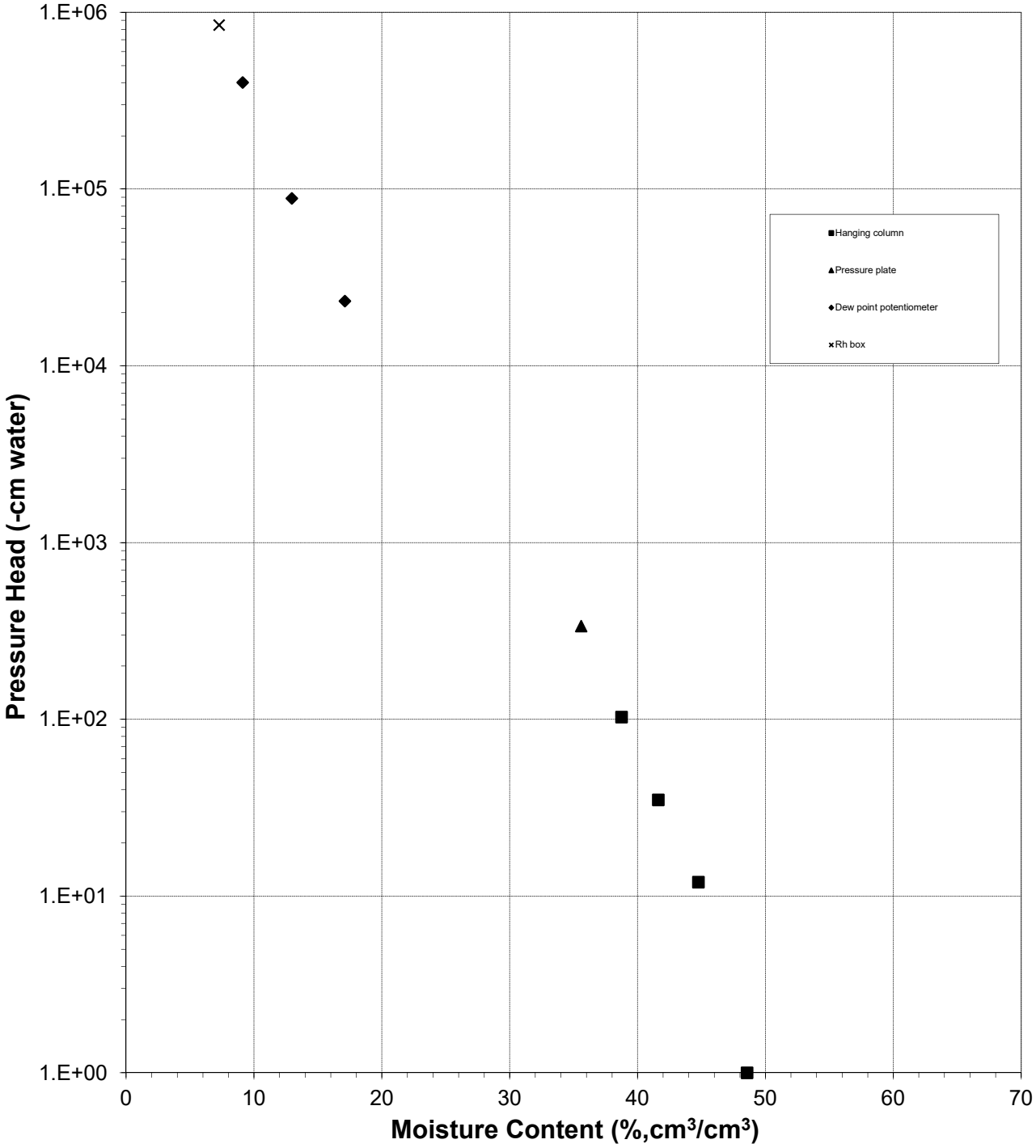
† Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm^3.

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

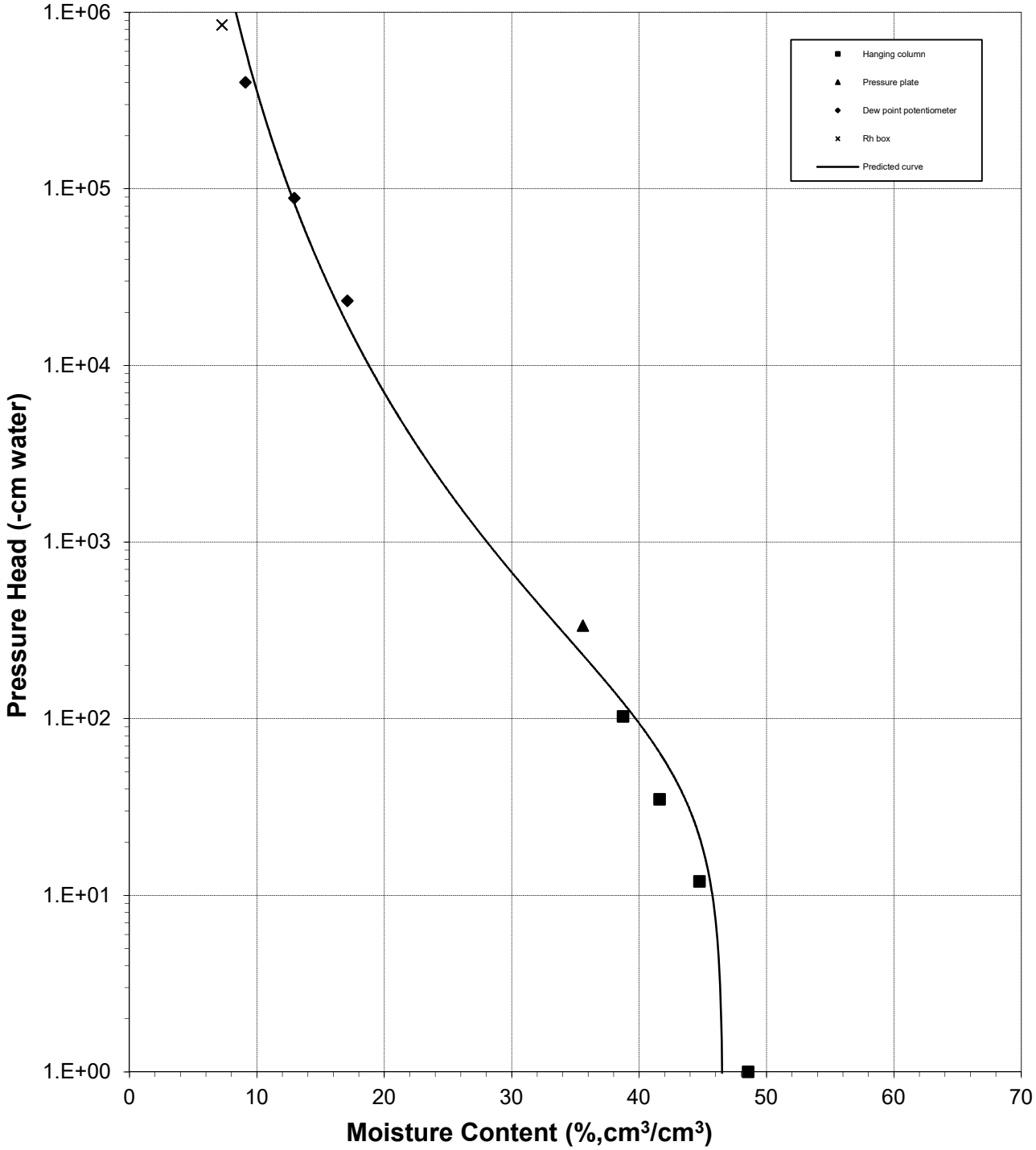
Water Retention Data Points

Sample Number: Borrow B (90%)



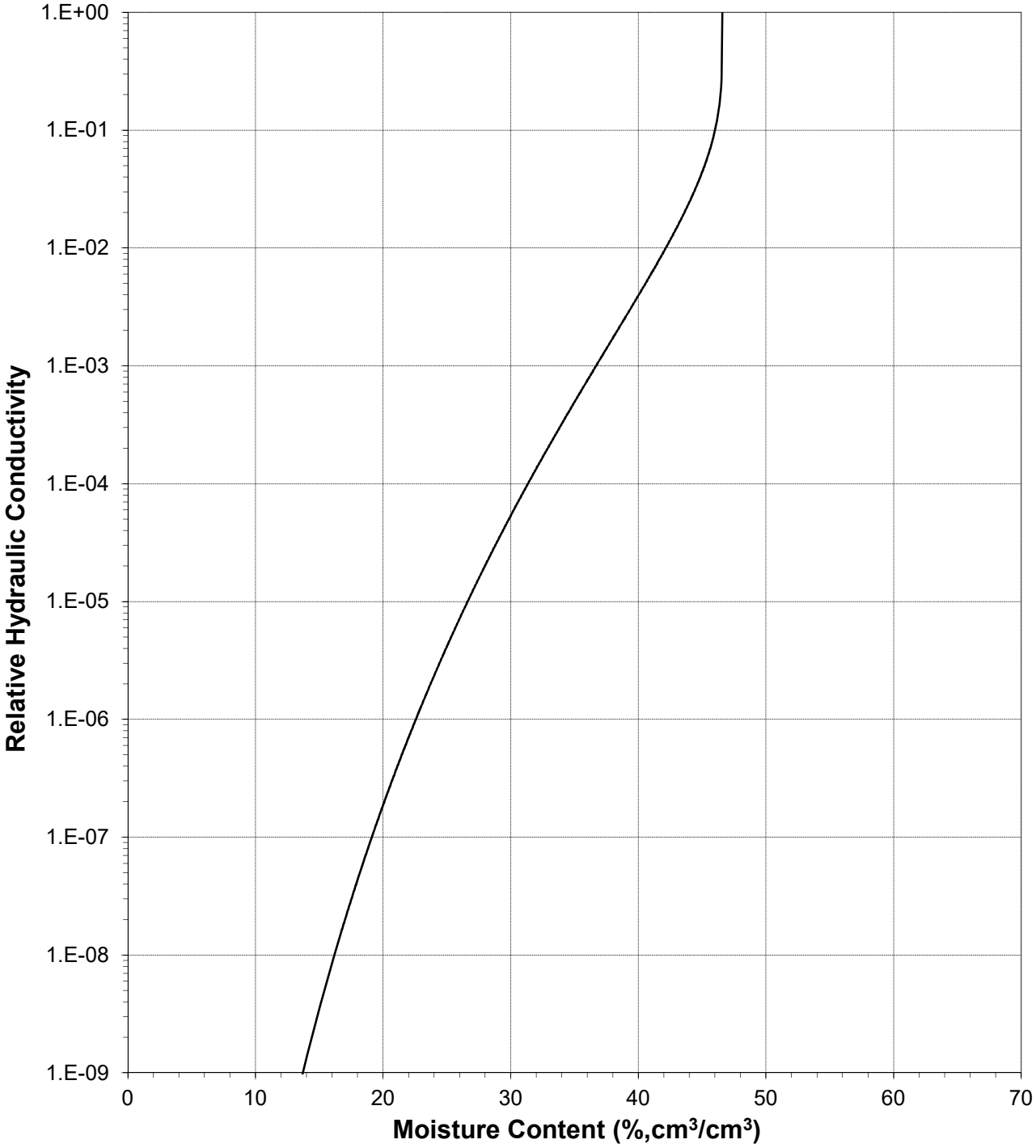
Predicted Water Retention Curve and Data Points

Sample Number: Borrow B (90%)



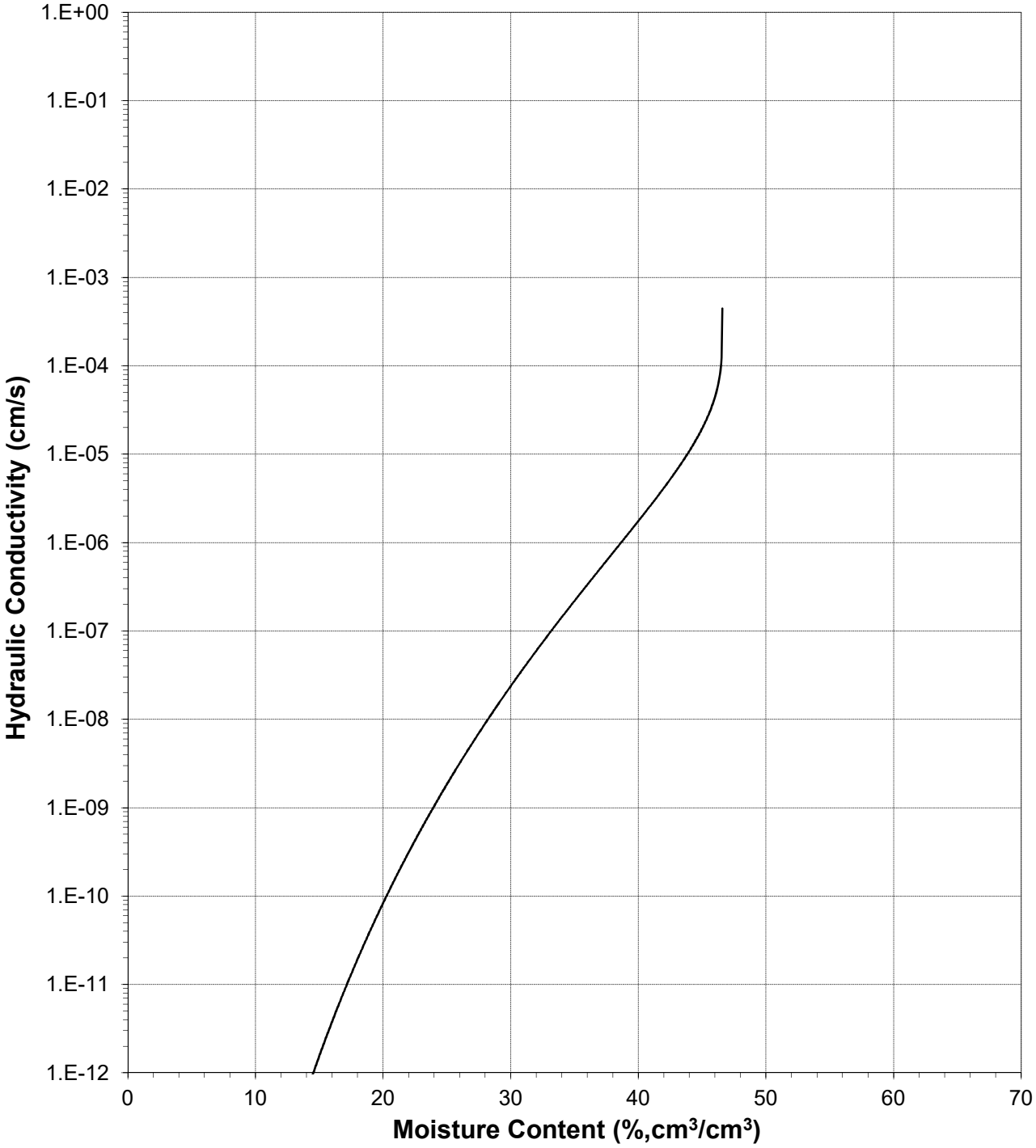
Plot of Relative Hydraulic Conductivity vs Moisture Content

Sample Number: Borrow B (90%)



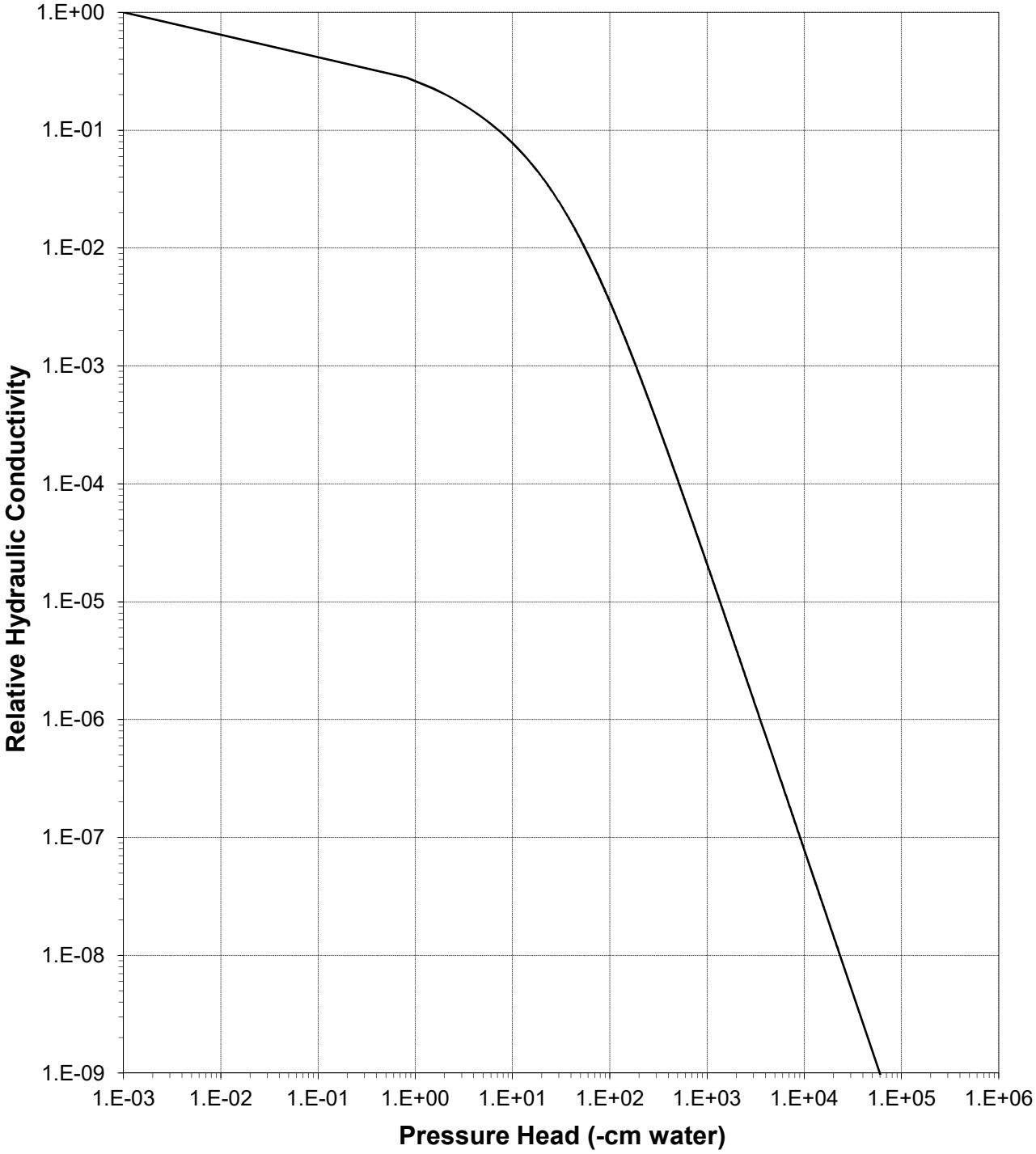
Plot of Hydraulic Conductivity vs Moisture Content

Sample Number: Borrow B (90%)



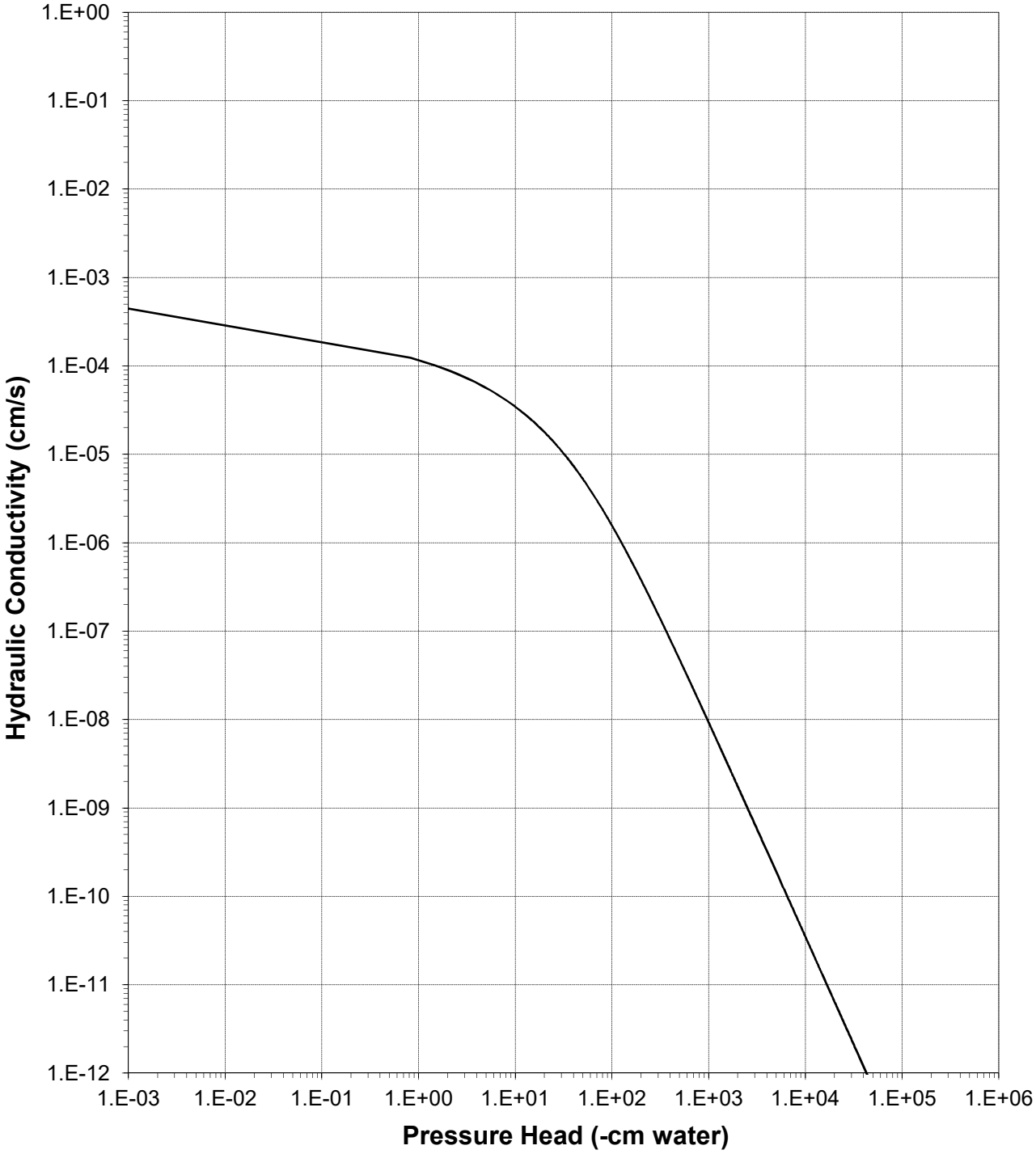
Plot of Relative Hydraulic Conductivity vs Pressure Head

Sample Number: Borrow B (90%)



Plot of Hydraulic Conductivity vs Pressure Head

Sample Number: Borrow B (90%)



Water Holding Capacity

Summary of Moisture Retention (1/3, 15 Bar Points and Water Holding Capacity*)

Sample Number	1/3 Bar Point Volumetric (%, cm^3/cm^3)	15 Bar Point Volumetric (%, cm^3/cm^3)	Water Holding Capacity (%, cm^3/cm^3)	Oversize Corrected 1/3 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected 15 Bar Point Volumetric (%, cm^3/cm^3)	Oversize Corrected Water Holding Capacity (%, cm^3/cm^3)
Borrow A (90%)	31.4	16.3	15.2	NA	NA	NA
Borrow B (90%)	33.5	17.4	16.1	NA	NA	NA

*Water Holding Capacity (WHC) is defined here as the difference in the moisture content of the sample at -1/3 bar of water potential (commonly referred to as 'Field Capacity') and the moisture content of the sample at -15 bars of water potential (commonly referred to as 'Wilting Point').

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable

NR = Not requested

Moisture Retention Data

Pressure Plate

(-1/3 Bar)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Dry wt. of sample (g): 347.58
Tare wt., ring (g): 133.53
Tare wt., screen & clamp (g): 26.82
Initial sample volume (cm^3): 222.26
Initial dry bulk density (g/cm^3): 1.56
Assumed particle density (g/cm^3): 2.65
Initial calculated total porosity (%): 40.99

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
1/3 bar [3]:	NA	NA	NA	340	31.45	‡‡

Volume Adjusted Data [1]

	Matric Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calculated Porosity (%)
1/3 bar [3]:	337	227.25	+2.24%	1.53	42.28

Moisture content at -1/3 bar (% cm^3/cm^3): 31.4

Oversize Corrected Moisture content at -1/3 bar (% cm^3/cm^3): NA

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

[3] The moisture content of the sample at the 1/3 bar water potential was interpolated from the predicted water retention curve.

* Weight including tares

† Assumed density of water is 1.0 g/cm^3

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Technician Notes:

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Moisture Retention Data

(Effective Porosity)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow A (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Initial sample calculated total porosity (cm^3*):* 40.99
Assumed particle density (g/cm^3)*:* 2.65
Initial sample bulk density (g/cm^3)*:* 1.56
Fraction of bulk sample used (<2.00mm fraction) (%)*:* 99.00

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content† (% vol)	
-15 bar[3]*:*	NA	NA	NA	15297	16.27	‡‡

Volume Adjusted Data[1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change[2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
-15 bar[3]*:*	15297	227.25	+2.24%	1.53	42.28

Moisture content at -15 bars (% cm^3/cm^3): **16.3**

Oversize Corrected Moisture content at -15 bars (% cm^3/cm^3): **NA**

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

[3] The moisture content of the sample at -15 bars of water potential was interpolated from the predicted water retention curve.

* Weight including tares

† Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm^3.

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Moisture Retention Data

Pressure Plate

(-1/3 Bar)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Dry wt. of sample (g): 310.29
Tare wt., ring (g): 145.06
Tare wt., screen & clamp (g): 24.19
Initial sample volume (cm^3): 223.61
Initial dry bulk density (g/cm^3): 1.39
Assumed particle density (g/cm^3): 2.65
Initial calculated total porosity (%): 47.64

	Date	Time	Weight* (g)	Matric Potential (-cm water)	Moisture Content † (% vol)	
1/3 bar [3]:	NA	NA	NA	340	33.54	‡‡

Volume Adjusted Data [1]

	Matric Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change [2] (%)	Adjusted Density (g/cm^3)	Adjusted Calculated Porosity (%)
1/3 bar [3]:	340	227.89	+1.91%	1.36	48.62

Moisture content at -1/3 bar (% cm^3/cm^3): 33.5

Oversize Corrected Moisture content at -1/3 bar (% cm^3/cm^3): NA

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent volume change measurements obtained after the pressure plate testing. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

[3] The moisture content of the sample at the 1/3 bar water potential was interpolated from the predicted water retention curve.

* Weight including tares

† Assumed density of water is 1.0 g/cm^3

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

Technician Notes:

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Moisture Retention Data

(Effective Porosity)

Job Name: Alan Kuhn Associates, LLC
Job Number: DB20.1391.00
Sample Number: Borrow B (90%)
Project: Mt. Taylor Mine
PO #: AKA-DBSA 6

Initial sample calculated total porosity (cm^3*):* 47.64
Assumed particle density (g/cm^3)*:* 2.65
Initial sample bulk density (g/cm^3)*:* 1.39
Fraction of bulk sample used (<2.00mm fraction) (%)*:* 99.00

	Date	Time	Weight* (g)	Water Potential (-cm water)	Moisture Content† (% vol)	
-15 bar[3]*:*	NA	NA	NA	15297	17.42	‡‡

Volume Adjusted Data[1]

	Water Potential (-cm water)	Adjusted Volume (cm^3)	% Volume Change[2] (%)	Adjusted Density (g/cm^3)	Adjusted Calc. Porosity (%)
-15 bar[3]*:*	15297	227.89	+1.91%	1.36	48.62

Moisture content at -15 bars **(% cm^3/cm^3)*:*** **17.4**

Oversize Corrected Moisture content at -15 bars **(% cm^3/cm^3)*:*** **NA**

Comments:

[1] Applicable if the sample experienced volume changes during testing. 'Volume Adjusted' values represent the volume change measurements obtained after the last hanging column or pressure plate point. "---" indicates no volume changes occurred.

[2] Represents percent volume change from original sample volume. A '+' denotes measured sample swelling, a '-' denotes measured sample settling, and '---' denotes no volume change occurred.

[3] The moisture content of the sample at -15 bars of water potential was interpolated from the predicted water retention curve.

* Weight including tares

† Adjusted for >2.00mm (#10 sieve) material not used in DPP/RH testing. Assumed moisture content of material >2.00mm is zero, and assumed density of water is 1.0 g/cm^3.

‡‡ Volume adjustments are applicable at this matric potential (see comment #1). Changes in volume, if applicable, are estimated based on obtainable measurements of changes in sample length and diameter.

NA Not Applicable

Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Laboratory Tests and Methods

Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263, ASTM D2216
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity:	
Falling Head Rising Tail: (Flexible Wall)	ASTM D5084
Hanging Column Method:	ASTM D6836 (modified apparatus)
Pressure Plate Method:	ASTM D6836
Water Potential (Dewpoint Potentiometer) Method:	ASTM D6836
Relative Humidity (Box) Method:	Campbell, G. and G. Gee. 1986. Water Potential: Miscellaneous Methods. Chp. 25, pp. 631-632, in A. Klute (ed.), Methods of Soil Analysis. Part 1. American Society of Agronomy, Madison, WI; Karathanasis & Hajek. 1982. Quantitative Evaluation of Water Adsorption on Soil Clays. SSA Journal 46:1321-1325
Moisture Retention Characteristics & Calculated Unsaturated Hydraulic Conductivity:	ASTM D6836; van Genuchten, M.T. 1980. A closed-form equation for predicting the hydraulic conductivity of unsaturated soils. SSSAJ 44:892-898; van Genuchten, M.T., F.J. Leij, and S.R. Yates. 1991. The RETC code for quantifying the hydraulic functions of unsaturated soils. Robert S. Kerr Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Ada, Oklahoma. EPA/600/2091/065. December 1991
Water Holding Capacity (calc):	ASTM D6836; Stephens, D. B. 1996, pp.11-12, Vadose Zone Hydrology. CRC Press, Inc., Boca Raton, FL

C.5 Compaction Tests

Summary of Densities for Growth Media (2020-2021)

Densities/Moisture Tests for Phase 3 Construction

			In-place Densities Results				ASTM TEST			
							D2487	D4318	D698	D698
Date	Test #	Location	Elev.	Ydry	W%	Sample #	Class.	PI	Max. Y	Opt M %
12/3/20	1	Growth Media Cover (1st lift) @ 110'E/50'N of CP	7380	67.5	17.5	20-234	CL/SCL	18	105	16.5
		(Upper South Slope)	-9" FSG							
12/3/20	2	Growth Media Cover (1st lift) @ 60'E/80'N of CP	7372	75.3	14.6	20-234	CL/SCL	18	105	16.5
		(Upper West Slope)	-9" FSG							
12/3/20	3	Growth Media Cover (1st lift) @ 200'N/80'E of CP	7374	76.8	15.3	20-234	CL/SCL	18	105	16.5
		(Upper West Slope)	-9" FSG							
12/3/20	4	Growth Media Cover (1st lift) @ 240'N/140'E of CP	7378	73.4	14.2	20-234	CL/SCL	18	105	16.5
		(Upper North Slope)	-9" FSG							
12/17/20	5	Growth Media Cover (1st lift) @ 360'N/130'E of CP	7371.5	85.8	20.6	20-239	CL/SCL	18	105	16.5
		(Lower North Slope)	-9"FSG							
12/17/20	6	Growth Media Cover (1st lift) @ 410'N/200'E of CP	7360	75.8	16.1	20-239	CL/SCL	18	105	16.5
		(Lower North Slope)	-9" FSG							
12/17/20	7	Growth Media Cover (1st lift) @ 480'N/100'E of CP	7354.5	75.4	18.2	20-239				
		(Lower North Slope)	-9" FSG							
12/17/20	8	Growth Media Cover (1st Lift) @ 420"N/80"E of CP	7364	73.7	19.8	20.239				
		(Lower North Slope)	-9" FSG							

11/26/19

Summary of Densities for Clay Cover (2020-2021)

Densities/Moisture Tests for Phase 3 Construction

			In-place Densities Results				ASTM TEST			
							D2487	D4318	D698	D698
Date	Test #	Location	Elev.	Ydry	W%	Sample #	Class.	PI	Max. Y	Opt M %
11/4/20	1	Clay Cover(1st lift) @70'E/4'N of CP at SW corner of Disp.C	7367.4	109.2	13.6	20-208	CL	17	109.3	15.1
		35°20'14N/107°38'10W (Upper South Slope)	-1.5' FSG							
11/4/20	2	Clay Cover(1st lift) @120'E/90'N of CP at SW corner of Disp.C	7377.7	105.7	15.6	20-208	CL	17	109.3	15.1
		35°20'15N/107°38'09W (Upper South Slope)	-1.5' FSG							
11/4/20	3	Clay Cover(1st lift) @ 210'E/60'W of CP	7373.9	107.2	13.1	20-208	CL	17	109.3	15.1
		35°20'14N/107°38'09W (Upper South Slope)	-1.5' FSG							
11/5/20	4	Clay Cover(1st lift) @ 180'N/30'E of CP	7364.6	109.0	18	20-208	CL	17	109.3	15.1
		35°20'16N/107°38'10W (Upper West Slope)	-1.5' FSG							
11/5/20	5	Clay Cover(1st lift) @ 140'N/120'E of CP	7377.1	103.5	17.8	20-208	CL	17	109.3	15.1
		35°20'15N/107°38'10W (Upper West Slope)	-1.5' FSG							
11/5/5/20	6	Clay Cover(1st lift) @ 90'N/120' E of CP	7365.2	104.9	16.1	20-208	CL	17	109.3	15.1
		35°20'15N/107°38'10W (Upper West Slope)	-1.5' FSG							
11/6/20	7	Clay Cover(1st lift) @ 180'N/150'E of CP	7378.7	106.5	16.5	20-208	SC	13	113.5	13.9
		35°20'15N/107°38'10W (Upper North Slope)	-1.5' FSG							
11/6/20	8	Clay Cover(1st Lift) @ 230'N/150'E of CP	7378.6	109.8	16.3	20-207	SC	13	113.5	13.9
		35°20'16N/107°38'09W (Upper North Slope)	-1.5' FSG							
11/6/20	9	Clay Cover (2nd lift) @ 120'N/120'E of CP	7383	106.5	15.7	20-207	SC	13	113.5	13.9
		35°20'15N/107°38'09W (Upper South Slope)	-1' FSG							
11/6/20	10	Clay Cover(2nd lift) @ 150'N/40'E of CP	7367.9	104.9	14.3	20-207	SC	13	113.5	13.9
		35°20'15N/107°38'10W (Upper West Slope)	-1' FSG							
11/6/20	11	Clay Cover (2nd lift) @ 100'N/150'E of CP	7378.6	106.6	14.9	20-207	SC	13	113.5	13.9
		35°20'16N/107°38'09W (Upper West Slope)	-1' FSG							
11/6/20	12	Clay Cover(2nd lift) @ 120'N/35'E of CP	7363.2	105.2	13.9	20-207	SC	13	113.5	13.9
		35°20'15N/107°38'11W (Upper West Slope)	-1' FSG							

12/22/20

Summary of Densities for Clay Cover (2020-2021)

Densities/Moisture Tests for Phase 3 Construction

			In-place Densities Results				ASTM TEST			
							D2487	D4318	D698	D698
Date	Test #	Location	Elev.	Ydry	W%	Sample #	Class.	PI	Max. Y	Opt M %
11/10/20	13	Clay Cover(3rd lift) @ 170'N/50' E of CP	7365.9	101.9	18.1	20-207	CL	17	113.5	13.9
		(Upper West Slope)	-.5' FSG							
11/10/20	14	Clay Cover(3rd lift) @ 100'N/35' E of CP	7368.3	104	16.5	20-207	CL	17	113.5	13.9
		(Upper West Slope)	-.5' FSG							
11/10/20	15	Clay Cover(4th lift) @ 120'E/70'N of CP	7371.9	103.7	1703	20-207	CL	17	113.5	13.9
		(Upper South Slope)	FSG							
11/10/20	16	Clay Cover(4th lift) @ 180'E/40'N of CP	7369.5	104.9	18.1	20-207	CL	17	113.5	13.9
		(Upper South Slope)	FSG							
11/11/20	17	Clay Cover (4th lift) @ 70'N of CP	7369.1	112.7	18.1	20-208	CL	17	109.3	15.1
		Upper West Slope)	FSG							
11/11/20	18	Clay Cover (4th lift) @ 110'N og CP	7363.5	114.9	17.8	20-208	CL	17	109.3	15.1
		Upper West Slope)	FSG							
11/11/20	19	Clay Cover (4th lift) @ 100'N of CP	7362.6	108.2	21.7	20-208	CL	17	109.3	15.1
		(Upper West Slope)	FSG							
11/11/20	20	Clay Cover (4th lift) @ 150'N of CP	7371.5	109.8	16.7	20-208	CL	17	109.3	15.1
		(Uppper West Slope)	F5G							
11/11/20	21	Clay Cover (4th lift) @ 120'N of CP	7368	114.1	17.1	20-208	CL	17	109.3	15.1
		(Upper West Slope)	FSG							
11/11/20	22	Clay Cover (4th lift) @ 275' E of W edge at STA 6+10	7361	103.5	18.4	20-208	CL	17	109.3	15.1
		(Upper North Slope)	FSG							
11/11/20	23	Clay Cover (4th lift) @ 210'E of W edge at STA 6+20	7365.4	109.4	19	20-208	CL	17	109.3	15.1
		Upper North Slope)	FSG							
11/11/20	24	Clay Cover (4th lift) @ 160'E of W edge at STA 6+75	7372.7	108.8	18.1	20-208	CL	17	109.3	15.1
		(Upper North Slope)	FSG							

12/22/20

Summary of Densities for Clay Cover (2020-2021)

Densities/Moisture Tests for Phase 3 Construction

			In-place Densities Results				ASTM TEST			
							D2487	D4318	D698	D698
Date	Test #	Location	Elev.	Ydry	W%	Sample #	Class.	PI	Max. Y	Opt M %
11/11/20	25	Clay Cover(4th lift) @ 115'E of W Edge at STA 6+00	7375	103.8	18.6	20-208	CL	17	109.3	15.1
		(Upper North Slope)	FSG							
11/17/20	26	Clay Cover(1st lift) @ 325'N/80'E of CP	7367.9	99.3	18.4	20-213	CL	21	108.4	15.7
		(Southside of Upper N Slopes)	-1.5' FSG							
11/17/20	27	Clay Cover (1st lift) @420'N/60'E of CP	7361.1	99.9	17.7	20-213	CL	21	108.4	15.7
		(Westside of Upper N Slopes)	-1.5' FSG							
11/17/20	28	Clay Cover (1st lift) @ 480'N/140'E of CP	7356.7	103.6	18.6	20-213	CL	21	108.4	15.7
		(Northside of Upper N Slopes)	-1.5' FSG							
11/17/20	29	Clay Cover (1st lift) @ 420'N/240'E of CP	7354	102.9	18.7	20-213	CL	21	108.4	15.7
		(Northside of Upper N Slopes)	-1.5' FSG							
11/19/20	30	Clay Cover (1st lift) @ 170'E of Center of Drain Chan. STAS+00	7359.6	104.7	23.4	20-205	CL	25	96	19.9
		(Upper North Slope/Lower Ramp)	-1.5' FSG							
11/19/20	31	Clay Cover (2nd lift) @ 220'E of Center of Drain Chan. STA 4+00	7350.2	101	24.8	20-205	CL	25	96	19.9
		(Upper North Slope/Lower Ramp)	-1' FSG							
11/19/20	32	Clay Cover (2nd lift) @ 180'E of Center of Drain Chan. STA 3+75	7345.8	103.7	24.6	20-205	CL	25	96	19.9
		(Upper North Slope/Lower Ramp)	-1' FSG							
11/19/20	33	Clay Cover (2nd lift) @ 250'E of Center of Drain Chan. STA 3+00	7350.3	103.2	24.6	20-205	CL	25	96	19.9
		(Upper North Slope/Lower Ramp)	-1' FSG							
11/19/20	34	Clay Cover(2nd lift) @ 200'E of Drain Chan. Sta 3+50	7350.8	105.6	23.3	20-205	CL	25	96	19.9
		(Upper North Slope/Lower Ramp)	-1'FSG							
11/19/20	35	Clay Cover (2nd lift) @ 40'E pf Center of Drain Chan. STA 1+50	7347	101.9	22.2	20-205	CL	25	96	19.9
		(Upper N Slope/Upper Ramp)	-1' FSG							
11/19/20	36	Clay Cover (2nd lift) @ 30'E of Center of Drain Chan. STA 1+30	7347.1	102.5	21.7	20-205	CL	25	96	19.9
		(Upper N Slope/Upper Ramp)								

12/22/20

Summary of Densities for Clay Cover (2020-2021)

Densities/Moisture Tests for Phase 3 Construction

			In-place Densities Results				ASTM TEST			
							D2487	D4318	D698	D698
Date	Test #	Location	Elev.	Ydry	W%	Sample #	Class.	PI	Max. Y	Opt M %
11/19/20	37	Clay Cover (2nd lift) @ 200'E of Center of Drain Chan STA S+00	7367	104.7	21	20-205	CL	25	96	19.9
		(Upper N Slope/Lower ramp)	-1' FSG							
11/25/20	38	Clay Cover (4th lift) @ 160'E/55'N of CP	7369.5	95.9	20.5	20-205	CL	25	96	19.9
		(Upper South Side)	FSG							
11/25/20	39	Clay Cover (4th Lift) @80'E/140'N of CP	7366.8	93.1	21.7	20-205	CL	25	96	19.9
		(Upper West Side)	FSG							
11/25/20	40	Clay Cover (4th lift) @ 140'E/180'N of CP	7374.1	92.3	21.9	20-205	CL	25	96	19.9
		(Lower North Slopes)	FSG							
11/25/20	41	Clay Cover(4th lift) @ 480'N/100' E of CP	7355.1	90.3	22.1	20-205	CL	25	96	19.9
		(Lower North Slopes)	FSG							
11/25/20	42	Clay Cover (4th lift) @ 400'N/240'E of CP	7360	19	91.5	20-205	CL	25	96	19.9
		(Lower North Slopes)	FSG							

12/22/20

COMPACTION TEST RESULTS

PROJECT : Mt. Taylor Mine Clay Cap & Growth Medium Soil 2020-2021 - San Mateo, NM
CLIENT: Rio Grande Resources Corporatio
TECHNICIAN: Geoffrey Juskiewicz
PROJECT NO.: 444320-7350000.00
REPORT NO.: 5
DATE: 11/11/20
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
17	Clay cover upper west slope, fourth lift 70' N of CP at SW corner	7375 FSG	2	18.1	112.7	99	90
18	Clay cover upper west slope, fourth lift 110' N of CP at SW corner	7384 FSG	2	17.8	114.9	101	90
19	Clay cover upper west slope, fourth lift 100' N of CP at SW corner	7376 FSG	2	21.7	108.2	95	90
20	Clay cover upper west slope, fourth lift 150' N of CP at SW corner	7368 FSG	2	16.7	109.8	97	90
21	Clay cover upper west slope120' N of CP at SW corner	7388 FSG	2	17.1	114.1	101	90
22	Clay cover upper north slope 275' E of W edge @ sta 6+10	7370 FSG	2	18.4	103.5	91	90
23	Clay cover upper north slope 210' E of W edge @ sta 6+20	7380 FSG	2	19.0	109.4	96	90
24	Clay cover upper north slope 160' E of W edge @ sta 6+75	7388 FSG	2	18.1	108.8	96	90
25	Clay cover upper north slope 110' E of W edge @ sta 6+00	7375 FSG	2	18.6	103.8	91	90

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
2	Stockpile E of disposal cell (middle of stockpile/after processing) (20-207)	13.9	113.5	Clayey SAND

WEATHER: Partly cloudy, breezy, cold

EQUIPMENT: 2 rock trucks, blade, dozer, water truck

REMARKS: Contracting personnel informed of the test results.

COMPACTION TEST RESULTS

PROJECT: Mt. Taylor Mine Clay Cap & Growth Medium Soil — CLIENT: Rio Grande Resources Corporatio
2020-2021 - San Mateo, NM — TECHNICIAN: Joe Deans
PROJECT NO.: 444320-7350000.00 — REPORT NO.: 6 — DATE: 11/17/20
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
26	Clay cover on south side of lower north slopes (1st lift) at 325' N x 80' E of CP	7367.9 -1.5' FSG	4	18.4	99.3	92	90
27	Clay cover on Westside of lower N slopes (1st lifts) at 420' N x 60' E of CP	7361.1 -1.5' FSG	4	17.7	99.9	92	90
28	Clay cover on north side of lower N slopes (1st lift) at 480' N x 140' E of CP	7356.7 -1.5' FSG	4	18.6	103.6	96	90
29	Clay cover on N side of lower N slopes (1st lift) 420' N x 240' E of CP	7354 -1.5' FSG	4	18.7	102.9	95	90

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
4	Clay cover stockpile from borrow area "A" (20-213)	15.7	108.4	Sandy lean CLAY

WEATHER: Clear, warm

EQUIPMENT: Dozer, blade, excavator, water truck

REMARKS: Contracting personnel informed of the test results.

COMPACTION TEST RESULTS

PROJECT: Mt. Taylor Mine Clay Cap & Growth Medium Soil 2020-2021 - San Mateo, NM
CLIENT: Rio Grande Resources Corporatio
TECHNICIAN: Technician
PROJECT NO.: 444320-7350000.00
REPORT NO.: 7
DATE: Geoffrey Juskiewicz
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
30	Clay layer upper north slope 170' E of center of drainage channel @ sta 5+00 lower ramp	7367 1st lift	1	23.4	104.7	109	90
31	Clay layer upper north slope 220' E of center of drainage channel @ sta 4+00 lower ramp	7354 2nd lift	1	24.8	101.0	105	90
32	Clay layer upper north slope 180' E of center of drainage channel @ sta 3+70 lower ramp	7350 2nd lift	1	24.6	103.7	108	90
33	Clay layer upper north slope 250' E of center of drainage channel @ sta 3+00 lower ramp	7348 2nd lift	1	24.6	103.2	108	90
34	Clay layer upper north slope 200' E of center of drainage channel @ sta 3+50 lower ramp	7346 2nd lift	1	23.3	105.6	110	90
35	Clay layer upper north slope 40' E of center of drainage channel @ sta 1+50 upper ramp	7366 2nd lift	1	22.2	101.9	106	90
36	Clay layer upper north slope 30' E of center of drainage channel @ sta 1+30 upper ramp	7362 2nd lift	1	21.7	102.5	107	90
37	Clay layer upper north slope 200' E of center of drainage channel @ sta 5+00 lower ramp	7367 2nd lift	1	21.0	104.7	109	90

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	East side of borrow area "B" at elevation 7248 (20-205)	19.9	96.0	Lean CLAY with sand

WEATHER: Windy, sunny

EQUIPMENT: Dozer, blade, water trucks, 2 rock trucks

REMARKS: Contracting personnel informed of the test results.

COMPACTION TEST RESULTS

PROJECT : Mt. Taylor Mine Clay Cap & Growth Medium Soil 2020-2021 - San Mateo, NM
CLIENT: Rio Grande Resources Corporation
TECHNICIAN: Joe Deans
PROJECT NO.: 444320-7350000.00
REPORT NO.: 8
DATE: 11/25/20
COA PROJECT NO.:

Test No.	Location	Elevation	Proctor Number	Field Moisture (%)	Field Dry Density (PCF)	Relative Compaction (%)	Specified Compaction (%)
38	Clay cover (final lift) upper south slope 160' E x 55' N of CP	7376 FSG	1	20.5	95.9	100	90
39	Clay cover (final lift) upper west slope 140' N x 80' E of CP	7375 FSG	1	21.7	93.1	97	90
40	Clay cover (final lift) upper north slope 180' N x 140' E of CP	7386 FSG	1	21.9	92.3	96	90
41	Clay cover (final lift) lower north slope 480' N x 100' E of CP	7356 FSG	1	22.1	90.3	94	90
42	Clay cover (final lift) lower north slope 400' N x 240' E of CP	7360 FSG	1	19.0	91.5	95	90

Proctor Test Utilized

Proctor No.	Sample Location	Opt. Moisture Content (%)	Maximum Dry Dens (pcf)	Soil Description
1	East side of borrow area "B" at elevation 7248 (20-205)	19.9	96.0	Lean CLAY with sand

WEATHER: Clear, warm

EQUIPMENT: Dozers, front loader, water truck, end dumps

REMARKS: Contracting personnel informed of the test results.

C.6 Riprap Tests

Client: Rio Grande Resources Corporation Project Number: 444320-7350000.00

Project: Mt. Taylor Mine Clay Cap & Growth Medium Soil 2020-2021 - San Mateo, NM

Date Sampled: 11/18/20 Sample Number: 1

Location: Stockpiled 4-8" Rip Rap Material

Sieve Analysis Test Results

ASTM D422

Sieve Size	% Passing By Weight	Specs	Specs
8"	5		
4"	84		
1 1/2"	11		

NMED Cmnt 21

Disposal CEll Ful-25-Ac Buildout, Placement of Small Containment

Flat-top Area for Placement of Future Contaminated Materials, After Site is Remediated and Disposal Cell is Closed

N

STMH 23

STMH 22

EXPANDED DISPOSAL CELL

EXISTING DISPOSAL CELL

EXISTING UPPER NORTH, WEST AND SOUTH SLOPES

EXISTING LOWER WEST SLOPE

LOWER SOUTH SLOPE

CONCRETE CHUTES

LEACH FIELD

SOUTH STORM WATER POND 7288

FENCE LINE

CO RD 334

CONCRETE CHUTES

A CL11 · A' CL11 · B CL10 · B' CL10 · C CL11 · C' CL11

NOTES:

1. EXPANDED DISPOSAL CELL. (SEE NOTE G.3)
2. WASTE ROCK PILE AND DISPOSAL CELL AS OF DECEMBER 2021 - (11.5 ACRES)
3. WASTE ROCK PILE SLOPES = 5H TO 1V
4. ALL NEW SLOPES = 24" THICK CLAY COVER (RADON BARRIER) AND 24" LOAM COVER (GROWTH MEDIA)
5. LOWER SOUTH SLOPE = CONSTRUCTED WITH CLEAN SOILS (NO COVER NEEDED).
6. EXISTING DISPOSAL CELL WITH 1' THICK CLAY LINER.
7. STORM DRAINAGE PIPES AND MANHOLES
8. EXISTING SERVICE ROADS
9. THE EXISTING UPPER NORTH, WEST AND SOUTH SLOPE COVER SOILS = 24" OF GROWTH MEDIA SOIL OVER 24" CLAY RADON BARRIER. (AS OF FEBRUARY 2022 THERE IS 18" GROWTH MEDIA OVER 24" CLAY)
10. THE EXISTING LOWER WEST SLOPE COVER SOILS = 18" OF GROWTH MEDIA SOIL OVER 24" CLAY RADON BARRIER. (AS OF FEBRUARY 2022 THERE IS 12" GROWTH MEDIA OVER 24" CLAY)
11. BURIED LAGOON AREA. FILL OVER THIS AREA IF NEEDED.
12. LAGOON MONITORING WELLS WILL BE ABANDONED AS APPROVED BY NMED. △

LEGEND

- EXISTING CONTOURS
- 10' INTERVAL CONTOURS
- SERVICE ROADS
- DRAINAGE PIPES
- EXISTING DISPOSAL CELL (CLAY LINED)
- EXPANDED DISPOSAL CELL (CLAY LINED)
- EXISTING WASTE ROCK / DISPOSAL CELL (11.5 ACRES)
- WASTE ROCK PILE / DISPOSAL CELL FULL BUILDOUT (25 ACRES)
- BURIED LAGOON AREA

GENERAL NOTES:

G.1 FOR CONSTRUCTION, PLACEMENT, AND MATERIAL REQUIREMENTS SEE PROJECT EARTHWORK SPECIFICATIONS.

G.2 EXISTING SITE TOPOGRAPHY BASED ON SURVEY DATA BY S3 PERFORMED NOVEMBER 2020. CONTOUR INTERVALS = 2' VERTICAL.

G.3 EXPANSION OF THE DISPOSAL CELL TO 25 ACRES IS SHOWN FOR INFORMATION PURPOSES ONLY, ACTUAL SIZE AND SHAPE OF THE FINAL DISPOSAL CELL WILL DEPEND ON THE AMOUNT OF MINE DEBRIS AND CONTAMINATED SOILS ENCOUNTERED IN THE SITE CLEAN UP.

REV	DESCRIPTION	DATE	DRAWN BY	ENGINEER	APPROVED
A		11-3-23			

RIO GRANDE RESOURCES CORP.
MOUNT TAYLOR MINE - *San Mateo, NM*

Prepared By: | Drawn By: | PRINT SIZE: B | SCALE: As Shown

MT. TAYLOR MINE
2022 CLOSEOUT / CLOSURE PLAN

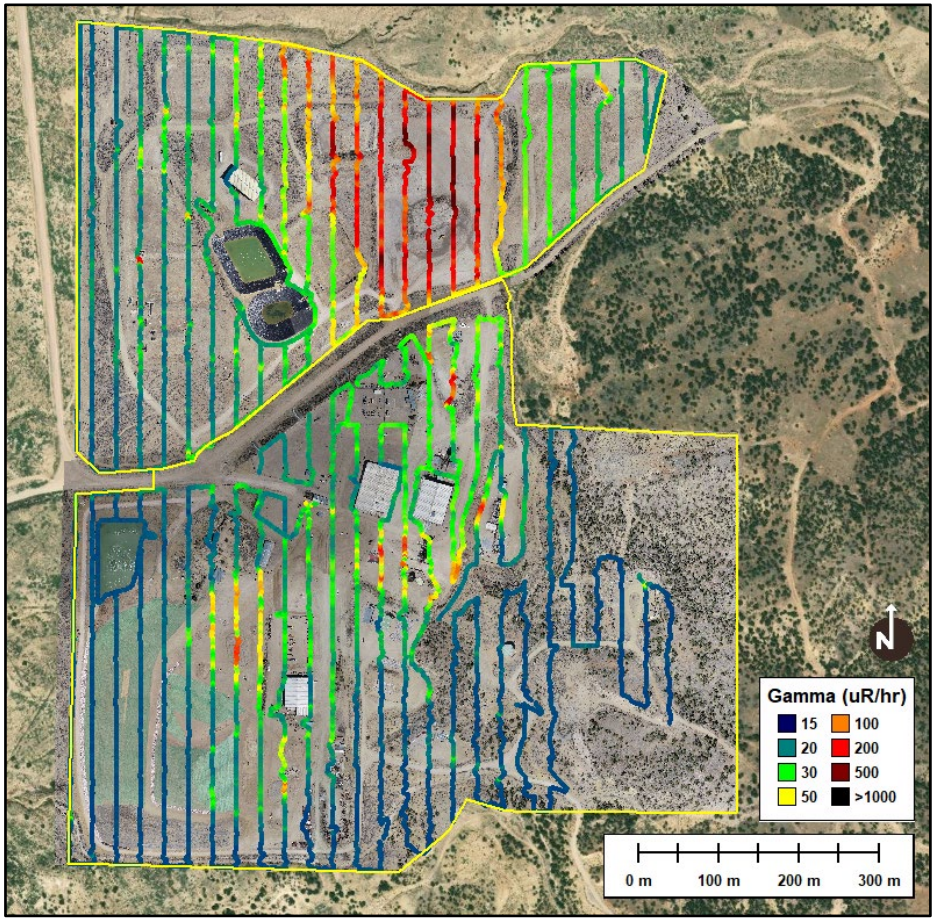
SHEET TITLE: Location of Small Containment CEll on Top of Closed Disposal Cell

SHEET NO. | DWG NO. | REV

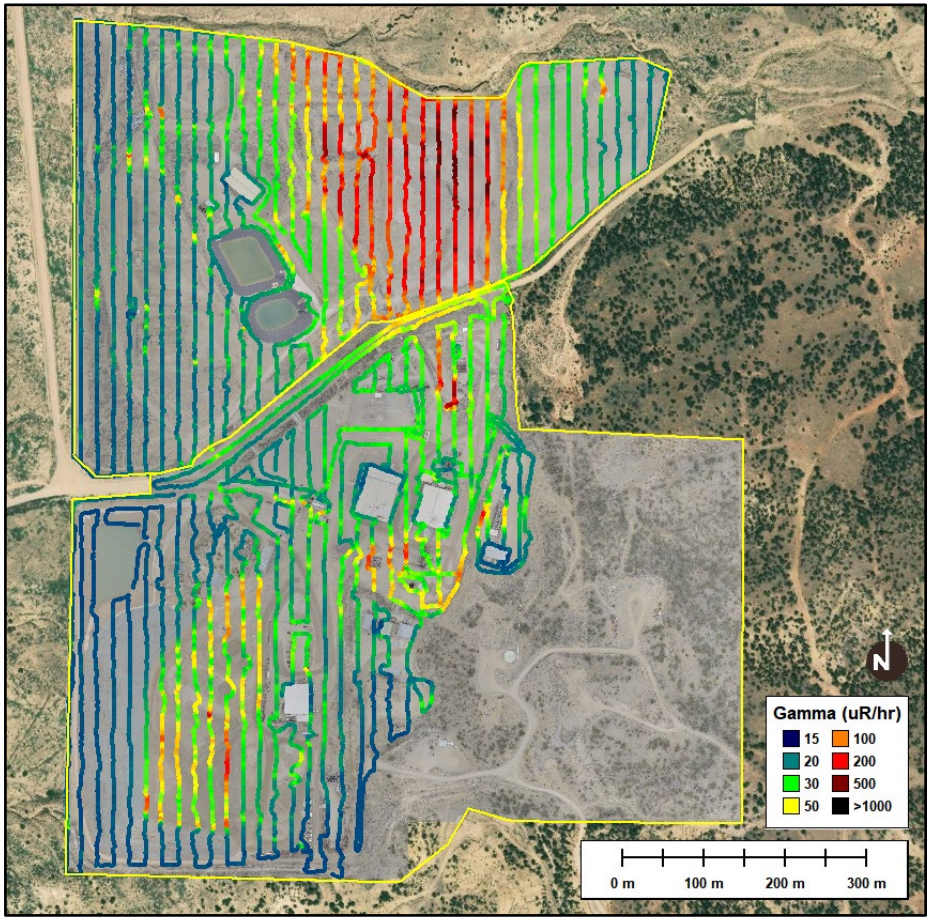
NMED Cmnt 25

Radiological Scans 2019-2021

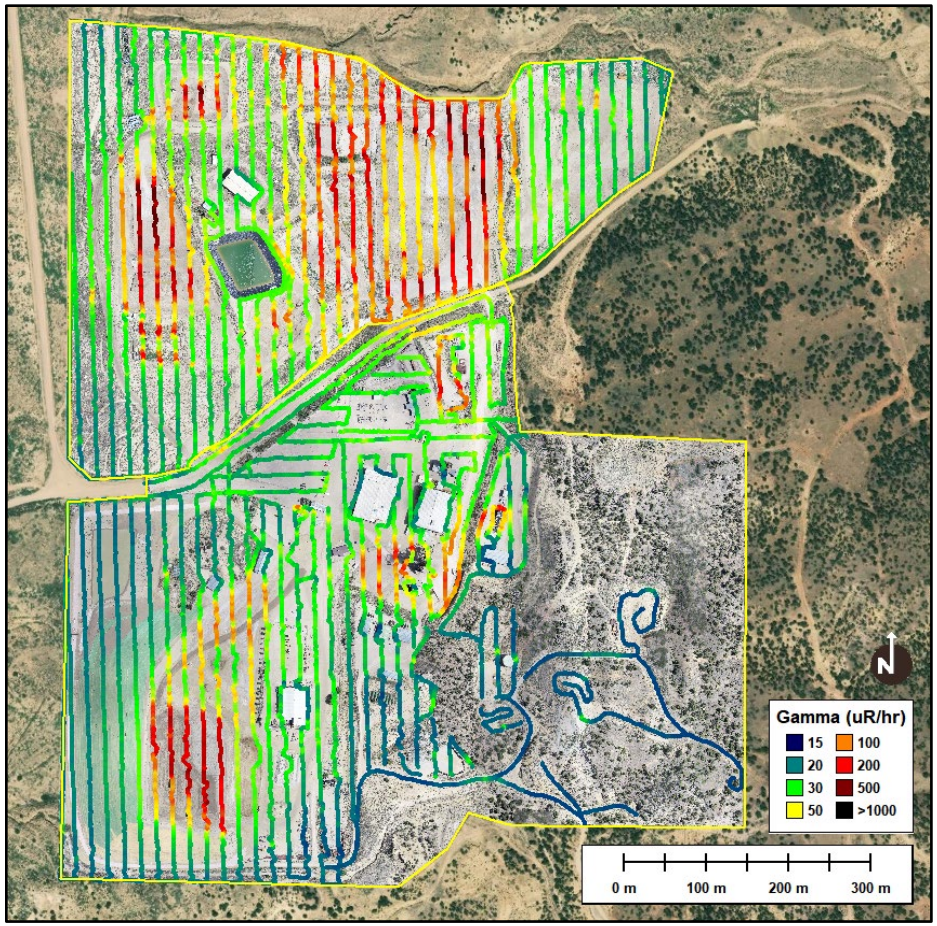
Spring 2021:



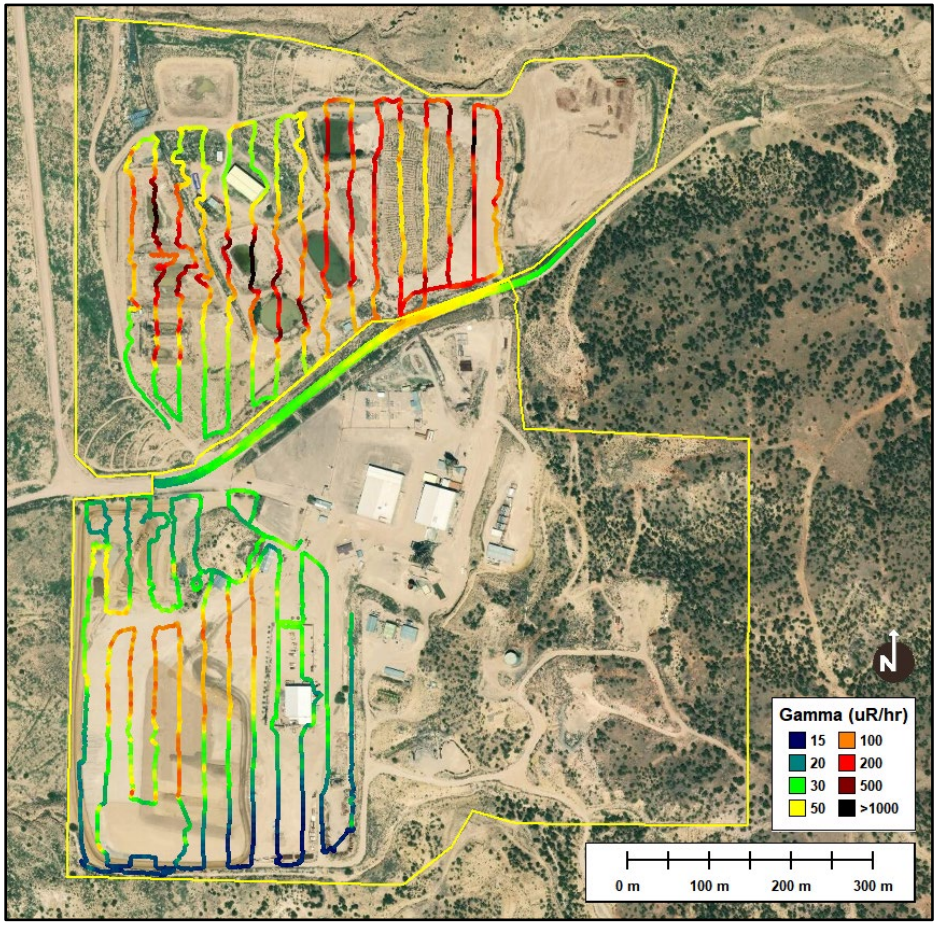
Spring 2020:



Spring 2019:



Spring 2018 (pre-construction data):



NMED Cmnt 28

Radon Flux measurement, Lower West Slope, WRP (2019)

Radon Flux Measurements Report
Waste Repository Cover at Mt. Taylor Mine

Cibola County, NM

Prepared for:

RIO GRANDE RESOURCES

Mount Taylor Mine

PO Box 1150
Grants, NM 87020
505-287-7971

Prepared by:

ERG

Environmental Restoration Group, Inc.

8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
505-298-4224

May 7, 2019

Radon Flux Measurements Report
Mt. Taylor Mine

1. Introduction

Twenty-two radon flux canisters were prepared by Environmental Restoration Group (ERG) and transferred from ERG's Albuquerque, NM office to the Rio Grande Resources' Mt. Taylor Mine (San Mateo, NM) for deployment on radon barrier cover material constructed over mine waste materials. Prior to delivery to the site, all canisters were heated in an oven for a 24-hour period at a temperature of approximately 220 degrees Fahrenheit to drive off any radon gas on the activated charcoal collection media, followed by sealing in plastic bags. On April 25, 2019, twenty of the canisters were deployed at locations over the constructed radon barrier in a manner consistent with EPA Method 115 (EPA, 1991). The remaining two canisters were left sealed in their plastic bags and used as trip blanks. The canisters were retrieved 24-hours later on April 26, 2019. The flux measurement locations design was based on a triangular-grid pattern with randomized start point as generated using the U.S. Department of Energy's statistical design software package Visual Sampling Plan (VSP, 2019). The area selected for study was chosen where at least a 15-foot thickness of waste rock material was expected to exist below the cover material; and as such, the area expected to have the highest flux rates.

2. Results

The 20 deployed canisters and 2 trip blank canisters were analyzed at ERG offices April 26 and 27, 2019 according to EPA Method 115 protocols. Results are provided in Attachment A. The average radon flux for the 20 locations measured is 1.23 pCi/m²s, with the maximum flux rate of 3.12 pCi/m²s measured at Location 15. The average flux was calculated as follows:

- Radon flux at each location was measured using a single canister. Three of the single canisters were counted twice as laboratory analytical duplicates, with each canister's average flux rate being used as the location flux rate.

The average flux rate for all measured locations is below the 20.0 pCi/m²s limit for radon-222 emissions to the atmosphere as prescribed in the 10 CFR Part 40, Appendix A, Criterion 6(1) standard. The results for all canisters are presented in both tabular and figure form in Appendix A of this Report, with deployment and retrieval logs included in Appendix B.

3. Quality Assurance

Environmental conditions required by EPA Method 115 for acceptable deployment of canisters are:

- No rainfall within 24-hours prior to deployment, and if rainfall during deployment then the seal around the lip of the canister must remain intact and the canister cannot be surrounded by water.
- The temperature during deployment must not fall below 35 degrees Fahrenheit, and the ground cannot be frozen.

The meteorological data recorded at the onsite weather monitoring station, included in Appendix C, indicates there was no detected rainfall at the site within 24 hours of canister deployment, and the minimum temperature during canister deployment was above 35 degrees Fahrenheit.

Two independent sources were used to calibrate the spectrometer before, during and after the counting of canisters. The independent sources were measured using identical counting geometry conditions to that of

the deployed canisters. Good agreement between calibration factors was obtained, as shown in Table 3-1. The relative percent difference (RPD) of the average counting efficiencies for the two sources was 4.5 percent, less than the 10-percent accuracy required by EPA Method 115.

Three of the canisters were reanalyzed for laboratory duplicate analysis comparison. The second analysis is indicated in the Appendix A results table with a "D" shown in the Lab Type column. The comparison of results shown in Table 3-2 is consistent with typical gamma spectroscopy results. Of the three canisters analyzed for duplicate comparison, only two met the EPA Method 115 criteria requiring a precision of 10 percent; with the remaining canister having an average flux rate below the requisite threshold of 1.0 pCi/m^{2}s. Regardless, all three canisters (312, 509 and 528) passed duplicate analysis comparison with a relative percent differences (RPD) of 8.3, 5.6 and 2.0 percent, respectively. The RPD were calculated as follows:

$$RPD = \frac{|A - B|}{(A + B)/2}$$
$$A = Flux\ from\ first\ canister\ analysis$$
$$B = Flux\ from\ second\ canister\ analysis$$

All 20 deployed canisters yielded usable results, greater than the 85 percent completeness required by EPA Method 115. Two trip blanks were included with the batch and were counted without exposing them to radon. The measured fluxes for the two canisters (482 and 68) were -0.27 and -0.32 pCi/m^{2}s, respectively, near the expected 0 pCi/m^{2}s value. These results indicate that the canisters had not been exposed during deployment, confirming the integrity of the bags.

Table 3-1 Gamma Spectrometer Calibrations

Standard	Date	Count Time (seconds)	Source (nCi)	Counts	Average Background Counts	Efficiency (cps/Bq) [1]	Error (1 SD) [2]
STD #1	4/26/19	1200	80.00	44610	3663.5	0.01153	6.19E-05
STD #3	4/26/19	1200	78.83	41912	3663.5	0.01093	6.10E-05
STD #1	4/26/19	1200	80.00	44869	3663.5	0.01160	6.20E-05
STD #3	4/26/19	1200	78.83	42028	3663.5	0.01096	6.11E-05
Mean of STD #1						**0.01156**	
Mean of STD #3						**0.01095**	
Relative Percent Difference of Standards						**5.5%**	

Note:

[1] Efficiency unit is net counts-per-second per source activity in becquerels.

[2] SD: standard deviation of efficiency.

Table 3-2 Comparison Data of Laboratory Analysis Duplicates

Canister	Analysis (A) pCi/m^{2}s	Analysis (B) pCi/m^{2}s	Relative Percent Difference [1]
312 [2]	0.69	0.63	8.3
509	1.95	1.84	5.6
500	2.53	2.48	2.0

Note:

[1] Relative Percent Difference (RPD) was calculated as using the equation presented earlier in this document.

[2] For Canister 402 no RPD calculation is necessary since the average result is below 1.0 pCi/m^{2}s. Regardless, results are presented for

References

U.S. Environmental Protection Agency (EPA), 1991. 40 CFR 61 Appendix B, Method 115 – Monitoring for Radon-222 Emission

VSP Development Team (VSP). 2019. Visual Sample Plan: A Tool for Design and Analysis of Environmental Sampling. Version 7.10. Pacific Northwest National Laboratory. Richland, WA. http://vsp.pnnl.gov

Appendix A

Radon Flux Measurement Results

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

Radon Flux Measurements

Location Name	Field Type	Canister Number	Date/Time			Count Time (sec)	BKG Counts	Lab Type	Sample Counts	Efficiency (cps/dps)	Flux (pCi/m²s)			
			Deployment	Retrieval	Counting						Result	LLD	Error 1.00 S.D.	Remarks
1		49	04/25/2019 09:27	04/26/2019 09:27	04/26/2019 16:53	1200	3663.5		6595	0.0113	1.55	0.2	0.05	OK
2		409	04/25/2019 09:29	04/26/2019 09:29	04/26/2019 16:11	1200	3663.5		3066	0.0113	-0.31	0.2	0.04	OK
3		417	04/25/2019 09:31	04/26/2019 09:31	04/26/2019 16:32	1200	3663.5		7425	0.0113	1.98	0.2	0.06	OK
4		459	04/25/2019 09:39	04/26/2019 09:39	04/26/2019 15:50	1200	3663.5		4401	0.0113	0.39	0.1	0.05	OK
5		488	04/25/2019 09:41	04/26/2019 09:41	04/26/2019 17:34	1200	3663.5		6859	0.0113	1.7	0.2	0.05	OK
6		510	04/25/2019 09:46	04/26/2019 09:47	04/26/2019 17:14	1200	3663.5		4780	0.0113	0.59	0.2	0.05	OK
7		524	04/25/2019 09:49	04/26/2019 09:49	04/26/2019 17:55	1200	3663.5		5273	0.0113	0.86	0.2	0.05	OK
8		514	04/25/2019 09:52	04/26/2019 09:52	04/26/2019 18:16	1200	3663.5		7318	0.0113	1.95	0.2	0.06	OK
9		519	04/25/2019 09:58	04/26/2019 09:58	04/26/2019 20:01	1200	3663.5		6740	0.0113	1.66	0.2	0.06	OK
10		312	04/25/2019 10:01	04/26/2019 10:01	04/26/2019 19:19	1200	3663.5		4940	0.0113	0.69	0.2	0.05	OK
10		312	04/25/2019 10:01	04/26/2019 10:01	04/26/2019 19:40	1200	3663.5	D	4835	0.0113	0.63	0.2	0.05	OK
11		521	04/25/2019 10:04	04/26/2019 10:04	04/26/2019 18:58	1200	3663.5		4653	0.0113	0.53	0.2	0.05	OK
12		516	04/25/2019 10:10	04/26/2019 10:15	04/26/2019 18:37	1200	3663.5		5068	0.0113	0.75	0.2	0.05	OK
13		525	04/25/2019 10:13	04/26/2019 10:16	04/26/2019 20:22	1200	3663.5		6177	0.0113	1.35	0.2	0.05	OK
14		528	04/25/2019 10:18	04/26/2019 10:18	04/26/2019 21:03	1200	3663.5	D	8323	0.0113	2.53	0.2	0.06	OK
14		528	04/25/2019 10:18	04/26/2019 10:18	04/26/2019 20:42	1200	3663.5		8241	0.0113	2.48	0.2	0.06	OK
15		517	04/25/2019 10:22	04/26/2019 10:22	04/26/2019 21:24	1200	3663.5		9406	0.0113	3.12	0.2	0.06	OK
16		4	04/25/2019 10:29	04/26/2019 10:34	04/26/2019 21:44	1200	3663.5		4260	0.0113	0.32	0.2	0.05	OK
17		509	04/25/2019 10:33	04/26/2019 10:42	04/26/2019 23:07	1200	3663.5		7223	0.0113	1.95	0.2	0.06	OK
17		509	04/25/2019 10:33	04/26/2019 10:42	04/26/2019 23:27	1200	3663.5	D	7022	0.0113	1.84	0.2	0.06	OK
18		486	04/25/2019 10:39	04/26/2019 10:44	04/26/2019 22:26	1200	3663.5		5703	0.0113	1.11	0.2	0.05	OK
19		520	04/25/2019 10:43	04/26/2019 10:46	04/26/2019 22:05	1200	3663.5		5190	0.0113	0.83	0.2	0.05	OK

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

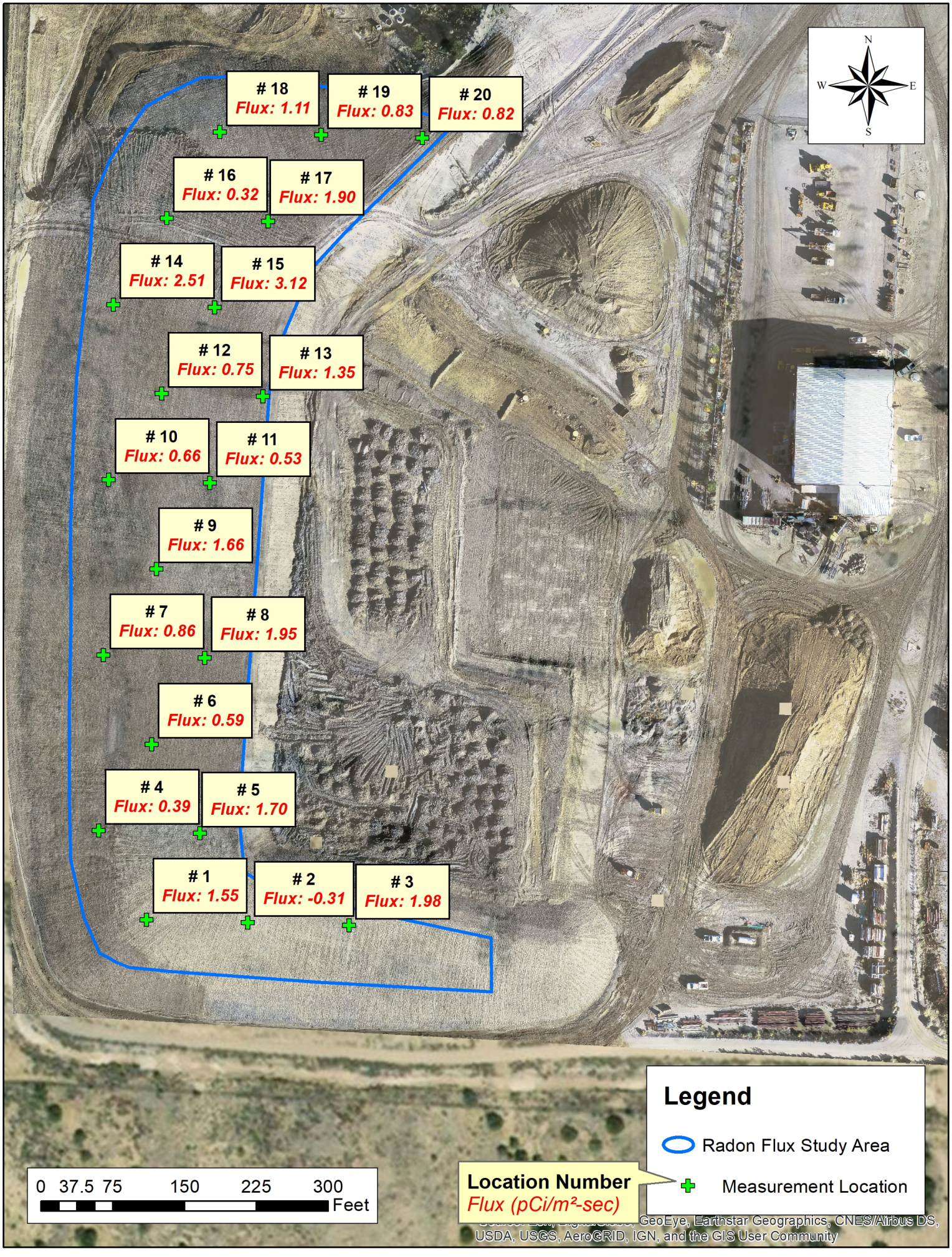
Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

Radon Flux Measurements

Location Name	Field Type	Canister Number	Date/Time			Count Time (sec)	BKG Counts	Lab Type	Sample Counts	Efficiency (cps/dps)	Flux (pCi/m²s)			
			Deployment	Retrieval	Counting						Result	LLD	Error 1.00 S.D.	Remarks
20		472	04/25/2019 10:46	04/26/2019 10:47	04/26/2019 22:46	1200	3663.5		5165	0.0113	0.82	0.2	0.05	OK
TB	TB	482	04/25/2019 12:00	04/26/2019 12:00	04/26/2019 15:29	1200	3663.5		3134	0.0113	-0.27	0.1	0.04	OK
TB	TB	68	04/25/2019 12:00	04/26/2019 12:00	04/26/2019 15:08	1200	3663.5		3037	0.0113	-0.32	0.1	0.04	OK

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____


18
Flux: 1.11
19
Flux: 0.83
20
Flux: 0.82
16
Flux: 0.32
17
Flux: 1.90
14
Flux: 2.51
15
Flux: 3.12
12
Flux: 0.75
13
Flux: 1.35
10
Flux: 0.66
11
Flux: 0.53
9
Flux: 1.66
7
Flux: 0.86
8
Flux: 1.95
6
Flux: 0.59
4
Flux: 0.39
5
Flux: 1.70
1
Flux: 1.55
2
Flux: -0.31
3
Flux: 1.98
N
W
E
S
0 37.5 75 150 225 300
Feet
Legend
Radon Flux Study Area
Measurement Location
Location Number
Flux (pCi/m²-sec)
GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix B

Field Deployment and Laboratory Analysis Log Forms

RGR

Site: Mt. TAYLOR MINE

Canister Deployment and Retrieval Log Form

- Minimum temperature during canister deployment: 45.1 °F

  How was onsite minimum temperature measured? ONSITE MET DATA STATION

- Was there rain onsite in the 24 hours prior to or during deployment? Yes (No) *(circle one)*

  How was the amount of onsite precipitation determined? ONSITE MET STATION

Location Number	Canister Number	Deployment Date (mm/dd/yy)	Deployment Time (24:00)	Retreival Date (mm/dd/yy)	Retrieval Time (24:00)	Comments
1	49	4/25/19	9:27	4/26/19	9:27	
2	409		9:29		9:29	
3	417		9:31		9:31	
4	459		9:39		9:39	
5	488		9:41		9:41	
6	510		9:46		9:47	
7	524		9:49		9:49	
8	514		9:52		9:52	
9	519		9:58		9:58	
10	312		10:01		10:01	
11	521		10:04		10:04	
12	516		10:10		10:15	
13	525		10:13		10:16	
14	528		10:18		10:18	
15	517		10:22		10:22	
16	4		10:29		10:34	
17	509		10:33		10:42	
18	486		10:39		10:44	
19	520		10:43		10:46	
20	472		10:46		10:47	
T.B. 21	482		12:00	~~12:00~~ (S)	12:00	TRIP BLANK
T.B. 22	68		12:00	~~12:00~~ (B)	12:00	TRIP BLANK
23						
24						
25						

Review: _____

Canister Analysis Log Form

Site: RGR Mt TAYLOR MINE
ROI: Channel 440 to Channel 540

Canister Number	Duplicate Count	Count Date (mm/dd/yy)	Count Time (24:00)	Count Duration (seconds)	Total Counts	Technician Initials
STD #1 A		4/26/19	~~13:54~~ 14:04	1200	44610	cf
STD #3 A		4/26/19	14:27	1200	41912	cf
BKG #1		4/26/19	14:48	1200	3986	cf
68		4/26/19	15:08	1200	3037	cf
482		4/26/19	15:29	1200	3134	cf
459		4/26/19	15:50	1200	4401	cf
409		4/26/19	16:11	1200	3066	cf
417		4/26/19	16:32	1200	7425	cf
49		4/26/19	16:53	1200	6595	cf
510		4/26/19	17:14	1200	~~4778~~ 4780	cf
488		4/26/19	17:34	1200	6859	cf
524		4/26/19	17:55	1200	5273	cf
514		4/26/19	18:16	1200	7318	cf
516		4/26/19	18:37	1200	5068	cf
521		4/26/19	18:58	1200	4653	cf
312		4/26/19	19:19	1200	4940	cf
312	✓	4/26/19	19:40	1200	4835	cf
519		4/26/19	20:01	1200	6740	cf
525		4/26/19	20:22	1200	6177	cf
528		4/26/19	20:42	1200	8241	cf
528	✓	4/26/19	21:03	1200	8323	cf
517		4/26/19	21:24	1200	9406	cf
4		4/26/19	21:44	1200	4260	cf
520		4/26/19	22:05	1200	5190	cf
486		4/26/19	22:26	1200	5703	cf
472		4/26/19	22:46	1200	5165	cf
509		4/26/19	23:07	1200	7223	cf
509	✓	4/26/19	23:27	1200	7022	cf
STD #1 B		4/26/19	23:49	1200	44869	cf
STD #3 B		4/27/19	00:10	1200	42028	cf
BKG #2		4/27/19	00:31	1200	3341	cf

Review: _____ **Date:** 4/29/19

Appendix C

Meteorological Station Data Output

Mt.Taylor Mine 4/24/19

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	Bar	Rain	Rain Rate	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density
4/24/19	1:00a	37.6	38.3	37.3	84	33.2	0.0	SE	0.00	3.0	SE	37.6	37.4	37.4	29.977	0.00	0.00	1.142	0.000	65.8	27	30.9	61.5	5.85	.0752
4/24/19	2:00a	37.2	37.7	36.2	83	32.5	0.0	---	0.00	0.0	---	37.2	37.0	37.0	29.972	0.00	0.00	1.158	0.000	65.4	27	30.5	61.2	5.85	.0753
4/24/19	3:00a	36.0	37.6	36.0	83	31.3	0.0	---	0.00	0.0	---	36.0	35.8	35.8	29.964	0.00	0.00	1.208	0.000	64.9	27	30.1	60.7	5.85	.0753
4/24/19	4:00a	35.9	36.8	35.6	87	32.4	0.0	SE	0.00	4.0	SE	35.9	35.7	35.7	29.975	0.00	0.00	1.212	0.000	64.7	27	29.9	60.5	5.85	.0754
4/24/19	5:00a	35.5	36.2	35.4	87	32.0	0.0	---	0.00	0.0	---	35.5	35.3	35.3	29.965	0.00	0.00	1.229	0.000	64.1	27	29.4	59.9	5.85	.0755
4/24/19	6:00a	35.5	35.6	35.0	88	32.3	0.0	SW	0.00	4.0	SW	35.5	35.4	35.4	29.971	0.00	0.00	1.229	0.000	64.7	27	29.9	60.5	5.85	.0754
4/24/19	7:00a	36.7	36.7	35.0	89	33.8	0.0	---	0.00	0.0	---	36.7	36.6	36.6	29.978	0.00	0.00	1.179	0.000	64.7	28	30.8	60.6	5.96	.0754
4/24/19	8:00a	43.4	43.5	36.7	78	37.0	0.0	---	0.00	0.0	---	43.4	43.1	43.1	29.997	0.00	0.00	0.900	0.000	67.3	28	33.1	63.3	5.95	.0750
4/24/19	9:00a	51.0	52.0	43.5	62	38.4	0.0	NNE	0.00	5.0	N	51.0	50.2	50.2	30.001	0.00	0.00	0.583	0.000	69.2	29	35.6	65.5	6.07	.0747
4/24/19	10:00a	52.6	52.6	50.9	61	39.5	3.0	NNE	3.00	12.0	N	52.6	51.6	51.6	30.002	0.00	0.00	0.517	0.000	71.2	30	38.2	68.0	6.20	.0744
4/24/19	11:00a	57.4	57.5	52.6	52	39.9	3.0	NE	3.00	12.0	NNE	57.4	55.6	55.6	29.992	0.00	0.00	0.317	0.000	71.9	28	37.0	68.8	5.84	.0743
4/24/19	12:00p	57.6	60.6	57.0	49	38.6	4.0	NE	4.00	15.0	NNE	57.6	55.6	55.6	29.959	0.00	0.00	0.308	0.000	72.6	29	38.5	70.0	5.95	.0741
4/24/19	1:00p	64.0	64.3	57.5	33	34.3	4.0	ENE	4.00	19.0	ENE	64.0	60.6	60.6	29.937	0.00	0.00	0.042	0.000	70.2	28	35.5	66.5	5.94	.0744
4/24/19	2:00p	64.5	66.0	62.0	31	33.2	5.0	E	5.00	19.0	ENE	64.5	60.9	60.9	29.914	0.00	0.00	0.021	0.000	74.6	24	35.4	72.3	5.17	.0737
4/24/19	3:00p	63.7	65.4	62.9	25	27.2	7.0	NE	7.00	17.0	NNE	63.7	59.1	59.1	29.912	0.00	0.00	0.054	0.000	77.3	22	35.5	75.7	4.85	.0734
4/24/19	4:00p	63.8	64.5	63.3	26	28.2	8.0	SSW	8.00	18.0	SW	63.0	59.4	58.6	29.897	0.00	0.00	0.050	0.000	79.9	19	33.9	76.8	4.35	.0730
4/24/19	5:00p	64.3	65.4	63.5	23	25.7	8.0	SSW	8.00	20.0	SSW	63.6	59.5	58.8	29.882	0.00	0.00	0.029	0.000	80.7	18	33.2	77.5	4.04	.0729
4/24/19	6:00p	64.9	65.2	63.8	24	27.2	8.0	SSW	8.00	20.0	S	64.3	60.2	59.6	29.883	0.00	0.00	0.004	0.000	80.6	17	31.7	77.3	3.84	.0729
4/24/19	7:00p	63.5	65.1	63.4	26	28.0	10.0	SSW	10.00	19.0	SSW	61.1	59.1	56.7	29.867	0.00	0.00	0.063	0.000	79.2	17	30.6	76.0	3.87	.0731
4/24/19	8:00p	59.1	63.5	59.1	29	26.8	5.0	SW	5.00	15.0	S	58.9	55.5	55.3	29.874	0.00	0.00	0.246	0.000	76.5	17	28.4	74.6	3.92	.0735
4/24/19	9:00p	53.6	59.1	53.5	37	27.9	0.0	---	0.00	0.0	---	53.6	51.3	51.3	29.891	0.00	0.00	0.475	0.000	73.5	18	27.4	70.1	4.18	.0740
4/24/19	10:00p	52.7	53.8	52.6	37	27.1	0.0	NNE	0.00	4.0	NE	52.7	50.5	50.5	29.899	0.00	0.00	0.512	0.000	71.1	20	28.0	66.9	4.55	.0743
4/24/19	11:00p	52.8	52.9	52.2	39	28.5	1.0	NE	1.00	5.0	NE	52.8	50.7	50.7	29.898	0.00	0.00	0.508	0.000	69.2	20	26.4	64.5	4.55	.0746
4/25/19	12:00a	51.2	52.8	51.2	41	28.3	0.0	NE	0.00	5.0	NE	51.2	49.5	49.5	29.896	0.00	0.00	0.575	0.000	67.6	21	26.2	62.7	4.75	.0748

Mt.Taylor Mine 4/24/19

Date	Time	Wind Samp	Wind Tx	ISS Recept	Arc. Int.
4/24/19	1:00a	1404	1	100.0	60
4/24/19	2:00a	1404	1	100.0	60
4/24/19	3:00a	1405	1	100.0	60
4/24/19	4:00a	1404	1	100.0	60
4/24/19	5:00a	1405	1	100.0	60
4/24/19	6:00a	1405	1	100.0	60
4/24/19	7:00a	1404	1	100.0	60
4/24/19	8:00a	1405	1	100.0	60
4/24/19	9:00a	1404	1	100.0	60
4/24/19	10:00a	1405	1	100.0	60
4/24/19	11:00a	1405	1	100.0	60
4/24/19	12:00p	1405	1	100.0	60
4/24/19	1:00p	1405	1	100.0	60
4/24/19	2:00p	1404	1	100.0	60
4/24/19	3:00p	1405	1	100.0	60
4/24/19	4:00p	1405	1	100.0	60
4/24/19	5:00p	1405	1	100.0	60
4/24/19	6:00p	1405	1	100.0	60
4/24/19	7:00p	1405	1	100.0	60
4/24/19	8:00p	1403	1	100.0	60
4/24/19	9:00p	1405	1	100.0	60
4/24/19	10:00p	1404	1	100.0	60
4/24/19	11:00p	1405	1	100.0	60
4/25/19	12:00a	1405	1	100.0	60

Mt.Taylor Mine 4/25/19

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	Bar	Rain	Rain Rate	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density
4/25/19	1:00a	49.4	51.2	49.2	44	28.4	1.0	NE	1.00	4.0	NE	49.4	48.1	48.1	29.893	0.00	0.00	0.650	0.000	66.3	22	26.3	61.4	4.95	.0750
4/25/19	2:00a	49.0	49.4	48.2	45	28.6	1.0	NE	1.00	5.0	N	49.0	47.7	47.7	29.886	0.00	0.00	0.667	0.000	65.1	22	25.3	60.3	4.95	.0752
4/25/19	3:00a	47.2	49.0	47.1	46	27.5	1.0	NE	1.00	4.0	NE	47.2	45.9	45.9	29.877	0.00	0.00	0.742	0.000	64.1	22	24.4	59.3	4.97	.0753
4/25/19	4:00a	47.8	48.3	47.2	44	26.9	1.0	NE	1.00	4.0	NE	47.8	46.5	46.5	29.884	0.00	0.00	0.717	0.000	63.2	23	24.7	58.5	5.12	.0755
4/25/19	5:00a	47.4	47.9	47.2	45	27.1	1.0	NE	1.00	5.0	NE	47.4	46.1	46.1	29.881	0.00	0.00	0.733	0.000	62.5	23	24.2	57.9	5.15	.0756
4/25/19	6:00a	45.6	47.7	44.7	49	27.5	0.0	N	0.00	3.0	NE	45.6	44.5	44.5	29.891	0.00	0.00	0.808	0.000	61.7	23	23.5	57.2	5.18	.0757
4/25/19	7:00a	46.5	46.7	45.6	50	28.8	0.0	N	0.00	3.0	NNE	46.5	45.3	45.3	29.902	0.00	0.00	0.771	0.000	63.0	24	25.6	58.4	5.29	.0755
4/25/19	8:00a	53.5	53.5	46.5	43	31.5	0.0	NE	0.00	3.0	NE	53.5	51.5	51.5	29.913	0.00	0.00	0.479	0.000	67.0	24	29.0	62.2	5.29	.0749
4/25/19	9:00a	59.6	59.6	53.5	34	31.2	2.0	ESE	2.00	6.0	E	59.6	56.4	56.4	29.914	0.00	0.00	0.225	0.000	70.8	24	32.2	66.9	5.32	.0743
4/25/19	10:00a	64.1	64.3	59.6	31	32.8	0.0	SSW	0.00	6.0	SW	64.1	60.5	60.5	29.910	0.00	0.00	0.038	0.000	73.2	23	33.2	70.3	5.09	.0740
4/25/19	11:00a	64.0	65.3	63.1	31	32.7	2.0	SSW	2.00	9.0	S	64.0	60.4	60.4	29.910	0.00	0.00	0.042	0.000	74.2	24	35.1	71.8	5.18	.0738
4/25/19	12:00p	67.7	67.9	64.0	27	32.5	3.0	SW	3.00	13.0	SW	67.7	63.6	63.6	29.894	0.00	0.00	0.000	0.112	75.5	24	36.2	73.5	5.15	.0736
4/25/19	1:00p	67.1	69.3	67.0	27	32.0	4.0	W	4.00	13.0	W	67.1	62.9	62.9	29.892	0.00	0.00	0.000	0.087	77.5	23	36.8	75.8	5.05	.0733
4/25/19	2:00p	69.3	69.7	66.6	24	30.9	4.0	SSW	4.00	16.0	WSW	69.3	65.0	65.0	29.884	0.00	0.00	0.000	0.179	79.0	21	35.7	76.2	4.75	.0731
4/25/19	3:00p	71.4	71.4	69.0	24	32.7	3.0	S	3.00	14.0	SW	71.4	67.7	67.7	29.863	0.00	0.00	0.000	0.267	74.9	25	36.7	72.8	5.26	.0736
4/25/19	4:00p	71.7	72.4	70.3	22	30.8	4.0	S	4.00	12.0	S	71.7	67.9	67.9	29.839	0.00	0.00	0.000	0.279	74.1	27	38.0	72.1	5.60	.0736
4/25/19	5:00p	72.9	73.1	71.3	19	28.2	5.0	WSW	5.00	14.0	SW	72.9	69.4	69.4	29.831	0.00	0.00	0.000	0.329	74.2	24	35.1	71.8	5.18	.0736
4/25/19	6:00p	70.0	72.9	70.0	22	29.4	4.0	S	4.00	13.0	SW	70.0	65.7	65.7	29.832	0.00	0.00	0.000	0.208	72.1	24	33.3	68.7	5.27	.0739
4/25/19	7:00p	68.2	70.0	68.2	24	30.0	3.0	SSW	3.00	7.0	S	68.2	63.9	63.9	29.821	0.00	0.00	0.000	0.133	68.2	25	31.0	64.0	5.51	.0745
4/25/19	8:00p	64.6	68.2	63.9	28	30.7	6.0	SSW	6.00	18.0	SSW	64.6	60.5	60.5	29.848	0.00	0.00	0.017	0.000	64.9	26	29.2	60.5	5.65	.0751
4/25/19	9:00p	60.9	64.6	60.9	38	35.1	4.0	SW	4.00	22.0	SSW	60.9	58.0	58.0	29.897	0.00	0.00	0.171	0.000	62.4	28	28.8	58.4	6.00	.0756
4/25/19	10:00p	59.1	60.9	58.6	40	34.8	7.0	SSW	7.00	19.0	SSW	58.1	56.4	55.4	29.887	0.00	0.00	0.246	0.000	62.3	29	29.6	58.5	6.15	.0755
4/25/19	11:00p	59.8	60.5	59.0	36	32.8	3.0	SSW	3.00	9.0	S	59.8	56.8	56.8	29.890	0.00	0.00	0.217	0.000	63.8	27	29.1	59.6	5.85	.0753
4/26/19	12:00a	59.7	60.1	59.4	35	32.0	3.0	SSW	3.00	12.0	S	59.7	56.6	56.6	29.882	0.00	0.00	0.221	0.000	64.3	26	28.7	59.9	5.65	.0752

Mt.Taylor Mine 4/25/19

Date	Time	Wind Samp	Wind Tx	ISS Recept	Arc. Int.
4/25/19	1:00a	1404	1	100.0	60
4/25/19	2:00a	1404	1	100.0	60
4/25/19	3:00a	1404	1	100.0	60
4/25/19	4:00a	1405	1	100.0	60
4/25/19	5:00a	1404	1	100.0	60
4/25/19	6:00a	1405	1	100.0	60
4/25/19	7:00a	1405	1	100.0	60
4/25/19	8:00a	1405	1	100.0	60
4/25/19	9:00a	1404	1	100.0	60
4/25/19	10:00a	1404	1	100.0	60
4/25/19	11:00a	1403	1	100.0	60
4/25/19	12:00p	1405	1	100.0	60
4/25/19	1:00p	1404	1	100.0	60
4/25/19	2:00p	1405	1	100.0	60
4/25/19	3:00p	1404	1	100.0	60
4/25/19	4:00p	1405	1	100.0	60
4/25/19	5:00p	1405	1	100.0	60
4/25/19	6:00p	1405	1	100.0	60
4/25/19	7:00p	1405	1	100.0	60
4/25/19	8:00p	1405	1	100.0	60
4/25/19	9:00p	1405	1	100.0	60
4/25/19	10:00p	1405	1	100.0	60
4/25/19	11:00p	1403	1	100.0	60
4/26/19	12:00a	1405	1	100.0	60

Mt.Taylor Mine 4/26/19

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Wind Run	Hi Speed	Hi Dir	Wind Chill	Heat Index	THW Index	Bar	Rain	Rain Rate	Heat D-D	Cool D-D	In Temp	In Hum	In Dew	In Heat	In EMC	In Air Density
4/26/19	1:00a	58.6	59.9	58.2	37	32.4	4.0	SSW	4.00	11.0	WSW	58.6	55.7	55.7	29.888	0.00	0.00	0.267	0.000	64.5	26	28.8	60.1	5.65	.0752
4/26/19	2:00a	53.9	58.6	53.9	44	32.5	1.0	S	1.00	6.0	SSE	53.9	51.9	51.9	29.878	0.00	0.00	0.462	0.000	64.3	26	28.7	59.9	5.65	.0752
4/26/19	3:00a	49.7	53.9	49.7	52	32.8	0.0	SW	0.00	4.0	N	49.7	48.6	48.6	29.861	0.00	0.00	0.637	0.000	63.7	26	28.1	59.3	5.65	.0753
4/26/19	4:00a	50.2	50.2	49.5	54	34.2	0.0	S	0.00	3.0	S	50.2	49.1	49.1	29.862	0.00	0.00	0.617	0.000	63.0	26	27.5	58.7	5.65	.0754
4/26/19	5:00a	47.6	50.5	47.6	60	34.4	0.0	S	0.00	3.0	S	47.6	46.8	46.8	29.868	0.00	0.00	0.725	0.000	62.4	27	27.9	58.3	5.85	.0755
4/26/19	6:00a	47.0	48.3	47.0	60	33.8	0.0	S	0.00	3.0	S	47.0	46.2	46.2	29.864	0.00	0.00	0.750	0.000	61.7	27	27.3	57.6	5.85	.0756
4/26/19	7:00a	45.8	47.0	45.1	62	33.5	0.0	---	0.00	0.0	---	45.8	45.0	45.0	29.879	0.00	0.00	0.800	0.000	61.8	28	28.3	57.9	6.01	.0756
4/26/19	8:00a	53.0	53.0	45.8	52	35.8	0.0	---	0.00	0.0	---	53.0	51.5	51.5	29.883	0.00	0.00	0.500	0.000	62.4	28	28.8	58.4	6.00	.0755
4/26/19	9:00a	56.0	56.7	53.0	49	37.1	0.0	---	0.00	0.0	---	56.0	54.0	54.0	29.881	0.00	0.00	0.375	0.000	63.8	30	31.7	60.1	6.27	.0753
4/26/19	10:00a	62.2	62.2	56.0	42	38.8	0.0	---	0.00	0.0	---	62.2	59.7	59.7	29.871	0.00	0.00	0.117	0.000	65.8	31	34.3	62.3	6.43	.0749
4/26/19	11:00a	66.6	66.6	62.2	36	38.8	2.0	WNW	2.00	9.0	WSW	66.6	63.6	63.6	29.851	0.00	0.00	0.000	0.067	68.4	29	34.9	64.7	6.08	.0745
4/26/19	12:00p	68.5	68.6	66.5	27	33.2	6.0	SSW	6.00	20.0	SW	68.5	64.5	64.5	29.831	0.00	0.00	0.000	0.146	69.7	29	36.0	66.0	6.06	.0742
4/26/19	1:00p	69.3	70.4	66.9	25	31.9	7.0	S	7.00	19.0	S	69.3	65.1	65.1	29.804	0.00	0.00	0.000	0.179	67.5	29	34.1	63.7	6.10	.0745
4/26/19	2:00p	70.8	70.8	66.1	18	25.2	6.0	SSW	6.00	19.0	SSW	70.8	66.4	66.4	29.773	0.00	0.00	0.000	0.242	66.1	29	32.9	62.3	6.13	.0746
4/26/19	3:00p	72.5	74.0	70.8	18	26.5	8.0	SSW	8.00	21.0	SSW	72.0	68.7	68.2	29.746	0.00	0.00	0.000	0.313	67.4	25	30.3	62.9	5.50	.0744
4/26/19	4:00p	72.8	74.0	71.0	16	24.0	8.0	SSW	8.00	19.0	SW	72.3	69.0	68.5	29.719	0.00	0.00	0.000	0.325	67.7	24	29.6	63.2	5.30	.0743
4/26/19	5:00p	70.4	73.2	70.2	23	30.8	8.0	SSW	8.00	20.0	SSE	69.9	66.3	65.8	29.694	0.00	0.00	0.000	0.225	66.4	24	28.5	61.6	5.28	.0745
4/26/19	6:00p	71.6	71.8	69.6	20	28.4	9.0	S	9.00	19.0	S	70.2	67.6	66.2	29.687	0.00	0.00	0.000	0.275	66.5	25	29.6	61.8	5.48	.0744
4/26/19	7:00p	70.1	71.6	68.5	20	27.1	7.0	S	7.00	18.0	SSW	70.1	65.6	65.6	29.687	0.00	0.00	0.000	0.212	65.2	25	28.5	60.6	5.45	.0746
4/26/19	8:00p	64.3	70.2	64.3	26	28.7	5.0	S	5.00	18.0	SSW	64.3	59.9	59.9	29.700	0.00	0.00	0.029	0.000	62.9	27	28.4	58.7	5.85	.0750
4/26/19	9:00p	59.4	64.3	59.4	31	28.7	2.0	S	2.00	9.0	S	59.4	56.0	56.0	29.724	0.00	0.00	0.233	0.000	61.2	26	26.0	57.0	5.65	.0753
4/26/19	10:00p	57.2	59.4	57.0	34	29.1	0.0	ESE	0.00	2.0	ESE	57.2	54.2	54.2	29.727	0.00	0.00	0.325	0.000	63.9	24	26.4	59.2	5.27	.0749
4/26/19	11:00p	54.4	57.5	54.4	37	28.6	0.0	ESE	0.00	3.0	ESE	54.4	52.0	52.0	29.747	0.00	0.00	0.442	0.000	64.1	24	26.5	59.4	5.27	.0750
4/27/19	12:00a	53.8	54.8	53.8	38	28.8	0.0	ESE	0.00	2.0	NE	53.8	51.5	51.5	29.746	0.00	0.00	0.467	0.000	64.1	23	25.5	59.3	5.09	.0750

Date	Time	Wind Samp	Wind Tx	ISS Recept	Arc. Int.
4/26/19	1:00a	1403	1	100.0	60
4/26/19	2:00a	1405	1	100.0	60
4/26/19	3:00a	1405	1	100.0	60
4/26/19	4:00a	1405	1	100.0	60
4/26/19	5:00a	1404	1	100.0	60
4/26/19	6:00a	1405	1	100.0	60
4/26/19	7:00a	1405	1	100.0	60
4/26/19	8:00a	1405	1	100.0	60
4/26/19	9:00a	1405	1	100.0	60
4/26/19	10:00a	1405	1	100.0	60
4/26/19	11:00a	1405	1	100.0	60
4/26/19	12:00p	1405	1	100.0	60
4/26/19	1:00p	1403	1	100.0	60
4/26/19	2:00p	1404	1	100.0	60
4/26/19	3:00p	1405	1	100.0	60
4/26/19	4:00p	1405	1	100.0	60
4/26/19	5:00p	1405	1	100.0	60
4/26/19	6:00p	1404	1	100.0	60
4/26/19	7:00p	1405	1	100.0	60
4/26/19	8:00p	1405	1	100.0	60
4/26/19	9:00p	1404	1	100.0	60
4/26/19	10:00p	1404	1	100.0	60
4/26/19	11:00p	1405	1	100.0	60
4/27/19	12:00a	1405	1	100.0	60

NMED Cmnt 28

Radon Flux Measurement Disposal Cell Cover (2021)

Radon Flux Measurements Report
Waste Repository Cover at Mt. Taylor Mine

Cibola County, NM

Prepared for:

RIO GRANDE RESOURCES

Mount Taylor Mine

PO Box 1150
Grants, NM 87020
505-287-7971

Prepared by:

ERG

Environmental Restoration Group, Inc.

8809 Washington St. NE, Suite 150
Albuquerque, NM 87113
505-298-4224

June 3, 2021

Radon Flux Measurements Report
Mt. Taylor Mine

1. Introduction

Forty-two radon flux canisters were prepared by Environmental Restoration Group (ERG) and transferred from ERG's Albuquerque, NM office to the Rio Grande Resources' Mt. Taylor Mine (San Mateo, NM) for deployment on radon barrier cover material constructed over mine waste materials. Prior to delivery to the site, all canisters were heated in an oven for a 24-hour period at a temperature of approximately 220 degrees Fahrenheit to drive off any radon gas on the activated charcoal collection media, followed by sealing in plastic bags. On May 11, 2021, forty of the canisters were deployed at locations over the constructed radon barrier in a manner consistent with EPA Method 115 (EPA, 1991). The remaining two canisters were left sealed in their plastic bags and used as trip blanks. The canisters were retrieved 24-hours later, on May 12, 2021. The flux measurement locations were divided into three zones: Western/Southern side slopes, Middle/Top, and the Eastern side slope. The location design for each zone was based on a triangular-grid pattern with randomized start point as generated using the U.S. Department of Energy's statistical design software package Visual Sampling Plan (VSP, 2019).

2. Results

The 40 deployed canisters and 2 trip blank canisters were analyzed at ERG offices May 12 and 13, 2021 according to EPA Method 115 protocols. Results are provided in Attachment A. The average radon flux for the 40 locations measured is 4.11 pCi/m²s, with the maximum flux rate of 20.94 pCi/m²s measured at Location 29. The average flux was calculated as follows:

- Radon flux at each location was measured using a single canister. Five of the single canisters were counted twice as laboratory analytical duplicates, with each canister's average flux rate being used as the location flux rate.

The average flux rate for all measured locations is below the 20.0 pCi/m²s limit for radon-222 emissions to the atmosphere as specified in the "Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico" from the Mining and Minerals Division, New Mexico Environment Department (MMD/NMED, 2016). The results for all canisters are presented in both tabular and figure form in Appendix A of this Report, with deployment and retrieval logs included in Appendix B.

For the three measurement location zones discussed in the Introduction above the radon flux averages are as follows:

- Western/Southern side slopes (20 locations): 4.64 pCi/m²s
- Middle/Top (17 locations): 3.11 pCi/m²s
- Eastern side slope (3 locations): 5.11 pCi/m²s

3. Quality Assurance

Environmental conditions required by EPA Method 115 for acceptable deployment of canisters are:

- No rainfall within 24-hours prior to deployment, and if rainfall during deployment then the seal around the lip of the canister must remain intact and the canister cannot be surrounded by water.
- The temperature during deployment must not fall below 35 degrees Fahrenheit, and the ground

cannot be frozen.

The meteorological data recorded at the onsite weather monitoring station, included in Appendix C, indicates there was no detected rainfall at the site within 24 hours of canister deployment, and the minimum temperature during canister deployment was above 35 degrees Fahrenheit.

Two independent sources were used to calibrate the spectrometer before, during and after the counting of canisters. The independent sources were measured using identical counting geometry conditions to that of the deployed canisters. Good agreement between calibration factors was obtained, as shown in Table 3-1. The relative percent difference (RPD) of the average counting efficiencies for the two sources was 5.3 percent, less than the 10-percent accuracy required by EPA Method 115.

Three of the canisters were reanalyzed for laboratory duplicate analysis comparison. The second analysis is indicated in the Appendix A results table with a "D" shown in the Lab Type column. The comparison of results shown in Table 3-2 is consistent with typical gamma spectroscopy results. Of the five canisters analyzed for duplicate comparison, three met the EPA Method 115 criteria requiring a precision of 10 percent, while the remaining two canisters had an average flux rate below the requisite threshold of 1.0 pCi/m^{2}s. All five canisters (80, 508, 467, 200 and 428) passed duplicate analysis comparison with a relative percent differences (RPD) of 0.70, 0.86, 1.49, 3.55, and 1.45 percent, respectively. The RPD were calculated as follows:

$$RPD = \frac{|A - B|}{(A + B)/2}$$

$$A = Flux\ from\ first\ canister\ analysis$$

$$B = Flux\ from\ second\ canister\ analysis$$

All 40 deployed canisters yielded usable results, greater than the 85 percent completeness required by EPA Method 115. Two trip blanks were included with the batch and were counted without exposing them to radon. The measured fluxes for the two canisters (503 and 510) were 0.22 and 0.15 pCi/m^{2}s, respectively, near the expected 0 pCi/m^{2}s value. These results indicate that the canisters had not been exposed during deployment, confirming the integrity of the sealed bags.

Table 3-1 Gamma Spectrometer Calibrations

Standard	Date	Count Time (seconds)	Source (nCi)	Counts	Average Background Counts	Efficiency (cps/Bq) [1]	Error (1 SD) [2]
STD #3	5/12/21	1200	78.83	43193	2634	0.011588	6.12E-05
STD #1	5/12/21	1200	80	45399	2634	0.01204	6.17E-05
STD #3	5/12/21	1200	78.83	41005	2634	0.010963	5.97E-05
STD #1	5/12/21	1200	80	45719	2634	0.01213	6.19E-05
STD #3	5/13/21	1200	78.83	43475	2644.5	0.011666	6.14E-05
STD #1	5/13/21	1200	80	45653	2644.5	0.012108	6.19E-05
STD #1	5/13/21	1200	80	45949	2644.5	0.012192	6.21E-05
STD #3	5/13/21	1200	78.83	43753	2644.5	0.011745	6.15E-05
Mean of STD #1						**0.01212**	
Mean of STD #3						**0.01149**	
Relative Percent Difference of Standards						**5.3%**	

Note:

[1] Efficiency unit is net counts-per-second per source activity in becquerels.

[2] SD: standard deviation of efficiency.

Table 3-2 Comparison Data of Laboratory Analysis Duplicates

Canister	Analysis (A) pCi/m²s	Analysis (B) pCi/m²s	Relative Percent Difference [1]
80	12.73	12.82	0.70
508	6.59	6.53	0.86
467	13.47	13.67	1.49
200 [2]	0.48	0.49	3.55
428 [2]	0.87	0.86	1.45

Note:

[1] Relative Percent Difference (RPD) was calculated as using the equation presented earlier in this document.

[2] For canisters 200 and 428 no RPD calculation is necessary since the average results are below 1.0 pCi/m²s. Regardless, results are presented for all canisters.

References

Mining and Minerals Division, New Mexico Environment Department (MMD/NMED). 2016. Joint Guidance for the Cleanup and Reclamation of Existing Uranium Mining Operations in New Mexico. March 2016.

U.S. Environmental Protection Agency (EPA), 1991. 40 CFR 61 Appendix B, Method 115 – Monitoring for Radon-222 Emission

VSP Development Team (VSP). 2019. Visual Sample Plan: A Tool for Design and Analysis of Environmental Sampling. Version 7.10. Pacific Northwest National Laboratory. Richland, WA. http://vsp.pnnl.gov

Appendix A

Radon Flux Measurement Results


19
Flux: 13.57
20
Flux: 7.03
17
Flux: 0.33
18
Flux: 13.58
37
Flux: 9.86
15
Flux: 3.27
16
Flux: 6.56
35
Flux: 8.88
36
Flux: 0.75
13
Flux: 1.91
14
Flux: 3.54
32
Flux: 0.79
33
Flux: 0.86
34
Flux: 2.21
28
Flux: 1.09
29
Flux: 20.94
30
Flux: 0.61
31
Flux: 0.52
11
Flux: 0.98
12
Flux: 4.77
26
Flux: 0.86
27
Flux: 0.66
40
Flux: 3.59
9
Flux: 3.31
10
Flux: 4.91
24
Flux: 0.49
25
Flux: -0.02
39
Flux: 8.35
7
Flux: 0.71
8
Flux: 12.78
23
Flux: 1.42
38
Flux: 3.4
5
Flux: 6.96
6
Flux: 2.46
21
Flux: 3.54
22
Flux: -0.55
1
Flux: 0.22
2
Flux: 2.03
3
Flux: 1.2
4
Flux: 2.58
N
W
E
S
0 37.5 75 150 225 300
Feet
Legend
Radon Flux Study Area
Measurement Location
Location Number
Flux (pCi/m²-sec)
GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

Radon Flux Measurements

Location Name	Field Type	Canister Number	Date/Time			Count Time (sec)	BKG Counts	Lab Type	Sample Counts	Efficiency (cps/dps)	Flux (pCi/m²s)			
			Deployment	Retrieval	Counting						Result	LLD	Error 1.00 S.D.	Remarks
1		501	05/11/2021 08:52	05/12/2021 09:30	05/12/2021 14:44	1200	2634		3092	0.0117	0.22	0.1	0.04	OK
2		410	05/11/2021 08:51	05/12/2021 09:31	05/12/2021 15:46	1200	2634		6742	0.0117	2.03	0.1	0.05	OK
3		518	05/11/2021 08:49	05/12/2021 09:31	05/12/2021 15:31	800	2634		7879	0.0117	4.51	0.1	0.07	OK
4		527	05/11/2021 08:47	05/12/2021 09:30	05/12/2021 15:09	1200	2634		7904	0.0117	2.58	0.1	0.05	OK
5		520	05/11/2021 09:02	05/12/2021 10:50	05/13/2021 13:12	598	2644.5		7746	0.0119	6.95	0.2	0.1	OK
6		525	05/11/2021 09:01	05/12/2021 09:33	05/12/2021 16:23	900	2634		5689	0.0117	2.46	0.1	0.06	OK
7		64	05/11/2021 10:02	05/12/2021 10:50	05/13/2021 13:39	1200	2644.5		3909	0.0119	0.71	0.1	0.05	OK
8		80	05/11/2021 09:05	05/12/2021 09:41	05/13/2021 17:15	515	2644.5	D	10470	0.0119	12.73	0.2	0.15	OK
8		80	05/11/2021 09:05	05/12/2021 09:41	05/12/2021 17:28	467	2634		11015	0.0117	12.82	0.2	0.14	OK
9		494	05/11/2021 09:19	05/12/2021 09:53	05/12/2021 19:25	723	2634		5517	0.0117	3.31	0.2	0.07	OK
10		422	05/11/2021 09:21	05/12/2021 09:57	05/12/2021 18:20	620	2634		6415	0.0117	4.91	0.2	0.09	OK
11		414	05/11/2021 10:04	05/12/2021 10:55	05/13/2021 14:03	1200	2644.5		4390	0.0119	0.98	0.1	0.05	OK
12		469	05/11/2021 09:17	05/12/2021 09:55	05/12/2021 18:54	551	2634		5561	0.0117	4.77	0.2	0.09	OK
13		411	05/11/2021 09:25	05/12/2021 10:12	05/13/2021 09:29	1076	2644.5		5510	0.0119	1.91	0.1	0.05	OK
14		511	05/11/2021 09:24	05/12/2021 10:16	05/13/2021 09:11	841	2644.5		6417	0.0119	3.54	0.2	0.07	OK
15		49	05/11/2021 10:05	05/12/2021 10:56	05/13/2021 13:24	778	2644.5		5508	0.0119	3.27	0.2	0.07	OK
16		508	05/11/2021 09:26	05/12/2021 10:14	05/13/2021 11:53	460	2644.5		5520	0.0119	6.53	0.2	0.12	OK
16		508	05/11/2021 09:26	05/12/2021 10:14	05/13/2021 11:56	457	2644.5	D	5521	0.0119	6.59	0.2	0.12	OK
17		479	05/11/2021 09:28	05/12/2021 10:29	05/13/2021 12:05	1200	2644.5		3236	0.0119	0.33	0.1	0.04	OK
18		530	05/11/2021 09:33	05/12/2021 10:38	05/13/2021 12:43	281	2644.5		6381	0.0119	13.58	0.3	0.2	OK
19		467	05/11/2021 09:29	05/12/2021 10:31	05/13/2021 14:39	1200	2644.5		26977	0.0119	13.67	0.1	0.1	OK
19		467	05/11/2021 09:29	05/12/2021 10:31	05/13/2021 15:19	1200	2644.5	D	26496	0.0119	13.47	0.1	0.1	OK

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

Radon Flux Measurements

Location Name	Field Type	Canister Number	Date/Time Deployment	Date/Time Retrieval	Date/Time Counting	Count Time (sec)	BKG Counts	Lab Type	Sample Counts	Efficiency (cps/dps)	Flux (pCi/m²s) Result	Flux (pCi/m²s) LLD	Flux (pCi/m²s) Error 1.00 S.D.	Remarks
20		524	05/11/2021 09:31	05/12/2021 10:33	05/13/2021 11:38	428	2644.5		5515	0.0119	7.03	0.2	0.12	OK
21		429	05/11/2021 09:00	05/12/2021 09:38	05/12/2021 16:11	700	2634		5710	0.0117	3.54	0.2	0.07	OK
22		415	05/11/2021 08:58	05/12/2021 09:36	05/12/2021 17:05	1200	2634		1537	0.0117	-0.55	0.1	0.03	OK
23		486	05/11/2021 09:08	05/12/2021 09:44	05/12/2021 18:33	1200	2634		5450	0.0117	1.42	0.1	0.05	OK
24		200	05/11/2021 09:11	05/12/2021 09:48	05/12/2021 17:38	1200	2634		3623	0.0117	0.49	0.1	0.04	OK
24		200	05/11/2021 09:11	05/12/2021 09:48	05/12/2021 17:59	1200	2634	D	3586	0.0117	0.48	0.1	0.04	OK
25		425	05/11/2021 09:09	05/12/2021 09:45	05/12/2021 16:42	1200	2634		2593	0.0117	-0.02	0.1	0.04	OK
26		428	05/11/2021 09:15	05/12/2021 10:00	05/12/2021 21:27	1200	2634	D	4332	0.0117	0.87	0.1	0.04	OK
26		428	05/11/2021 09:15	05/12/2021 10:00	05/12/2021 21:06	1200	2634		4312	0.0117	0.86	0.1	0.04	OK
27		487	05/11/2021 09:14	05/12/2021 10:02	05/12/2021 19:38	1200	2634		3937	0.0117	0.66	0.1	0.04	OK
28		459	05/11/2021 09:38	05/12/2021 10:06	05/12/2021 20:25	1200	2634		4770	0.0117	1.09	0.1	0.04	OK
29		485	05/11/2021 09:39	05/12/2021 10:05	05/12/2021 20:45	1200	2634		43364	0.0117	20.94	0.1	0.11	OK
30		482	05/11/2021 09:40	05/12/2021 10:04	05/12/2021 20:03	1200	2634		3827	0.0117	0.61	0.1	0.04	OK
31		496	05/11/2021 09:41	05/12/2021 10:03	05/12/2021 19:04	1200	2634		3651	0.0117	0.52	0.1	0.04	OK
32		516	05/11/2021 09:46	05/12/2021 10:18	05/13/2021 09:58	1200	2644.5		4069	0.0119	0.79	0.1	0.05	OK
33		470	05/11/2021 09:44	05/12/2021 10:20	05/13/2021 10:19	1200	2644.5		4198	0.0119	0.86	0.1	0.05	OK
34		460	05/11/2021 09:43	05/12/2021 10:21	05/13/2021 11:01	1200	2644.5		6625	0.0119	2.21	0.1	0.05	OK
35		529	05/11/2021 09:48	05/12/2021 10:15	05/13/2021 09:49	466	2644.5		7246	0.0119	8.88	0.2	0.13	OK
36		461	05/11/2021 09:47	05/12/2021 10:21	05/13/2021 10:40	1200	2644.5		3993	0.0119	0.75	0.1	0.05	OK
37		437	05/11/2021 09:50	05/12/2021 10:26	05/13/2021 11:31	341	2644.5		5778	0.0119	9.86	0.3	0.16	OK
38		407	05/11/2021 09:59	05/12/2021 10:45	05/13/2021 12:58	759	2644.5		5525	0.0119	3.4	0.2	0.07	OK
39		502	05/11/2021 09:55	05/12/2021 10:44	05/13/2021 12:50	398	2644.5		5848	0.0119	8.35	0.2	0.14	OK

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

Environmental Restoration Group, Inc.
8809 Washington St. NE, Suite 150
Albuquerque, NM, 87113

Radon Flux Measurements

Location Name	Field Type	Canister Number	Date/Time Deployment	Date/Time Retrieval	Date/Time Counting	Count Time (sec)	BKG Counts	Lab Type	Sample Counts	Efficiency (cps/dps)	Flux (pCi/m²s) Result		Flux (pCi/m²s) LLD	Error 1.00 S.D.	Remarks
40		75	05/11/2021 09:53	05/12/2021 10:41	05/13/2021 12:27	853	2644.5		6469	0.0119	3.59		0.2	0.07	OK
	TB	503	05/11/2021 10:06	05/12/2021 10:10	05/13/2021 15:50	1200	2644.5		3024	0.0119	0.22	✓	0.1	0.04	OK
	TB	510	05/11/2021 10:07	05/12/2021 10:11	05/13/2021 16:12	1200	2644.5		2893	0.0119	0.15	✓	0.1	0.04	OK

Types: D-Duplicate, TB-Trip Blank

Reviewed by: _____

Appendix B

Field Deployment and Laboratory Analysis Log Forms

ERG Radon Flux Canister Data Log

Site: RGR MT. TAYLOR 2021

Location Number	Canister Number	Deployment Date (mm/dd/yy)	Deployment Time (24:00)	Retrieval Date (mm/dd/yy)	Retrieval Time (24:00)	Notes/Comments
1	501	5/11/21	8:52	5/12/21	9:30	
2	410		8:51		9:31	
3	518		8:49		~~9:31~~ 9:31	
4	527	5/11/21	8:47		9:30	
5	520		9:02		10:50	
6	525		9:01		9:33	
7	64		10:02		10:50	
8	80		9:05		9:41	
9	494		9:19		9:53	
10	422		9:21		9:57	
11	414		10:04		10:55	
12	469		9:17		9:55	
13	411		9:25		10:12	
14	511		9:24		10:16	
15	~~508~~ 49		~~9:26~~ 10:05		10:56	
16	508		9:26		10:14	
17	479		9:28		10:29	
18	530		9:33		10:30	
19	467		9:29		10:31	
20	524		9:31		10:33	
21	429		9:00		9:38	
22	415		8:58		9:36	
23	486		9:08		9:44	
24	200		9:11		9:48	
25	425		9:09		9:45	

Environmental Restoration Group, Inc.
8809 Washington St. NE * Suite 150
Albuquerque, NM 87113

Site: AGR ME Dixon

ERG Radon Flux Canister Data Log

Location Number	Canister Number	Deployment Date (mm/dd/yy)	Deployment Time (24:00)	Retrieval Date (mm/dd/yy)	Retrieval Time (24:00)	Notes/Comments
26	428	5/11/21	9:15	5/12/21	10:00	
27	487		9:14		10:02	
28	459		9:38		10:06	
29	485		9:39		10:05	
30	482		9:40		10:04	
31	496		9:41		10:03	
32	516		9:46		10:18	
33	470		9:44		10:20	
34	460		9:43		10:21	
35	529		9:48		10:15	
36	461		9:47		10:21	
37	437		9:50		10:26	
38	407		9:59		10:45	
39	502		9:55		10:44	
40	75		9:53		10:41	
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

Environmental Restoration Group, Inc.
8809 Washington St. NE * Suite 150
Albuquerque, NM 87113

Canister Analysis Log Form

Site: RGR Mt TAYLOR

#1 ROI: Channel 437 to Channel 527

#1 441 531

Canister Number	Duplicate Count	Count Date (mm/dd/yy)	Count Time (24:00)	Count Duration (seconds)	Total Counts	Technician Initials
STD #3 A		05-12-21	12:27	1200	41005	cf
STD #1 A			14:01	1200	45719	cf
BKG A			14:22	1200	2672	cf
501			14:44	1200	3092	cf
527			15:09	1200	7904	cf
518			15:31	800	7879	cf
410			15:46	1200	6742	cf
429			16:11	700	5710	cf
525			16:23	900	5689	cf
425			16:42	1200	2593	DN
415			17:05	1200	1537	DN
80			17:28	467	11015	DN
200			17:38	1200	3623	DN
200D up *	X		17:59	1200	3586	DN
422			18:20	620	6415	DN
486			18:38 dn	1200	5450	DN
469			18:54	551	5561	DN
496			19:04	1200	3651	DN
494			19:25	723	5517	DN
487			19:38	1200	3937	DN
482			20:03	1200	3827	DN
459			20:25	1200	4770	DN
485			20:45	1200	4364	DN
428			21:06	1200	4312	DN
428D up *	X		21:27	1200	4332	DN
STD #3 B			21:49	1200	43193	DN
STD #1 B			22:10	1200	45399	DN
BKG B			22:32	1200	2596	DN

ROI #2 ↓

Review: [signature]

Date: JUNE 6/3/2021

Canister Analysis Log Form

Site: RGR Mt. Taylor

ROI: Channel 441 to Channel 531

Canister Number	Duplicate Count	Count Date (mm/dd/yy)	Count Time (24:00)	Count Duration (seconds)	Total Counts	Technician Initials
BKG C		5/13/21	07:58	12:00	2615	cf
STD #3C			08:27	12:00	43475	DN
STD #1C			08:50	1200	45653	DN
511			09:11	841	6417	DN
~~508~~			~~09:27~~			~~DN~~ dn
411			09:29	1076	5510	DN
529			09:49	466	7246	DN
516			09:58	1200	~~1880~~ 4069	DN
470			10:19	1200	4198	DN
461			10:40	1200	3993	DN
460			11:01	1200	6625	DN
437			11:31	341	5778	DN
524			11:38	428	5515	DN
508			11:53	460	5520	DN
*Dup 508D	Dup ✓		11:56	457	5521	DN.
479			12:05	1200	3236	DN
75			12:27	853	6469	DN
530			12:43	281	6381	DN
502			12:50	398	5848	DN
407			12:58	759	5525	DN
520			13:12	598	7746	DN
49			13:24	778	5508	DN
64			13:39	1200	3909	DN
414			14:03	1200	4390	DN
467		14:39 (68)	16:39	1200	26977	cf
*Dup 467D	Dup ✓		15:19	1200	26496	DN
trip blank 503			15:50	1200	3024	DN
trip blank 510 ✓			16:12	1200	2893	DN
BKG D			16:53	1200	2674	DN

Review: _____

Date: 6/3/2021

ERG Canister Analysis Log Form

Site: RGR Mt. Taylor
ROI: Channel 441 to Channel 531

Canister Number	Duplicate Count	Count Date (mm/dd/yy)	Count Time (24:00)	Count Duration (seconds)	Total Counts	Technician Initials
80D	Dup ✓	05-13-21	17:15	515	10470	DN
STD #1D		↓	17:25	1200	45949	DN
STD #3D		↓	17:47	1200	43753	DN
End						
		✓				
	5 DUPS					

Review: _____ Date: June 3, 2021

ERG Form PWT.107.B

Page: 3 of 3

Appendix C

Meteorological Station Data Output

MONTHLY CLIMATOLOGICAL SUMMARY for MAY. 2021

NAME: Mt.Taylor Mine CITY: San Mateo STATE: NM
ELEV: 0 ft LAT: 35° 20' 26" N LONG: 107° 38' 03" W

TEMPERATURE (°F), RAIN (in), WIND SPEED (mph)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	61.1	77.5	6:00p	43.5	6:00a	7.3	3.4	0.00	2.5	20.0	6:00p	SSE
2	60.8	72.3	4:00p	48.1	7:00a	5.8	1.5	0.00	6.0	27.0	7:00p	SSE
3	49.9	61.2	1:00p	42.1	12:00m	15.1	0.0	0.00	3.0	28.0	2:00p	SSE
4	52.8	69.1	6:00p	35.2	7:00a	12.6	0.4	0.00	2.2	21.0	3:00p	SSE
5	60.8	75.0	6:00p	47.3	5:00a	6.5	2.2	0.00	3.3	20.0	4:00p	S
6	63.3	78.1	5:00p	44.4	7:00a	5.5	3.8	0.00	2.8	20.0	7:00p	S
7	68.2	79.0	3:00p	56.4	7:00a	1.2	4.4	0.00	6.1	24.0	1:00p	SSE
8	58.6	70.3	5:00p	46.3	4:00a	7.2	0.8	0.00	5.0	27.0	11:00a	ESE
9	57.5	68.6	3:00p	45.5	7:00a	7.6	0.2	0.00	4.3	23.0	12:00p	SSE
10	59.2	69.7	4:00p	45.9	7:00a	6.8	1.0	0.00	6.1	27.0	6:00p	SSE
11	55.4	70.6	5:00p	41.5	7:00a	10.0	0.5	0.00	2.1	24.0	5:00p	ENE
12	53.6	69.7	3:00p	39.4	7:00a	7.4	0.3	0.00	1.7	16.0	2:00p	S
13												
14												
15												
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25												
26												
27												
28												
29												
30												
31												
	58.4	79.0	7	35.2	4	93.0	18.5	0.00	3.8	28.0	3	SSE

Max >= 90.0: 0
Max <= 32.0: 0
Min <= 32.0: 0
Min <= 0.0: 0
Max Rain: 0.00 ON 05/01/21
Days of Rain: 0 (>.01 in) 0 (>.1 in) 0 (>1 in)
Heat Base: 65.0 Cool Base: 65.0 Method: Integration

Response No. 13 Attachment

Drawing of Location of Small Containment Cell After Closure of Primary Disposal Cell

TABLE 2
Soll ChemicaIl Analytlcal Results - Aprll 2012
Total Metals by SW 6010/SW 6020 and Radiochemistry by E903.0/RA-05
RIO GRANDE RESOURCES SOIL SAMPLING AND TESTING FOR CLOSEOUT PLAN
MT. TAYLOR MINE, SAN MATEO, NEW MEXICO

Sample ID	LOCATION	Collection Depth (inches bgs)	Collection Date	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Radlum 226	Radlum 228	Selenium	Sliver	Uranium	Uranium-234	Uranium-235	Uranium-238
	CONCENTRATION			mg/L						pCi/g	pCi/g	mg/L			mg/L		
Analytical Method				SW 6020	SW 6010 B	SW 6010 B	SW 6010 B	SW 6010 B	SW 7470A	E903 0	RA-05	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020	SW 6020
NMED SSL DAF 1				1.31E-02	3.01E•02	1.37	9.86E+07	NA	0.571	30[3]		0.965	1.57	49.3	49.3	49.3	49.3
MT-4-D-S3 (48" B.G.)	**MT-4-D**	48	4/10/2.012	0.003	0.88	<0.001	0.009	0.003	<0,002	6.7	0.8	0.020	<0.002 D	0.013 D	0.013 D	0.013 D	0.013 D
MT-4-E-S1 (0-4" B.G.)	**MT-4-E**	0-4	4/10/2.012	0,034	34	<0.001	0.007	0.008	<0,002	8,7	1.5	0.15	<0.002 D	0.39 D	0.39 D	0.39 D	0.39 D
MT-4-E-S2 (10-12"' B.G.)	**MT-4-E**	10-12	4/10/2.012	0.005	0.22	<0.001	0.011	0.005	<0,002	4.8	0.4	0.072	<0.002 D	0.014 D	0.014 D	0.014 D	0.014 D
MT-4-E-S3 (36" B.G.)	**MT-4-E**	36	4/10/2.012	0.003	0.13	<0.001	0.007	0.003	<0,002	2.9	0.7	0.026	0.0030	0.0043 D	0.0043 D	0.0043 D	0.0043 D
MT-4-E-S3 (48" B.G.)	**MT-4-E**	48	4/10/2.012	.0.005 B	0.06	<0.001	0.006	0.002	<0,002	6.2	0.4	0.011	<0.001	0.027	0.027	0.027	0.027
MT-4-F *(6" B.G.)*	**MT-4-F**	6	4/10/2.012	0.005	<0.05	<0.001	<0.005	0.003	<0,002	0.8	1.0	0.002	<0.002 D	0.0027 D	0.0027 D	0.0027 D	0.0027 D
MT-5-F (6" B.G.)	**MT-6-f**	6	4/10/2.012	0.002	<0.05	<0.001	<0.005	0,001	<0,002	2.0	0.8	0.001	0.003 D	0.0029 D	0.0029 D	0.0029 D	0.0029 D
MT-6-A-S1 (0-5" B.G,)	**MT-6-A**	0-5	4/10/2.012	0.012	7.3	<0.001	0.007	0.016	<0,002	6.4	0.2	0.007	<0.001	0.044	0.044	0.044	0.044
MT-6-A-S2 (12-20" B .G.)	**MT-6-B**	12-20	4/10/2.012	0.003 B	0.05	<0.001	0.007	<0.001	<0,002	0.4	0.1	0.15	<0.001	0.26 U	0.26 U	0.26 U	0.26 U
MT-6-B-S1 (8-10" B.G.)	**MT-6-B**	8-10	4/10/2.012	0.004 B	0.05	<0.001	0.007	<0.001	<0,002	0.8	0.2	0.16	<0.001	0.26	0.26	0.26	0.26
MT-6-B-S2 (30" B.G.)	**MT-6-8**	30	4/10/2.012	0.002 B	0.06	<0.001	<0.005	<0.001	<0,002	4.1	0.8	0.003	<0.001	0.014	0.014	0.014	0.014
MT-7-C (6 " B.G.)	**MT-7-C**	6	4/10/2.012	0.002	<0.05	<0.001	0.006	0.002	<0,002	0.6	0.8	<0.001	<0.002 D	0.0023 D	0.0023 D	0.0023 D	0.0023 D
MT-8-F [6" B.-G.)	**MT-8-F**	6	4/10/2.012	0.001	0.05	0.001	0.005	0.001	0.002	-1000	-1000	0.001	0.002 D	0.0006 D	0.0006 D	0.0006 D	0.0006 D
MT-A-C (6" B.G.)	**MT-A-C**	6	4/10/2.012	0.003	<0.05	<0.001	<0.005	0.001	<0,002	1.7	0.5	0.044	<0.002 D	0.14	0.14	0.14	0.14
MT-Borrow/Background	**MT-Borrow**	24-66	4/10/2.012	0.001	<0.05	<0.001	<0.005	<0,001	<0,002	0.7	0.7	0.001	<0.002 D	0.0007	0.0007	0.0007	0.0007
MT-OP-C-S1 (0-6" B.G.)	**MT-OP-C**	0-6	4/10/2.012	0;015	0.05	<0.001	0.010	0.001	<0,002	53:3	2.1	0.052	<0.001	1.8	1.8	1.8	1.8
MT-OP-C-S2 (20" B .G.)	**MT-OP·C**	20	4/10/2.012	0.005	0.05	<0.001	0.007	0.002	<0,002	1.7	0.6	0.018	<0,002 D	0.14	0.14	0.14	0.14
MT-OP-C-S3 (48-50" B.G.)	**MT-OP-C**	48-50	4/10/2.012	0.004	<0.05	<0.001	<0.005	<0,001	<0,002	0,8	0.8	0.028	<0,002 D	0.049	0.049	0.049	0.049
MT-OP-C-S4 (72" B.G.)	**MT-OP-C**	72	4/10/2.012	0.004	<0.05	<0.001	<0.005	<0,001	<0,002	1.5	0.6	0.025	<0,002 D	0.0064	0.0064	0.0064	0.0064
MT-OP-D-S1 (0-6" B.G.)	**MT-OP-D**	0-6	4/10/2.012	0.013	1.3	<0.001	0.007	0.008	<0,002	51.9	0.5	0.009	<0,002 D	0.23	0.23	0.23	0.23
MT-OP-D-S2 (48-50" B.G.)	**MT-OP-D**	48-50	4/10/2.012	0.001	0.05	<0.001	<0.005	<0.001	<0,002	1,9	0.6	0.005	<0,002 D	0. 10	0. 10	0. 10	0. 10
MT-OP-D-S3 (76° B.G.)	**MT-OP-D**	76	4/10/2.012	0.006	0.11	<0.001	0.012	0.009	<0,002	0.6	0.5	0.002	<0,002 D	0.0034	0.0034	0.0034	0.0034
MT-OP-E (6" B.G.)	**MT-OP-E**	6	4/10/2.012	0.004	0.05	<0.001	0.006	0,003	<0,002	1.1	0.8	0.005	<0,002 D	0.0056	0.0056	0.0056	0.0056
MT-WP-SM1										0.7					0.60	0.03	0.60
MT-WP-SM2										0.7					0.80	0.10	0.20
MT-WP-SM3										1.1					1.1	-0.02	0.9

Notes:
bgs = below ground surface
mg/Kg = milligrams/Kilogram
DAF = Dilution Attenuation factor
NA = No DAF values available, NMED 2012, rev6

Total metals concentrations should be compared to background soil sample cocentrations before comparing to Soil Screeening Levels (SSL). Only metals concentrations above bacckground should be considered for comparison to SSLs.
NMED considers a DAF = 20 to be protective of groundwater for a 0.5-acre source. SSL values are included for reference only, as they are applicable for reclamation, not for mines that are active or on stand-by status.
B = The analyte was detected in the method blank
D = reporting limit increased due to sample matrix
U = Not detected at minimum detectable concentration