



July 26, 2021

Karl Beaster, PG  
Sr. Environmental Advisor  
Enbridge Energy, Limited Partnership  
11 East Superior Street, Suite 125  
Duluth, MN 55802  
karl.beaster@enbridge.com

**Subject: Geotechnical Soil Sampling Results  
Enbridge Line 13 MP 312, Blackhawk Island Rd Valve Site, Ft. Atkinson, WI  
WDNR BRRTS #02-28-586199**

Dear Mr. Beaster:

WSP USA Inc. (WSP) is pleased to submit the following summary of results for geotechnical soil samples collected on June 15, 2021 at the Line 13 Milepost (MP) 312 Valve Site located at the intersection of Blackhawk Island Road and Westphal Lane near Fort Atkinson, Wisconsin (Site). The soil samples were collected in accordance with the Supplemental Site Investigation Work Plan, dated May 4, 2021, which was approved by the Wisconsin Department of Natural Resources (WDNR) in a letter dated May 26, 2021. This summary of results is provided to fulfill the reporting requirements of NR 716.14, Wis. Adm. Code. A thorough presentation of the sampling procedures and results will be included in the Supplemental Site Investigation Report.

On June 15, 2021, WSP collected two soil samples for geotechnical analysis during the installation of remediation well RW-9. Soil samples were collected from the vadose zone at 15 to 20 feet below ground surface (bgs) and from the saturated zone at 25 to 30 feet bgs. The sample location is shown on Figure 1. Samples were analyzed by Pace Analytical of Green Bay, Wisconsin for Fractional Organic Carbon (FOC) and percent moisture, and analyzed by Tetra Tech of Green Bay, Wisconsin for specific gravity, porosity, hydraulic conductivity, wet soil density, water content, dry soil density, and soil classification. Table 1 includes the laboratory analytical results, and Enclosure A includes the laboratory reports.

In accordance with NR 712, Wis. Adm. Code., the certification of a hydrogeologist for this sampling results submittal is included in Enclosure B.

WSP USA  
Suite 2800  
211 North Broadway  
St. Louis, MO 63102

Tel.: +1 314 206-4444  
Fax: +1 314 421-1741  
wsp.com



Please do not hesitate to contact me if you have questions:

Kind regards,

A handwritten signature in black ink that reads "Tim Huff". The signature is written in a cursive style.

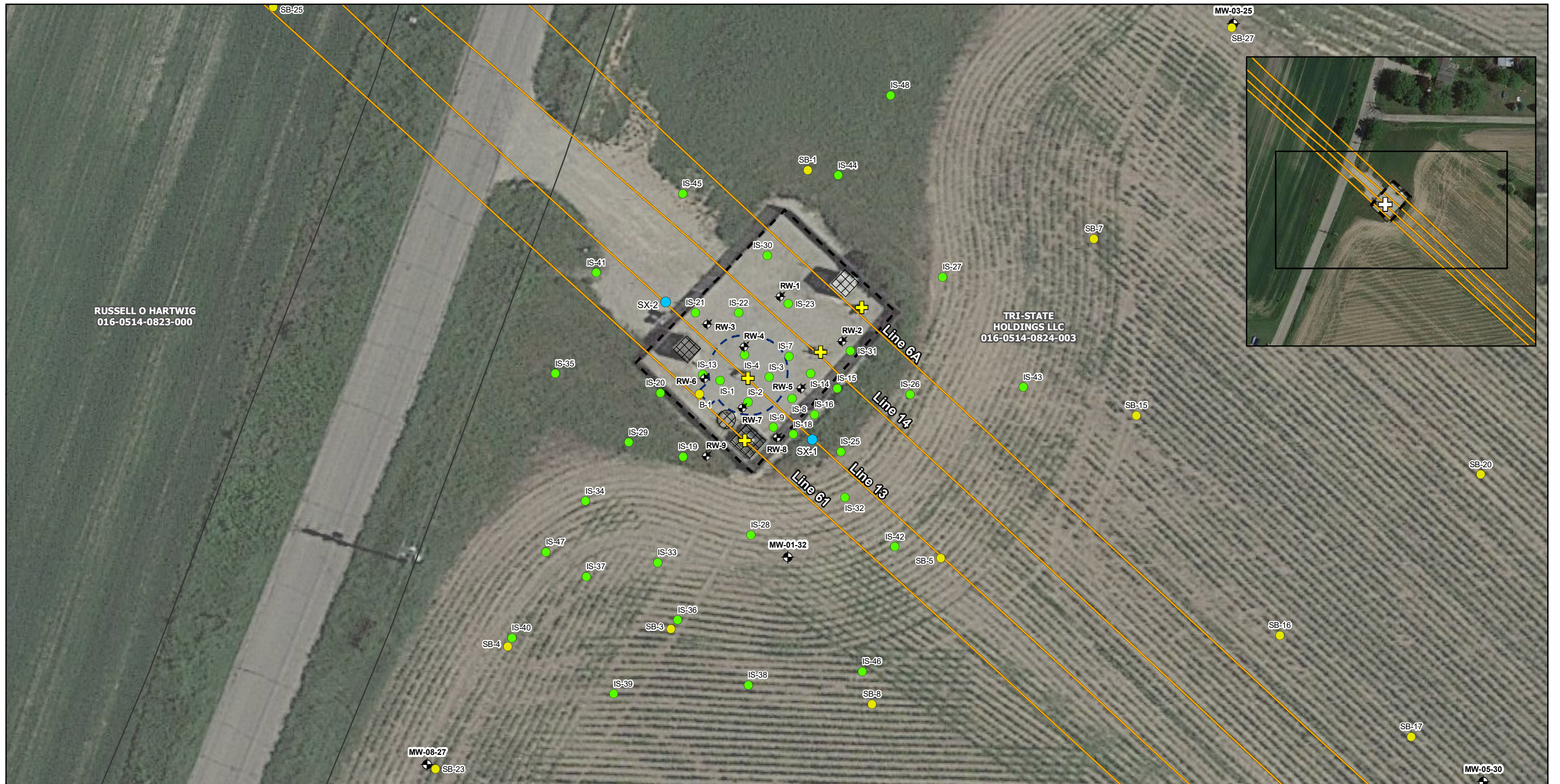
Timothy A. Huff  
Senior Lead Geologist

TAH :  
\\10.0.199.15\job\enbridge\ft atkinson\line 13 mp 312\_work plans and reports\2021-07 geotech soil sampling results to wdnr\2021.07.26\_line13 mp312\_geotech soil sampling results.docx

Encl.

FIGURE





**ENBRIDGE**

Drawn: WSP 7/9/2021  
 Approved: WSP 7/9/2021  
 Project #: 31401967.705

**Map Location**

**Legend**

- Pipeline Valve
- Remediation Well
- June 2021 Pipeline Bedding Soil Sample
- June 2021 Soil Boring
- July/Sept 2020 Soil Boring/Temporary Well
- Existing Monitoring Well
- Enbridge Pipeline
- 2019 Soil Excavation Limits
- Site Features
- Site Fence
- Property Parcels

Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

**FIGURE 1**  
**SOIL BORING LOCATIONS**  
 LINE 13 MP 312 VALVE SITE  
 FORT ATKINSON, WISCONSIN

**ENBRIDGE ENERGY LIMITED PARTNERSHIP**



TABLE

**Table 1**

**Geotechnical Soil Sampling Results  
LN 13 MP312 Valve Site  
Fort Atkinson, Wisconsin**

	<u>RW-9 Geotech Sample</u>	<u>RW-9 Geotech Sample</u>
Depth (ft bgs)	15-20	25-30
Date	6/15/2021	6/15/2021
<b>Analysis</b>		
Percent Moisture (ASTM D2974)	5.5	11.8
Fractional Organic Carbon (ASTM D2974)	0.25	0.32
Specific Gravity (ASTM D854)	2.647	2.751
Porosity	10	15
Hydraulic Conductivity (ASTM D2937) cm/sec	$1.5 \times 10^{-4}$	$2.2 \times 10^{-4}$
In-Situ Soil Density		
Wet Soil Density (pcf)	147.2	162.4
Water Content (%)	12.6	11.2
Dry Density (pcf)	130.7	146.0
Grain Size Distribution (ASTM D6913)		
Gravel %	12.6	7.0
Sand %	67.7	80.4
Silt and Clay %	19.7	12.6
USCS Classification	SILTY SAND (SM); fine to medium grained, a little gravel, light brown (7.5 YR 6/4)	SILTY SAND (SM); fine to medium grained, a little gravel, light brown (7.5 YR 6/4)

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## ENCLOSURE A – LABORATORY ANALYTICAL RESULTS

July 08, 2021

Timothy Huff  
WSP USA  
211 North Broadway  
Saint Louis, MO 63102

RE: Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

Dear Timothy Huff:

Enclosed are the analytical results for sample(s) received by the laboratory on June 16, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses were subcontracted outside of the Pace Network. The test report from the external subcontractor is attached to this report in its entirety.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Dan Milewsky  
dan.milewsky@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Matt Grady, WSP USA - MADISON  
Brian Kimpel, WSP USA



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
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## CERTIFICATIONS

Project: 31401967.705 LN13 MP312 VALVE

Pace Project No.: 40228521

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### **Pace Analytical Services Green Bay**

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40228521001	GEOTECH (15-20)	Solid	06/15/21 11:00	06/16/21 07:30
40228521002	GEOTECH (25-30)	Solid	06/15/21 11:00	06/16/21 07:30

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40228521001	GEOTECH (15-20)	ASTM D2974-87	K1S	1
		ASTM D2974-87	JXM	1
40228521002	GEOTECH (25-30)	ASTM D2974-87	K1S	1
		ASTM D2974-87	JXM	1

PASI-G = Pace Analytical Services - Green Bay

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

**Sample: GEOTECH (15-20)**      **Lab ID: 40228521001**      Collected: 06/15/21 11:00      Received: 06/16/21 07:30      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	<b>5.5</b>	%	0.10	0.10	1		06/18/21 09:17		
<b>Fractional Organic Carbon</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Fractional Organic Carbon	<b>0.25</b>	% (w/w)	0.058	0.058	1		06/22/21 08:00		FOC

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

**Sample: GEOTECH (25-30)**      **Lab ID: 40228521002**      Collected: 06/15/21 11:00      Received: 06/16/21 07:30      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Percent Moisture	<b>11.8</b>	%	0.10	0.10	1		06/18/21 09:17		
<b>Fractional Organic Carbon</b>	Analytical Method: ASTM D2974-87 Pace Analytical Services - Green Bay								
Fractional Organic Carbon	<b>0.32</b>	% (w/w)	0.058	0.058	1		06/22/21 08:00		FOC

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 31401967.705 LN13 MP312 VALVE

Pace Project No.: 40228521

QC Batch: 388283

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40228521001, 40228521002

SAMPLE DUPLICATE: 2240031

Parameter	Units	40228529001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.0	5.2	4	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 31401967.705 LN13 MP312 VALVE

Pace Project No.: 40228521

QC Batch: 388607

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: D2974 Fractional Organic Carbon

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40228521001, 40228521002

METHOD BLANK: 2241611

Matrix: Solid

Associated Lab Samples: 40228521001, 40228521002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fractional Organic Carbon	% (w/w)	3.5	0.058	06/22/21 08:00	FOC

LABORATORY CONTROL SAMPLE: 2241612

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fractional Organic Carbon	% (w/w)	66	56.9	86	80-120	FOC

SAMPLE DUPLICATE: 2241613

Parameter	Units	40228521001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fractional Organic Carbon	% (w/w)	0.25	0.24	6	10	FOC

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 31401967.705 LN13 MP312 VALVE

Pace Project No.: 40228521

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

FOC Reported results by ASTM D2974-87 for Fractional Organic Carbon (FOC) are determined by multiplying the Soil Organic Matter result by 0.58 (the percentage of organic carbon which comprises the SOM)

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 31401967.705 LN13 MP312 VALVE  
Pace Project No.: 40228521

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40228521001	GEOTECH (15-20)	ASTM D2974-87	388283		
40228521002	GEOTECH (25-30)	ASTM D2974-87	388283		
40228521001	GEOTECH (15-20)	ASTM D2974-87	388607		
40228521002	GEOTECH (25-30)	ASTM D2974-87	388607		

**REPORT OF LABORATORY ANALYSIS**

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Pace Analytical - ECCS Division  
 2525 Advance Road  
 Madison, WI 53718  
 608-221-8700 (phone)  
 608-221-4889 (fax)

# CHAIN OF CUSTODY

No. 14036

40228321

Page: 1 of 1

Project Number: 31401967.705		PO Number:		Lab Work Order #:						Report To: Tim Huff						
Project Name: LN13 MP312 value site - Fort Atkinson		Project Location (City, State): Fort Atkinson, WI		Analyses Requested						Company: WSP						
Turn Around (check one): <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush		If Rush, Report Due Date:		Preservation Codes						Address 1:						
Sampled By (Print): Cal Johnson				Address 2:						E-mail Address: Tim.Huff@wsp.com						
				Invoice To:						Company:						
				Address 1:						Address 2:						
				Address 2:												
				Comments						Lab ID	Lab Receipt Time					
Sample Description		Collection		Matrix	Total # of Containers	Sieve Analysis	Bulk Density	Porosity	Specific Gravity	Permeability	PCL Moisture					
		Date	Time													
REF Geotech (15-20)		6/15/21	1100	S	2	X	X	X	X	X	X		001			
Geotech (25-30)		6/15/21	1100	S	2	X	X	X	X	X	X		002			
<del>CFS</del>																
<b>Preservation Codes</b> A=None B=HCL C=H <sub>2</sub> SO <sub>4</sub> D=HNO <sub>3</sub> E=EnCore F=Methanol G=NaOH O=Other (Indicate)				<b>Other Comments:</b> Relinquished By: Cal Johnson <i>del</i> Relinquished By: CS Logistics Custody Seal: <input type="checkbox"/> NA <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact				Date: 6/15/21 Date: 6/16/21		Time: 1300 Time: 0730		Received By: Paul Malison Received By: Anthony Scull		Date: 6/15/21 Date: 6/16/21	Time: 1300 Time: 0730	
<b>Matrix Codes</b> A=Air S=Soil W=Water O=Other				Shipped Via: CS Logistics				Receipt Temp: 2.5		Thermometer #/ Exp. Date:			Temp Blank: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N			



**Sample Preservation Receipt Form**

Pace Analytical Services, LLC  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

Client Name: Pace Madison

Project # 40228321

All containers needing preservation have been checked and noted below:  Yes  No  N/A

Initial when completed:

Date/Time:

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic					Vials					Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)			
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC								GN		
001																																		2.5 / 5 / 10
002																																		2.5 / 5 / 10
003																																		2.5 / 5 / 10
004																																		2.5 / 5 / 10
005																																		2.5 / 5 / 10
006																																		2.5 / 5 / 10
007																																		2.5 / 5 / 10
008																																		2.5 / 5 / 10
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015																																		2.5 / 5 / 10
016																																		2.5 / 5 / 10
017																																		2.5 / 5 / 10
018																																		2.5 / 5 / 10
019																																		2.5 / 5 / 10
020																																		2.5 / 5 / 10

6/16/21  
ALS

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm) :  Yes  No  N/A \*If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	shelby tube unpres.
BG3U	250 mL clear glass unpres						

6/16/21 SRK  
Page 1 of 2

**Sample Condition Upon Receipt Form (SCUR)**

Project #:

Client Name: Pace Madison

**WO# : 40228521**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walco  
 Client 6/16/21  Pace  Other: \_\_\_\_\_



Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR-107 Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 2.5 / Corr: 2.5

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Person examining contents:  
Date: 6/16/21 / Initials: ARL  
Labeled By Initials: SRK

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1. <u>+CCx2 6/16/21 ARL</u>
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>no inv. info 6/16/21 ARL</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:**

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir



July 7, 2021

Mr. Dan Milewsky  
Pace Analytical Services - WI  
1241 Bellevue Street, Suite 9  
Green Bay, Wisconsin 54302

Dear Chris:

We have completed the tests requested by Pace Analytical for the sample submitted to our laboratory on June 17, 2021, Pace Analytical's Project No. 40228521. A summary of the test results is as follows:

<u>Sample I.D.</u>	<u>40228521-001</u>	<u>40228521-002</u>
Location:	Geotech (15-20)	Geotech (25-30)
Depth:	15' – 20'	25' – 30'
Specific Gravity (ASTM D854):	2.647	2.751
Porosity:	10	15
Hydraulic Conductivity (ASTM D5084) cm/sec:	1.5 x 10 <sup>-4</sup>	2.2 x 10 <sup>-4</sup>
In-Situ Soil Density (ASTM D2937)		
Wet Density (pcf):	147.2	162.4
Water Content (%):	12.6	11.2
Dry Density (pcf):	130.7	146.0
Soil Classification:	SILTY SAND	SILTY SAND
	fine to medium grained	fine to medium grained
	a little gravel, light brown (SM)	a little gravel, light brown (SM)
Munsell Color Code	7.5YR 6/4	7.5YR 6/4

Attached to this report are the sieve analysis reports on the samples tested.

We appreciate the opportunity to provide our professional services to your firm. Should you require additional information or clarification, feel free to contact our office.

Sincerely,

**TETRA TECH – GREEN BAY**

Robert R. Rouse, C.E.T.  
Soils Laboratory Manager

# TETRA TECH

## SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D6913)

**GENERAL DATA:**

Client:	Pace Analytical
Project:	No. 40228521
Location Sampled:	Geotech (15-20)
Sample No:	40228521-001
Depth of Sample:	15-20
Date Received:	6/17/21
Sample Designated For:	Soil Classification
Source of Sample:	31401967.705 LN13 MP 312
Munsell Color Code:	7.5YR 6/4
Date Sampled:	6/15/21

**LABORATORY DATA:**

Date Tested:	July 1-6, 2021
Test Performed By:	MAB
24 Hrs. Turn Around:	NO
Washed Gradation:	YES
Dry Weight of Soil (gms):	126.6

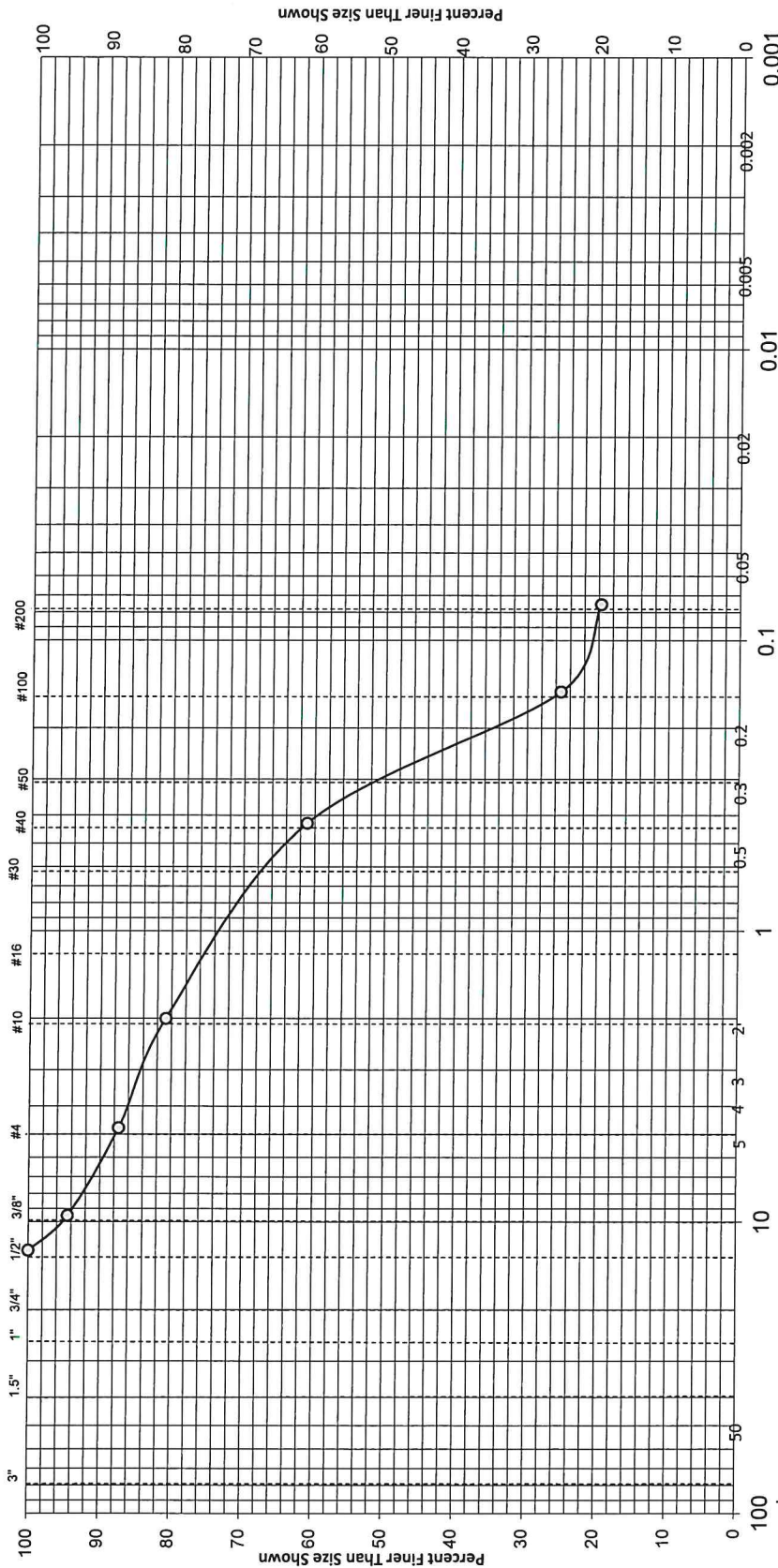
Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					
1 1/2"					
1"					
3/4"					
1/2"	0.0	0.0	100.0		
3/8"	7.0	5.5	94.5		
#4	9.0	7.1	87.4		
#10	8.3	6.6	80.8		
#40	25.0	19.7	61.1		
#100	45.3	35.8	25.3		
#200	7.1	5.6	19.7		

REVIEWED BY:	<i>Robert A. House</i>
DATE REVIEWED:	7/7/21

Remarks:

# GRAIN SIZE DISTRIBUTION CURVE

U.S. Standard Sieve Sizes



Gravel	Sand	Silt - Clay	
Coarse	Medium	Fine	Silt - Clay
12.6%	19.7%	41.4%	19.7%
6.6%	19.7%	41.4%	19.7%

Soil Classification: SILTY SAND, fine to medium grained, a little gravel, light brown (SM)

Location Sampled: Geotech (15-20)	Elevation or Depth: 15-20	Date Sampled: 6/15/21	
Sample Number: 40228521-001	Sampled Moisture Content (%): 7.1	Report No.: 8521-1	
Sample Source: 31401967.705 LN13 MP 312	<b>TETRA TECH</b>		
Atterberg Limits: LL=      PL=      PI=	Client: Pace Analytical		
Munsell Color Code: 7.5YR 6/4	Project: No. 40228521	Page: 2	
Date Received: 6/17/21	Prepared by: Robert J. Peeters	Date: 7/6/21	
Coefficients: Cc=      Cu=	Checked by: <i>Robert A. Bove</i>	Date: <i>7/7/21</i>	



PROJECT NO.: 40228521  
PROJECT: Pace Analytical  
DATE: 7/7/2021

SUMMARY OF TEST RESULTS

SAMPLE NO. 40228521-001  
LOCATION 15'-20'  
CLASSIFICATION SILTY SAND, fine to medium grained,  
a little gravel, light brown

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	130.7	130.7
WATER CONTENT (%)	12.6	16.2
DIAMETER (cm)	2.98	2.98
LENGTH (cm)	5.90	5.90
HYDRAULIC GRADIENT (MAXIMUM)		15.8
PERCENT SATURATION	119.22597	153.13428
HYDRAULIC CONDUCTIVITY k (cm/sec)		1.49E-04

# TETRA TECH

## SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D6913)

**GENERAL DATA:**

Client:	Pace Analytical
Project:	No. 40228521
Location Sampled:	Geotech (25-30)
Sample No:	40228521-002
Depth of Sample:	25-30
Date Received:	6/17/21
Sample Designated For:	Soil Classification
Source of Sample:	31401967.705 LN13 MP 312
Munsell Color Code:	7.5YR 6/4
Date Sampled:	6/15/21

**LABORATORY DATA:**

Date Tested:	July 1-6, 2021
Test Performed By:	MAB

24 Hrs. Turn Around:	NO		
Washed Gradation:	YES	Dry Weight of Soil (gms):	174.3

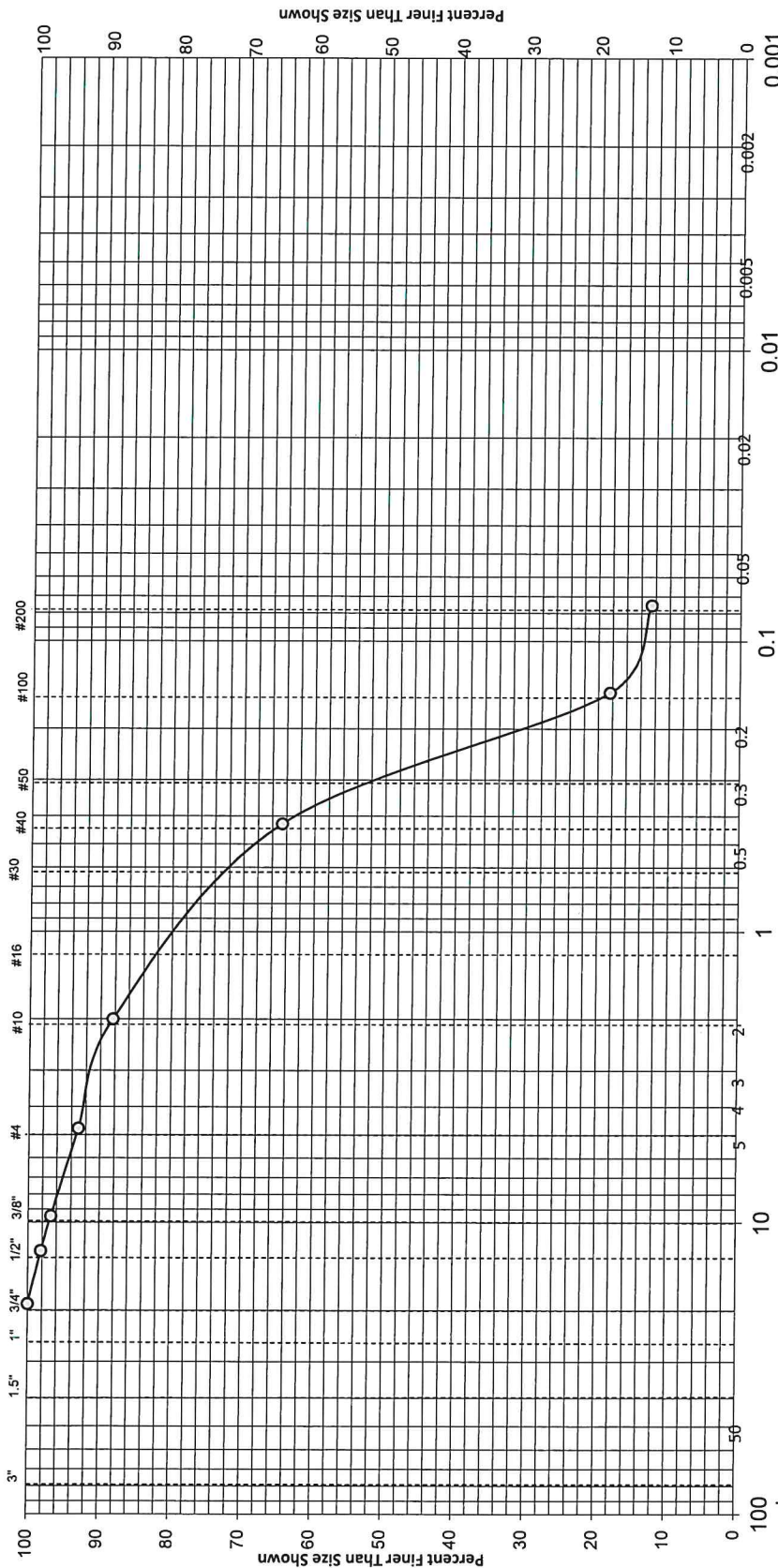
Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					
1 1/2"					
1"					
3/4"	0.0	0.0	100.0		
1/2"	3.2	1.8	98.2		
3/8"	2.4	1.4	96.8		
#4	6.6	3.8	93.0		
#10	8.2	4.7	88.3		
#40	41.3	23.7	64.6		
#100	80.6	46.2	18.4		
#200	10.1	5.8	12.6		

REVIEWED BY:	<i>Robert R. House</i>
DATE REVIEWED:	<i>7/7/21</i>

Remarks:

# GRAIN SIZE DISTRIBUTION CURVE

U.S. Standard Sieve Sizes



Gravel		Sand	
Coarse	Fine	Coarse	Fine
	7.0%	23.7%	52.0%
	4.7%	23.7%	12.6%
			Silt - Clay
			12.6%

Soil Classification: SILTY SAND, fine to medium grained, a little gravel, light brown (SM)

Location Sampled: Geotech (25-30)	Elevation or Depth:	Date Sampled: 6/15/21	
Sample Number: 40228521-002	Sampled Moisture Content (%): 10.4	Report No.: 8521-2	
Sample Source: 31401967.705 LN13 MP 312	<b>TETRA TECH</b>		
Atterberg Limits: LL=      PL=      PI=	Client: Pace Analytical		
Munsell Color Code:	Project: No. 40228521	Page: 2	
Date Received: 6/17/21	Prepared by: Robert J. Peeters	Date: 7/6/21	
Coefficients: Cc=      Cu=	Checked by: <i>Robert R. House</i>	Date: 7/7/21	

HYDRAULIC CONDUCTIVITY DETERMINATION  
 Rising tailwater method in a triaxial permeameter  
 ASTM D 5084, Method C (EM-1110-2-1906 7)

Tetra Tech

PROJECT NO.: 40228521  
 PROJECT: Pace Analytical  
 DATE: 7/7/2021

SUMMARY OF TEST RESULTS

SAMPLE NO. 40228521-002  
 LOCATION 25'-30'  
 CLASSIFICATION SILTY SAND, fine to medium grained,  
 a little gravel, light brown

	<u>INITIAL</u>	<u>FINAL</u>
DRY UNIT WEIGHT (pcf)	146.0	146.0
WATER CONTENT (%)	11.2	13.4
DIAMETER (cm)	3.00	3.00
LENGTH (cm)	5.74	5.74
HYDRAULIC GRADIENT (MAXIMUM)		16.6
PERCENT SATURATION	199.58881	238.83064
HYDRAULIC CONDUCTIVITY k (cm/sec)		2.20E-04



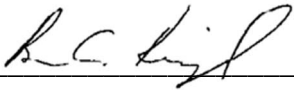


**ENCLOSURE B – HYDROGEOLOGIST CERTIFICATION**

**CERTIFICATION**

Geotechnical Soil Sampling Results  
Enbridge Line 13 MP 312 Valve Site  
Blackhawk Island Road  
Fort Atkinson, Wisconsin  
BRRTS Number: 02-28-586199

I, Brian C. Kimpel, certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



7/26/2021

Brian C. Kimpel,  
Supervisory Hydrogeologist, Wisconsin P.G. #1140

Date